Darwin Initiative Main & Extra: Final Report

To be completed with reference to the "Project Reporting Information Note": (https://www.darwininitiative.org.uk/resources/information-notes/).

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

Submission Deadline: no later than 3 months after agreed end date.

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Darwin Initiative Project Information

Scheme (Main or Extra)	Main
Project reference	29-021
Project title	More bees: Supporting agrobiodiversity and livelihoods in Amhara, Ethiopia
Country(ies)	Ethiopia
Lead Organisation	Bees for Development, UK
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
Project Leader name	Dr.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 and Baye Getahun, June 2025

1 Project Summary

Successive assessments and community consultations (2018-2021) identified the core problem which this Project (More Bees) sought to address – namely the loss of honeybees and beekeeping livelihoods, due to intensive use of pesticides, in Amhara, Ethiopia. The most evident problem perceived by smallholders was that beekeeping, previously important for income, is becoming non-viable, with resulting loss of income. Where viable, beekeeping income contributes up to 40% of household income. In one survey conducted in Project area, in the year before the Project started, farmers reported keeping ten times fewer bee colonies, attributed losses due to pesticides. Chemical application was the only pest control method used by target population. This project was designed to address this major driver of biodiversity loss. The Project was highly relevant for local farmers and for informing higher-level decision makers in the agriculture sector in Ethiopia - because it addressed the underlying reasons for farmers' overreliance on pesticides i.e. lack awareness of alternatives and lack of understanding of the environmental and health risks.

The Project built 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.

As result, farmers involved in the Project have reduced the frequency of pesticide spraying by 59% and adopted alternative pest control methods. More people are now supporting pollinator-friendly farming (83.5%), and the number of colonies per beekeeper has increased, by 60% among existing beekeepers and 114 people have started beekeeping for the first time. In local currency (Ethiopian Birr), existing beekeepers saw a 165% increase in income from honey sales—indicating strong real growth (although note currency devaluation in 2024). In addition to the impact on honeybees, farmers reported additional concerns about pesticides, including harmful effects on human health and high costs. The Project has strengthened the understanding of farmers, agricultural extension workers, and policymakers regarding the role of pollinators in improving crop yield and quality. As a result, the government is integrating Integrated Pest Management (IPM) into its regular agricultural extension services, particularly in Project area.

IPM trials were conducted using the Farmer Field School approach. The difference in net income across three crops and three season was always positive in favour of IPM i.e. farmers made more profit by using fewer pesticides. These changes ranged from 32% increase in profit to 130% increase in profit (depending on the crop and the site).

The project was implemented in Fogera district of South Gondar Zone and North Mecha district of North Gojjam Zone, in the Amhara Region, Ethiopia. These areas are primarily flatlands, characterized by large-scale, irrigation-based vegetable farming.

2 Project Partnerships

The success of this Project can be attributed to excellent collaboration between all partners and key stakeholders. Primary demand for the Project came directly from beekeeper-farmers, who told Bees for Development Ethiopia (BfDE) that they were losing their bees to pesticides and didn't know what to do—other than to give up beekeeping altogether. This urgent concern inspired BfDE and Bees for Development UK (BfD UK) to collaborate with Pesticide Action Network (PAN), which has offices in Ethiopia and UK and had prior experience, in Ethiopia, of transforming agricultural practice away from relying on Highly Hazardous Pesticides. These favourable enabling conditions helped to establish strong partnerships during project designing and implementation phases. The partnership was built on the unique added value each organization brought to the Project, and resulted in good outcomes.

BfD UK, played the lead role and oversaw overall project management. BfDE led project management and monitoring & evaluation in Ethiopia, and coordinated local planning and implementation. BfDE organized policy familiarization workshop, regular planning, experience sharing, and evaluation meetings with partners. In collaboration with the Ethiopian Biodiversity Institute (EBI), BfDE led a desk study on 'Assessment of Policy Instruments Related to Pollinators and Pollination in Ethiopia'. BfDE was responsible for implementing both the beekeeping and IPM components of the Project.

PAN Ethiopia (PAN-E) provided key technical support for the Integrated Pest Management (IPM) component. PAN-E delivered IPM training, conducted hands-on demonstrations in Farmer Field Schools (FFS), monitored IPM-FFS demonstration plots, and analyzed results. PAN-E also played a leading role in policy familiarization workshop by presenting technical papers and facilitating discussions.

PAN UK offered technical backstopping through online meetings, resource sharing, and field visits. PAN UK provided training on how to use the IPM adoption ladder and helped with end of project evaluation and reporting.

Bahir Dar University's (BDU) Department of Agricultural Entomology contributed significantly by providing training on IPM, pollinator identification, and monitoring. The University also presented research findings at the policy familiarization workshop. It supported project documentation efforts, including the lessons learned workshop materials and end of project workshop.

Government stakeholders, particularly the agriculture and livestock offices, were actively involved in selecting project beneficiaries, mobilizing participants for training sessions, allocating land for IPM-FFS demonstration plots at Farmers Training Centres (FTCs), attending field days and trainings, and supporting IPM adoption at the individual farmer level. Farmers actively participated in trainings, field visit programmes and experience sharing, and eventually adopted

the Project's outcomes on their own farms. They also shared their knowledge and skills in beekeeping and integrated pest management (IPM) with other farmers.

Learning:

BfDE and PAN-E, in collaboration with PAN-UK, strengthened the partnership through a series of joint field visit programmes. As part of this effort, a representative from PAN-UK visited PAN project woredas in Ethiopia, accompanied by three field staff members from BfDE in Bahir Dar. Together, they visited PAN projects around Ziway and Arba-Minch. This visit offered a valuable opportunity for the Bahir Dar team to exchange experiences and discuss challenges.

In October 2024, the BFD UK team visited Ethiopia to conduct hands-on training on solitary bee identification and recording in Bahir Dar. The training covered both field collection and laboratory identification techniques. This work extended to the Arba-Minch area, where PAN-E team members participated and learned about solitary bee collection and identification. These visits and training sessions significantly contributed to strengthening the partnership between the organizations, and fostered improved technical confidence amongst the team.

Some challenges:

Timing Issues: Coordinating technical field support with the PAN-E team proved difficult at times due to the seasonal and time-sensitive nature of agricultural activities, especially since the PAN-E team are not based in Bahir Dar (project area). As the More Bees field workers gained experience and confidence in handling technical issues on their own, the team in Bahir Dar was able to rely less on PAN.

Government Extension Workers: Extension workers were not consistently available to support project activities due to their multiple responsibilities assigned by the Woreda Office of Agriculture. However, once the project team shared the initial Integrated Pest Management (IPM) results with them, and the local farmers, their engagement increased significantly. As a result, IPM is now being integrated into the regular agricultural extension services.

Partnership Management Summary

Management area	Approach / activity / Partner
Leadership and coordination	BfD UK provided overall project oversight BfDE coordinated in-country activities
Clarity of roles	Partners took on roles, in accordance with their expertise Roles were reviewed during planning sessions
Communication	Regular virtual meetings were held amongst all In-person joint workshops and field visits were held
Planning and monitoring	Joint work plans and timelines Shared M&E and evaluation missions
Technical support	PAN-UK provided technical backstopping and training, both remotely and in-field BDU and PAN-E delivered hands-on training
Capacity building	Cross-partner learning sessions On-site demonstrations and experience sharing
Problem solving	Adaptive response to seasonal/timing issues Local staff gained confidence and independence
Learning and documentation	Lessons learned workshop and final project proceedings compiled and shared – all partners

3 Project Achievements

3.1 Outputs

Output 1 Smallholder farmers and government extension workers in Fogera and Mecha have a good working understanding of their local agro-ecosystem.

To achieve this Output, a total of 124 DAs and experts, and 850 farmers (27% women) received training on agro-ecology, pollinator conservation and on the detrimental effects of pesticides (Table 1). A basic identification guide was developed to help DAs and farmers recognize the most common beneficial insects. The guide includes clear morphological descriptions, photographs and brief behavioural traits for easy field identification. Solitary bees, honey bees, hoverflies, ladybirds, wasps and lacewing were included in the guide and more than 500 copies distributed to different kebeles to enhance the knowledge and capacity of Development Agents (DAs) and farmers.

Table 1: Training Participants on Agro-Ecology, Pollinator Conservation, and the Harmful Effects of Pesticides (Fogera and North Mecha, 2022–2024)

Woreda	Participant Farmers				Participant DAs and Experts		
	year	Male	Female	Total	Male	Female	Total
Fogera	2022	83	48	131	26	10	38
	2023	235	70	305	11	4	16
	2024	153	37	190	11	4	15
Fogera sub-total		**471**	**155**	**626**	**48**	**18**	**69**
North. Mecha	2022	58	22	80	29	7	37
	2023	0	0	0	0	0	0
	2024	104	40	144	14	8	22
North Mecha sub-total		**162**	**62**	**224**	**43**	**15**	**59**
Grand total	**2022-2024**	**633**	**217**	**850**	**91**	**33**	**124**

In addition to the training sessions, 265 extension workers and farmers participated in IPM field visits in Years 1&2. Participating farmers and government extension workers in Fogera and North Mecha woredas demonstrated a significantly improved understanding of their local agro-ecosystem. They were able to identify key components of the system, including specific pollinators, natural enemies of pests, and their habitats. Importantly, they began to view their agro-ecosystem as an interconnected whole—one that can be actively nurtured to enhance ecological balance and overall productivity. Such a change in mindset is a critical step toward the promotion of biodiversity and reduction in pesticide dependency.

In the end-line assessment, 200 farmers were interviewed. None identified chemical pesticides as the best method for pest control, compared to 97% at baseline. Furthermore, 83.5% reported taking steps to encourage beneficial insects, such as pollinators and natural pest predators, compared to 17% at baseline.

Results against indicators.

Indicators 1.1 and 1.2 – Knowledge of government extension workers enhanced.

Sample survey (n=10) in April 2024 revealed that Development Agents interviewed had attended all the training provided by the Project and had acquired good knowledge and understanding:

Table 2: Development agents responses to questions about pesticide use.

Respondents were asked to mention any problems with pesticides		%age who said yes [n=10]
Risk of poisoning the person applying the spray		100%
Risk of harming livestock		100%
Risk of harming bees		100%
Risk of harm caused to other family members (i.e. not those applying the		80%
Risk of harm to farmers' friends (other beneficial insects)		80%
Risk of contaminating soil and water		90%

Risk of health effects for the people who eat the food crop - the consumer		70%
High cost of pesticides		100%
Difficulty of getting hold of pesticides at the right time		1 person
Difficulty of getting the preferred or most effective chemicals		50%
Consumers don't want pesticides on their food		50%
Pests are becoming resistant to pesticides		100%
Traders and retailers are strict about which pesticides can be used		0

All said that their understanding had changed *because of the Project.*

Other knowledge and understanding

Question	
Apart from honey bees do you think there are other beneficial insects?	9/10 said *Yes, many - I think there are many beneficial insects in addition to honey bees* 1/10 said *A small number - I think there are a few kinds of other insects, in addition to honey bees, which are beneficial*
Do you think it is important for farmers to try and destroy all the insects present in vegetable fields?	9/10 said, *No*
Have you participated in all the training sessions delivered by Bees for Development Ethiopia in this Project?	10/10 said, *Yes*
How do you rate the learning experience?	10/10 said, *The learning has been very valuable and useful*

Indicators 1.3 and 1.4 – Farmers gain new knowledge about ecosystem, pesticides and importance of pollinators. Changes were assessed using questions asked in baseline and endline surveys. See Figures 1, 2 and 3.

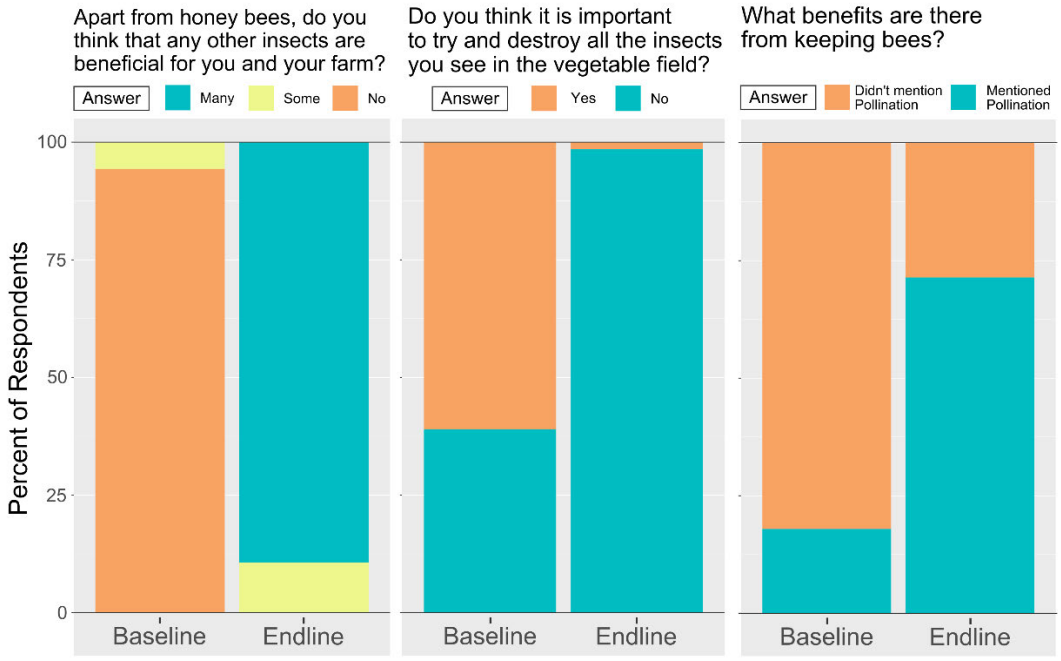

Figure 1. Change in knowledge and understanding of farmers, comparing baseline with endline

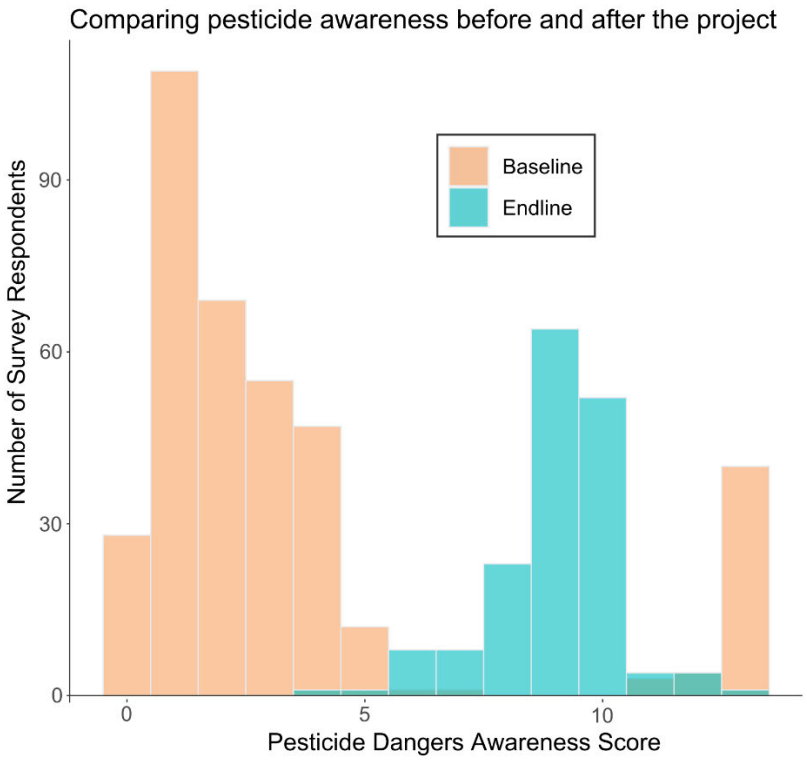

Figure 2. Chart showing changes in pesticide awareness using score derived from interview with farmers.

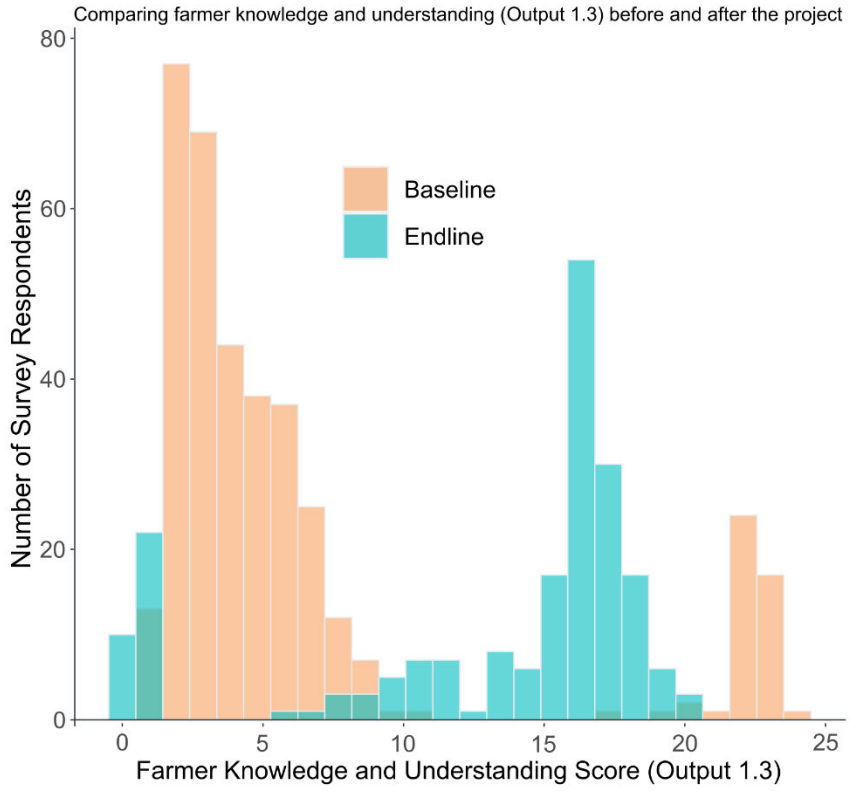

Figure 3. Chart showing change in farmers' understanding about agroecology, IPM and pollination. This was based on the computed scores from six questions asked. If the farmer

answered the questions in a way that demonstrated full understanding and awareness they scored 25 – this was the maximum.

Indicator 1.5 – Evidence of new knowledge gained about pollinating insects. See Figure 1 above and testimonial here.

Evidence of change in farmers' understanding

Tarkegne Damtie, government extension agent, Fogera, explained that there has been a significant shift in understanding among farmers – about bees and pesticides. He stated that the farmers initially knew honey bees only as "honey makers." This reflects a common, and often limited, perception of bees in agricultural communities, overlooking their role as pollinators. He emphasized that the **More Bees** project successfully educated the farmers, leading them to understand that "*honey bees are pollinators in addition to honey makers*." This is a fundamental shift in their knowledge base and appreciation for bees.

Tarkegne pointed out that initially, "*most farmers were not in agreement with the project experts*" who were promoting IPM. This resistance is common when introducing new agricultural practices. Farmers may have established routines, rely on the perceived quick fixes of pesticides, or lack confidence in alternative methods. They might also be concerned about potential risks to their yields if they deviate from conventional practices. Tarkegne noted a positive transformation: "*Now, most of the farmers become convinced and develop interest to practice IPM and reduce synthetic pesticide use*." This indicates that the Project's efforts in promoting IPM were successful in overcoming the initial scepticism.

Tarkegne Damtie, end of project workshop, March 2025

Indicator 1.6 – Guide to beneficial insects produced. This was achieved see Annex 5.

Indicator 1.7 – Count done of natural enemies in non-IPM and in IPM plots showed there to be consistently more natural enemies under IPM. Summarised results (See Annex 6) showed there to be between 2.2 and 4.8 times as many natural enemies in IPM plots.

Output 2

A key Project output was teaching and demonstrating the efficacy of IPM. This was done through training and the implementation of Farmer Field Schools (FFS) and comparative field demonstrations of IPM versus current farming practices. The objective of the FFS approach is to promote experiential learning—"learning by doing"—among farmers, evaluate the cost-benefit performance of IPM-FFS plots, and encourage the adoption of environmentally sustainable farming methods.

Indicator 2.1 – Evidence of knowledge of IPM by extension workers

The training was combined with the training delivered in Output 1. See Indicators 1.1 and 1.2. Further evidence of their learning is show by their willingness and ability to roll out IPM training as part of their normal work – see Indicator 2.7 below.

Indicator 2.2 – Evidence of knowledge of IPM by farmers

This is evidenced by learning reported on in Output 1 above, and manifested by level of adoption reported on below in this section.

Indicator 2.4 - Results of FFS trials

Across three years, 22 FFS groups were established, engaging 692 farmers, of whom 27.9% were women. Through their participation, farmers adopted a range of IPM practices that included cultural, physical, and biological control methods. Notable practices included crop rotation, the use of refuge crops, application of food sprays to attract natural enemies, and actions to enhance natural pest control services by promoting on-farm biodiversity (Table 3).

Table 3: IPM-FFS and participant farmers by crop in Fogera and North Mecha (2022–2024)

Woredas	Year/seasons	Crop type	#FFS	Male	Female	Total

		Onion	Grass pea	Pepper				
Fogera	2022	√	√		4	113	67	180
	2023	√	√		8	163	77	240
	2024		√		4	105	12	117
N. Mecha	2022	√		√	2	42	18	60
	2023				0	0	0	0
	2024			√	4	76	19	95
Total					**22**	**499**	**193**	**692**

The cost-benefit analysis of IPM-FFS plots compared to traditional farmer-managed plots clearly demonstrated both the economic and ecological advantages of adopting IPM practices. The demonstration trials were designed to assess performance by considering pesticide cost as a variable, while treating other inputs such as land, labour, and fertilizer as fixed costs. The Grass Pea trials in 2023 revealed that the IPM-managed plots provided a 23.7% higher economic return compared to the traditional plots (see Table 4). Full economic analysis of all trials see Annex 6.

Table 4: Comparison of net income between IPM plots and Farmers' plots in three kebeles of Fogera during the 2023 Grass Pea Production Season

Kebele	Net income – IPM plot	Net income – farmers' plot	Difference % - IPM v normal farmer plot
Kuhar-Abo	12,624.50	10,430.00	21.04%
Kuar-Michael	12,144.50	7,045.00	72.40%
Kokit	3,072.70	5,034.72	39% (negative)
Average	**9,280.57**	**7,503.24**	**23.7%**

Note: Pesticide costs were treated as variable, while land, labour, and fertilizer were considered fixed inputs in the cost-benefit analysis.

Indicator 2.5 – Evidence of IPM being practiced by farmers, on their own farms

Focus Group Discussions (FGDs) were conducted in March 2025, in Kuhar-Abo, Kuhar-Michael, Enguti, and Kudm, to assess how far up the 'IPM ladder' farmers had progressed on their own farms – in terms of adoption. Those included within the Project were compared with those not included. 18 IPM indicators were used as evaluation criteria on the IPM ladder. Farmers were scored based on the number of best practices adopted under each indicator:

Results of the FGD showed that, IPM farmers included within the Project scored between 59.7% and 72.2%, while non-IPM farmers scored between 24.2% and 26.9% (see Table 5).

Table 5: IPM-Ladder Levels for IPM and Non-IPM Farmer groups across four kebeles

Kebele	Group	Average FGD score (%)	IPM-ladder level
Kuhar-Abo	IPM	59.7%	Above level 2
	Non-IPM	26.9%	Level 1
Kuhar-Michael	IPM	61.1%	Above level 2
	Non-IPM	26.29%	Level 1
Enguti	IPM	63.9%	Above level 2
	Non-IPM	24.2%	Level 1
Kudmi	IPM	72.2%	Above level 2
	Non-IPM	26.9%	Level 1

The assessment indicated that all IPM-FFS participating farmers are above Level 2 in the IPM ladder and are showing strong indications towards IPM adoption.

Indicator 2.6 - Record of IPM field trial result sharing workshop proceedings

The IPM results were shared with stakeholders in workshops conducted in June 2024 and in March 2025. A total of 97 (15F) learned the results of the IPM trails on grass pea, onion and pepper in the workshops. See Annex 5 for evidence of proceedings.

Indicator 2.7 Interviews with Development Agents and seeing their workplans and confirming they include targets about IPM adoption

Following the results sharing workshop in June 2024, DAs developed their own IPM implementation plan. The DAs plan was supported by the Project through the distribution of 200kg powdered neem seed for each kebele. The DAs developed action plans for each kebele and selected participating farmers. As a result, approximately 239 farmers implemented IPM practices based on the DAs' guidance (Table 6).

Table 6: Farmers supported by Development Agents to adopt IPM in 6 kebele.

Kebele	Number of farmers			Number of Development Agents
	Male	Female	Total	
Kuhar Michael	34	15	49	3
Kuhar Abo	40	7	47	3
Kokit	42	5	47	2
Shina	37	10	47	2
Kudmi	11	10	21	2
Enguti	17	11	28	2
Total	181	58	239	14

This work was taken on by Development Agents as part of their normal work and not as Project work – indicating buy-in from government and long term legacy. Target was 10, we achieved 14.

Output 3

Project aimed to create additional income for smallholder farmers from beekeeping and enhance restoration of beekeeping business through the reducing bee losses, caused by pesticides.

A total of 192 new and existing beekeepers (both IPM and non-IPM farmers) received comprehensive training on beekeeping, hive making, apiary establishment, and dearth period management, honey postharvest handling, quality control and honey marketing. Among the trainees, 24% were women (Table 7). The Project distributed over 5,760 top-bars (just the bars, not the hives), 192 protective suits, and 228 bee colonies to new and established beekeepers.

Table 7: Number of beekeepers trained in Fogera and North Mecha woredas (2022-2024)

Woreda	**Group**	**Number of Beekeepers**		
		Male	Female	Total
Fogera	New	34	25	59
	Existing	32	7	39
North Mecha	New	46	9	55
	Existing	34	5	39
Total		**146**	**46**	**192**

Figure 4. Chart showing change in beekeeping skills and knowledge; these were assessed at baseline and endline using a skill-score [

Indicator 3.1 41 government extension workers (10F) also participated in the training from both target woredas and gained new knowledge. They said, "*the majority of us are crop protection and horticulture professionals and we did not have the basic beekeeping knowledge and skills. This is the first beekeeping training we took. Now we are confident to provide assist beekeeping extension workers in any 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.

Table 8: Experts and DAs participated in the beekeeping training

Woreda	Male	Female	Total
Fogera Woreda Experts and Development Agents	13	7	20
North-Mecha Woreda Experts and Development Agents	16	3	19
Project staff	2	0	2
Total	31	10	41

Indicators 3.2, 3.3, 3.4 and 3.6. Beekeeping skills improvement – see Figure 4 above.

Indicators 3.5. This work enabled smallholder farmers to generate additional income through beekeeping while supporting the revitalization of the beekeeping sector in the region. End-of-project survey was conducted to verify improvements in key areas, including hive construction, apiary establishment, colony multiplication, bee protection, and forage provision. The findings revealed notable outcomes: 73.2% of participants achieved the highest skill scores in hive making, while 54.76% excelled in honeybee management.

See next section for Outcomes.

Output 4

To facilitate wider knowledge sharing, advocacy and influence, the project implemented a series of strategic activities, including:

- A pesticide policy familiarization workshop - 2023
- Dissemination workshops on Integrated Pest Management (IPM) results – 2024 and 2025
- A desk review of national policy instruments related to pollinators and pollination - 2024
- An end-of-project workshop to present findings and recommendations - 2025
- Sharing of newsletters with stakeholders – yearly

- Desk study on pollinators in Ethiopia, with EBI – 2024
- Presenting results at external events

These engagements proved highly effective and persuasive in shifting perceptions and priorities. As a result, the government has begun integrating IPM into regular agricultural extension services, especially in the Project's target areas. The Ethiopian Biodiversity Institute (EBI) is now prepared to present the desk review findings to relevant sectoral authorities and members of parliament responsible for agriculture policy. These outcomes reflect meaningful progress in aligning agricultural practices with ecological sustainability and pollinator protection.

3.2 Outcome

Our Outcome indicators were updated during the project. Here we report here against the approved updated indicators.

Smallholder farmers 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 [250 farmers, 40%F].

Following our field demonstrations, farmers in the project area became increasingly convinced of the benefits of reducing chemical pesticide use and have begun adopting IPM on their own farms. According to our baseline assessment, the average pesticide application frequency was 7.73 times per production season. After three years of project implementation, this number dropped to 3.20 times per season [this figure was derived from endline survey n=166]. Reduction from 7.73 to 3.2 reflects a 59% reduction in pesticide use compared to the baseline (see Figure 5).

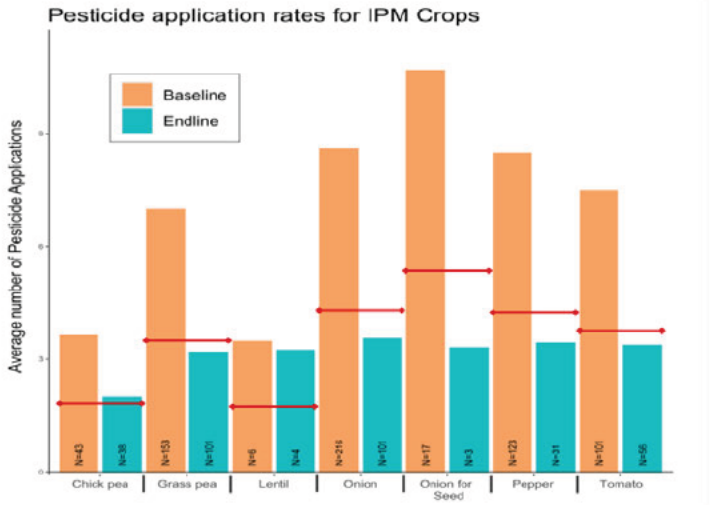

Figure 5: Change in Pesticide Application Frequency before and after IPM Project Intervention

Table 9: Data about frequency of pesticide application before and after Project

Data	Baseline survey	Endline survey
Number of farmers in the survey	330	166
Average frequency of pesticide applications / all crops	7.73	3.21
Median	7.5	3
Range	1 to 28	1 to 6

The 59% reduction is an average across a sample of 166. If we extrapolate the endline survey results (166 farmers) to all those who attended FFS participants (692) this indicates that this target of 250 farmers was met. This reflects a successful behavioural shift among participating farmers towards more sustainable pest management practices. With 692 farmers adopting these

methods, the project has made significant progress in reducing chemical dependency while enhancing farmers' capacity to manage pests through natural alternatives like neem extract.

Where this target was not met was on the gender breakdown. The target was 40% women, whereas actual participation in FFS was 28%. However, it must be noted these are family farms with husbands and wives working together. Where the FFS participate is the husband – this does not mean his wife is wholly excluded from the learning. See Section 4.3.

Smallholder farmers 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 that Smallholder farmers are assessed to have progressed to at least Level 1 on the IPM ladder [380 farmers, 40%F].

The team was trained in the IPM ladder adoption measure by PAN-UK. FGDs were held to evaluate farmers' level of IPM adoption using the IPM ladder. 40 IPM practicing farmers and 40 non-IPM practicing farmers were involved in eight FGD groups. All IPM-FGD groups scored between 59.7% and 72.2%, which is above IPM ladder Level 2, while non-IPM farmers scored between 24.2% and 26.9% which is at Level 1 in the IPM ladder level. 100% of our sample achieved between Level 2 and 3 – if use the 100% to extrapolate to all who participated in the FFS this would suggest 692 (193F) are above Level 2 in the IPM ladder. This exceeds our target. If we reduced our extrapolation assumption from 100% to 60% - we still exceed the target of 380 [60% of 692 is 415]. These results highlight that IPM-FFS participant farmers not only reduced their dependence on chemical inputs but also adopted a broader range of sustainable IPM practices. While none of the groups reached Level 3, the progress made by IPM farmers indicates strong momentum towards IPM adoption. The findings also point to a need for continued technical support, training, and awareness-raising—especially for those farmers who did not participate in FFS. Sustained efforts are crucial to ensure long-term environmental and economic benefits and to build resilient farming systems

Annual income of 200 people increases by average of GBP50 and 10kg of honey per beekeeper by end of the project

With a reduction in pesticide use, the plan was that beekeeping activity and honey yields could recover. The average honey production per beekeeper increased from 32.9 kg (baseline) to 64.4 kg (end line), reflecting a 95.7% increase. 192 farmers were included in the project and 41 beekeepers were sampled in the endline survey – giving us fair level of confidence that the endline survey was indicative of the whole group (Table 9).

In Ethiopian Birr existing beekeepers saw a 165% increase in income from honey sales—indicating strong growth. In ETB the average earning of existing beekeepers was 8,214 ETB at baseline and 24,050 ETB at endline (Table 9).

When converted to UK£ existing beekeepers' average income increased by £6.31 and new beekeepers' average income increased by £31.48. This discrepancy between ETB and GBP gains are due to significant devaluation of ETB in 2024.

The results reflect that the Project brought a significant improvement in honey production—almost doubling yields—and enhanced income generation for 192 participating beekeepers. The substantial increase in honey volumes and income in local currency confirms the Project's success in strengthening livelihoods and restoring the beekeeping sector.

Table 10: Average honey production and income increase of beekeepers

Indicator	Baseline	End-line	Change/remarks
Average honey production/beekeeper	32.9 kg	64.4 kg	+95.7% increase
Target increase in honey production	-	+10 kg	Target exceeded by +21.5 kg
Target income increases per beekeeper	-	+£50	Target set in GBP

Income – Existing Beekeepers (GBP)	-	+£6.31	Below GBP target due devaluation of ETB
Income – New Beekeepers (GBP)	-	+£31.48	Below GBP target; see ETB figures for actual growth
Income – Existing Beekeepers (ETB)	8,214 ETB	24,050 ETB	+192% increase
Income – New beekeepers (ETB)	-	5,036 ETB	
Summary	-	-	Project nearly doubled honey yields and increased income in ETB

No. of honeybee colonies kept by smallholders in the project increased by 50% from the baseline, by end.

Among existing beekeepers, the average number of colonies rose from 12 to 19—representing a 60% increase, surpassing the target. For newly engaged beekeepers, the Project aimed to support the establishment of 3 colonies per individual; this target was significantly exceeded, with an average of 5.36 colonies owned by new beekeepers by end of Project.

The result can be extrapolated to all 192 project participants, indicating that the Project effectively supported both existing and new beekeepers in expanding their beekeeping operations. This growth in colony numbers is a strong indicator of the Project's success in revitalizing local apiculture, strengthening household resilience, and laying the foundation for increased honey production and income generation.

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.

IPM practices contributed significantly to enhancing biodiversity within the production system. There was a substantial increase in the number of natural enemies (NEs)—beneficial insects that help control pest populations—in the IPM-managed plots compared to traditional farmer-managed plots.

During the 2023/24 production season, the average NE count in grass pea (8 plots) was 26/m² in IPM plots, compared to 6/m² in farmers' plots—representing a more than 300% increase (see Figure 2). In the 2024/25 season, the average NE count across grass pea and pepper (8 plots) was 31/m² in IPM plots versus 8/m² in farmers' plots, indicating a 288% increase.

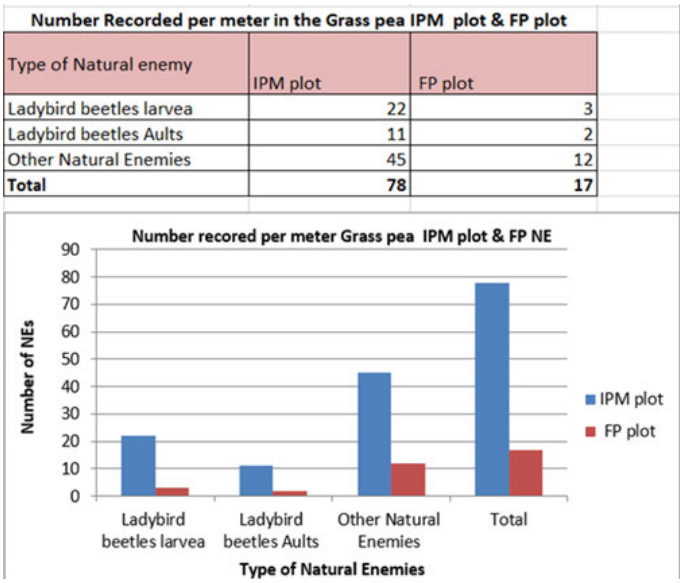

Figure 6: Number of Natural Enemies Recorded in IPM vs. Farmers' Plots on Grass Pea during the 2023 Production Season

See Annex 6 for full set of IPM trial results.

At project outset we planned to monitor changes in populations of pollinators also. Unlike natural enemies pollinating insects are much more mobile and do not follow the crop pests' lifecycle – this necessitated a different monitoring approach. Furthermore, many pollinating insects, especially solitary bees have short life cycles and so spot surveys would not have given a true picture. As a result we established 6 monitoring sites within the wider landscape – where fieldworkers did repeat insects counts (to group level e.g. hoverflies, leafcutter bees, honey bees, carpenter bees) – once every two weeks. Unfortunately, with the onset of the State of Emergency in 2023 this work came to an end, as the sites could not be accessed. Consequently we have no result for this work. See Annex 7 for further thinking about this work.

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 = honeybee only).

Before Project intervention, farmers in the target areas typically recognized only the honey bee and considered most other insects as pests requiring elimination. This narrow understanding led to widespread and often indiscriminate pesticide use, negatively impacting ecological balance.

Farmer Field Schools (IPM-FFS), farmers' knowledge and awareness of farm ecology have significantly improved. They are now able to identify key functional groups within their production systems, including pollinators and natural enemies of pests.

From the group of natural enemies, farmers can now recognize beneficial species such as the ladybird beetle, hover fly, and lacewing. In terms of pollinators, their understanding has expanded beyond the honey bee to include hoverflies, butterflies, leafcutter bees, carpenter bees, sweat bees. In collaboration with BfD UK, over 20 species of solitary bees were identified around Lake Tana and the Arba Minch area, which were previously overlooked by local communities.

See Annex 5 for poster of Bees of Ethiopia.

This increase—from recognizing only 1 pollinator (the honey bee) at baseline to over 20 types of pollinators and beneficial insects—demonstrates a profound shift in farmers' ecological literacy. Importantly, it reflects a growing understanding among farmers that not all insects are harmful, and many play crucial roles in crop pollination and natural pest control.

3.3 Monitoring of assumptions

Output and Outcome level assumptions were monitored throughout Project:

Assumption 1: Unexpected and out-of-control pest infestations that lead to government-led pest control campaigns (e.g. aerial spraying).
Update: A valid assumption but has not occurred.

Assumption 2: Increases in yields of vegetables, pulses and honey harvests will not lead to price reductions.
Update: Prices did not fall. In fact, our observations indicate an increase in market prices for vegetables, pulses, and honey, suggesting that higher yields have not led to price drops.

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.
Update: A correct assumption and now out-of-date

Assumption 4: Extreme weather hazard will not occur.
Update: This assumption still holds true.

We believe the Output level assumptions still stand

Assumption 1: Women farmers can attend training sessions held at their local Farmer Training Centres and by making sessions to be half-day sessions it is more feasible for women to attend as they have many daily household chores.

Update: This assumption has held true. However, whilst women did attend training sessions – it tended to be the men who were selected to participate fully in the weekly FFS sessions.

Assumption 2: All training attendees, government workers and farmers will apply the new knowledge and share it with others.
Update: This assumption is valid. The rate of adoption by government workers was most strongly influenced by the sharing of results – once proven. They were less convinced by the early training sessions – before the work started.

Assumption 3: Government extension workers will support the Project and work alongside Project staff to regularly follow-up the FFS and collect trial data.
Update: Government extension workers do support the project; their involvement has been factored in by design.

Assumption 4: Based on discussion we know some farmers are willing to allocate land to FFS trials and some are unable.
Update: Most farmers did participate in allocating land for IPM-FFS (Integrated Pest Management - Farmer Field School) activities

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.
Update: Yes, this is a valid assumption – up to a point. There is need for constant engagement to maintain high participation rates. It is harder for women to participate – due to their home responsibilities and established gender norms.

Assumption 6: Both beekeepers and non-beekeepers would be able and committed to applying IPM (Integrated Pest Management) practices and reducing pesticide us
Update: This assumption has proven valid—our endline assessment confirmed that both groups adopted IPM practices and reduced pesticide application beyond project expectations.

Assumption 7: The current high demand for honey persists.
Update: The assumption holds true

Assumption 8: Government remains committed to co-hosting policy familiarization and analysis workshops and advocating and enforcing government policies, proclamations and regulations.
Update: Government offices and officers are demonstrating good commitment, but reaching decision-makers remains a challenge.

3.3 Impact

The focus of the Project is on insects – natural enemies of crop pests, honey bees and other pollinating insects. These insects have a direct and tangible role to play in the success of sustainable agriculture. Protecting these insects from poisoning, by reducing use of chemical pesticides, forms the central aim of this project. These chemical pesticides are inevitably causing harm to many other groups of insects and fauna in the Lake Tana ecosystem.

Lake Tana is well known for its unique concentration of endemic fish species due to the lake's isolation from other water bodies separated by the Tis Issat falls. Approximately 70% of the 67 different fish species recorded in Lake Tana are endemic.

Lake Tana Biodiversity - NABU beyond borders

Wetlands are located all around the lake. Together they are the largest in the country and integral parts of the complex Tana-ecosystem. They consist of permanent & seasonal swamps, and areas subjected to regular inundation. They act as nurseries for most of the fish populations in the lake and as breeding ground for waterfowl and mammals. Around the lake and its catchment, including the town of Bahir Dar, live about 2 million people.

(3) (PDF) Lake Tana: Source of the Blue Nile (researchgate.net)

It is these same wetlands which are the focus of irrigation schemes for growing vegetables and it is these same wetlands which are currently subject to heavy pesticide use.

The Lake Tana environment is also home to 2 million people, most of whom are depending directly on natural resources – as farmers, beekeepers, fishermen. Excessive pollution and contamination can potentially lead to loss of key species and damage to ecosystem functioning which can have a direct impact on the success of people's livelihoods. More specifically overuse of pesticides can lead to loss of income through:

(a) Direct expenses associated with buying pesticides. As our IPM trials have shown the cost of pest management using chemical pesticides is 2-4 times greater than IPM alternatives.
(b) Beekeepers can earn up to £100-200 a year from selling honey, and this important extra income can be used as 'free capital' to invest in other income-generating activities. Given that beekeeping requires less land, labour and capital than other farming activities it can be an incredibly empowering and accessible livelihood for the most marginalised people. Loss of this livelihood opportunity can increase vulnerability.

Many studies have been conducted on the effects of pesticide use in bee colonies across Ethiopia, for example one study indicated that 48.3% of beekeepers abandoned beekeeping as a result of colony losses due to pesticide applications. Similarly, studies in other parts of Ethiopia, including the Enebse and Bure districts, the Dangila, Guangua and Mecha districts, the Gojjam zone of northwest Ethiopia, the Ejere District of western Ethiopia, and others reported a decreasing trend of honey bee populations, due indiscriminate pesticide application.

Farmers' health can be negatively affected by exposure to pesticides – and those who are unwell cannot/or struggle to work. Families who experience ill-health of the economically productive adults – can quickly fall into poverty.

Respiratory health is the most frequently studied occupational health effect of pesticide exposure in Ethiopia. Another relatively larger study that focused both on male pesticide applicators as well as female re-entry workers in farming systems in Ethiopia indicated significant exposure-response associations of occupational pesticide exposure with respiratory symptoms and reductions in lung function.

Negatu B, Dugassa S, Mekonnen Y. Environmental and Health Risks of Pesticide Use in Ethiopia. J Health Pollut. 2021 May 28;11(30):210601. doi: 10.5696/2156-9614-11.30.210601. PMID: 34267988; PMCID: PMC8276724.

Recent studies which looked at the risks of pesticide presence in the Lake Tana Basin indicated that, 35 different compounds were available in the districts surrounding the Lake, including pesticides that are banned in Europe, i.e., endosulfan, dicofol, and malathion. 7 pesticide residues were detected in the assessed aquatic habitats. Of these, dichloro-diphenyl-dichloroethylene (DDE) and bifenthrin occurred most often (97.7% and 62.3%, respectively).

B Abera, B.; Van Echelpoel, W.; De Cock, A.; Tytgat, B.; Kibret, M.; Spanoghe, P.; Mengistu, D.; Adgo, E.; Nyssen, J.; Goethals, P.L.M.; et al. Environmental and Human Health Risks of Pesticide Presence in the Lake Tana Basin (Ethiopia). Sustainability 2022, 14, 14008.

4 Contribution to Darwin Initiative Programme Objectives

4.1 Project support to the Conventions, Treaties or Agreements

The Project has been operating in alignment with national strategies and will contribute to Ethiopia's international commitments. In March 2023, a policy familiarization workshop looked at international conventions, treaties, and development goals, as well as national policies, proclamations, and action plans. A representative from the Ethiopian Biodiversity Institute (EBI)—the national focal point for the Convention on Biological Diversity (CBD)—participated and delivered a presentation on Ethiopia's commitments under the CBD, which was well received by participants, many of whom were previously unaware of the CBD's objectives and relevance.

In February 2025, the Project, in collaboration with EBI, conducted a desk review of national policy instruments related to pollinators and pollination. The review revealed several policy gaps among institutions engaged in biodiversity-related sectors. Based on these findings, the project and EBI have agreed to present the results to policymakers, to influence future policy.

The Project supports Ethiopia's commitment to the "Coalition of the Willing on Pollination", an initiative which emanated from the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) assessment on pollinators. It does so by addressing threats to pollinators from pesticide use. The Project contributes to the achievement of Sustainable Development Goals (SDGs) 1, 2, and 15 by:

- Supporting sustainable farm incomes from crop cultivation and beekeeping (SDG 1),
- Promoting the production of nutritious, high-quality food (SDG 2),
- Reducing harm to insect biodiversity on agricultural lands (SDG 15).

Dr. Tadesse Amera, Executive Director of PAN Ethiopia and Co-Chair of the International Pollutants Elimination Network (IPEN), has promoted the Project at international levels. As an observer at various chemical-related conventions (including the Basel, Rotterdam, Stockholm, and Minamata Conventions, as well as SAICM and UNEA), Dr. Amera regularly shares the Project's objectives, actions, results, and learnings on global platforms.

4.2 Project support for multidimensional poverty reduction

The primary target groups of the Project were smallholder farmers and government extension workers. These smallholder farmers, located in one of the most disadvantaged regions of Ethiopia, experience high levels of poverty. According to the Baseline Survey, literacy rates were alarmingly low, with 35% of men and 73% of women unable to read or write—an indicator closely associated with persistent poverty.

Agriculture is the main livelihood in the area, making it essential that farms are both sustainable and resilient, avoiding practices that degrade the natural resource base or disrupt vital ecosystem functions. The Project aimed to increase incomes while safeguarding ecosystems. It focused particularly on promoting beekeeping—a valuable livelihood strategy under threat—while enhancing awareness of biodiversity and ecosystem services among both farmers and DAs.

As a result of the Project's interventions, both DAs and farmers demonstrated a significantly improved understanding of their local agro-ecosystem. They learned to identify critical components of the system, including key pollinators and natural enemies of pests. More importantly, participants began to understand the agro-ecosystem as an interconnected system—one that must be actively managed to maintain ecological balance.

A cost-benefit analysis of IPM plots versus normal farmer-managed plots highlighted the advantages of IPM adoption. In 2023, a comparative study for grass pea was carried out in Fogera woreda across three kebeles—Kuhar Abo, Kuhar Michael, and Kokit. The results were clear: IPM-managed plots not only delivered ecological benefits, including reduced pesticide use and greater biodiversity, but also yielded a 23.7% higher economic return compared to traditional plots [see Table 4] and Annex 6.

The Project invested in beekeeping activities [Output 3]. The results delivered increased income benefits for both new and existing beekeepers [see Table 9]. Importantly the Project is making it possible for beekeepers to re-integrate beekeeping into their livelihood portfolios, by reducing the risks of pesticide poisoning, so giving farmers an important additional income source.

As multi-dimensional poverty includes income, access to knowledge, ability to adapt and cope, and livelihood resilience, we can confidently state that this Project is supporting multidimensional poverty reduction.

4.3 Gender Equality and Social Inclusion (GESI)

GESI Scale	Description	Put X where you think your project is on the scale
Not yet sensitive	The GESI context may have been considered but the project isn't quite meeting the requirements of a 'sensitive' approach	
Sensitive	The GESI context has been considered, and project activities take this into account in their design and implementation. The project addresses basic needs and vulnerabilities of women and marginalised groups, and the project will not contribute to or create further inequalities.	
Empowering	The project has all the characteristics of a 'sensitive' approach whilst also increasing equal access to assets, resources and capabilities for women and marginalised groups	X
Transformative	The project has all the characteristics of an 'empowering' approach whilst also addressing unequal power relationships and seeking institutional and societal change	

The Project endeavoured to reach women and give them information & knowledge, so they are not left out, and can contribute to decision-making about farming practices from an informed position. Over the past three years, the average female participation in FFS stands at 21.5%, representing only half of our target. As men are the main decision-makers, and the aim is to change the decision (pesticide usage) – then working with men is valid.

Our gender analysis (Year 1) revealed that in some households, men and women discuss and share ideas about how much fertilizer, seed and pesticide should be used in a production season – but this less likely to occur if men or women think that men are more knowledgeable, or have had more training, in which case decisions are largely taken by men. Men are more likely to consult their wives, if they know their wives have attended training – hence it is important to work towards their greater engagement.

The gender analysis activity was designed, not only to reveal gender roles relevant to the Project, but to be a participatory and transformative training event. This is evidenced by feedback:

I have been participated in other trainings. However, this gender analysis is new for me. From the gender analysis exercise discussion and result I understand that women are contributing more in some of farming practices than males and equally in most of the activities. The exercise showed me that women must equally participate in every discussion at household and community level, Yeshiemebet Lake, Kudmi Kebele, North Mecha district.

Previously, I did not attend gender analysis. I now understand that women have equal understanding about the farming practices, and women and males should discuss and make decisions together. More farmers have to get this opportunity to attend the gender analysis exercise. Both the husband and wife have to participate in the gender analysis rather than simply forming separate groups for men and women, Tilaye Kebede, Kudmi Kebele, North Mecha district.

Going forward – we appreciate that empowering women does not mean selecting wives, and de-selecting husbands, to participate in FFS and it is not practical for both to attend FFS, as this would interfere too much with daily life / household / farming tasks. We would need to introduce some new design elements into an equivalent project such as (i) having special women-only FFS days (ii) encouraging and checking that men share learning with their wives.

The Project reached both male and female Development Agents – and the proportions reached in different training sessions ranged from 25% to 45%. This is determined by the number of women who are employed in these roles, and the Project had no control over that.

The Project worked with existing beekeepers and people who have never kept bees before. Most [82%] of the existing beekeepers in the project location were men (determined by existing gender norms). To re-dress this gender imbalance we purposively pushed up the proportion of women being trained as new beekeepers – and reached 30%. It is expected that by giving more women the chance to own bees, have beekeeping skills, and become successful and independent beekeepers – this will serve to increase access to assets, resources and capabilities for women.

Interestingly, men are very much concerned for women's health regarding the effect of pesticides on fertility and unborn children, and they do not let females to participate in pesticide spraying.

4.4 Transfer of knowledge

The Project has actively sought to transfer both existing and newly generated knowledge. We undertook a collaborative desk review with the Ethiopian Biodiversity Institute (EBI), which analysed national policy instruments related to pollinators and pollination. The findings identified key policy gaps and now serves as a foundation for targeted policy engagement.

To ensure this knowledge informs practical conservation action, the Project and EBI have agreed to present the review's findings to relevant policymakers. This will be facilitated through national platforms such as roundtables, technical working groups, and stakeholder consultation meetings.

The results of the More Bees IPM initiative were presented to the Mass Youth Employment in Apiculture (MaYEA) (large national project funded by MasterCard Foundation) Technical Working Group, which includes ORDA-Ethiopia, BfDE, the International Centre of Insect Physiology and Ecology (ICIPE), the International Institute of Rural Reconstruction, SOS Sahel, Melka-Ethiopia, People Health and Environment, and The Well in Action (TWA). December 2024.

Feedback from MaYEA working group meeting – after More Bees presentation

Ato Dejene Minilik, ORDA Ethiopia Liaison office head and Chairperson of Technical Working Group (TWG) "Thank you so much for sharing these important documents with us. They are very inspiring, and these experiences shall be mainstreamed into MaYEA program. The experience you shared last time as presentation, pesticide use vs IPM, although at initial level will be a lesson after sharpening it in the future."

Dr Zewudu Wuletaw, ICIPE Policy Advisor, TWG Secretary. "Thank you for sharing with us such interesting information products; this is one of the key tasks of our policy technical working group~ sharing experiences. I took it as a good lesson for all of us as it encourages us to produce similar products"

Ato Girma Executive Director of The Well in Action, member of TWAG "Thank you so much for sharing these interesting and inspiring documents, I really appreciate what BDE is doing. Well done."

A project-derived paper entitled "Understanding and Awareness on Risks of Synthetic Pesticides Use on Honeybee Colonies in Western Amhara, Ethiopia" has been accepted for presentation at the 49th APIMONDIA Congress in Copenhagen in September 2025.

BfDE organized regional-level workshops in Bahir Dar, including Theory of Change, project familiarization, and achievement-sharing sessions. These were attended by stakeholders, including farmers, Development Agents (DAs), agricultural experts from woreda, zonal, and regional levels, as well as academic staff from Bahir Dar University.

BfDE hosted end-of-project workshop in Bahir Dar. Event brought together senior representatives from key stakeholder organizations, including the Bureau of Finance and Economic Development (which oversees project performance), the Bureau of Agriculture, the Livestock Agency, Bahir Dar University, and the Amhara Regional Agricultural Research Institute. Participants shared their perspectives on how government institutions—particularly the Bureau of Agriculture—could utilize the Project's outcomes to inform and enhance future agricultural programming and policy.

4.5 Capacity building

There is evidence of increased international recognition among Project staff. For example, one Project team member (male, early-career professional) has been invited to present a research paper at the 49th APIMONDIA Congress in Copenhagen in September 2025.

Dr. Tadesse Amera, Executive Director of PAN Ethiopia and Co-Chair of the International Pollutants Elimination Network (IPEN), has actively participated in several international platforms, where he has shared the project's objectives, actions, results, and lessons learned with a global audience.

Additionally, two in-country staff members (both male) have been invited to contribute to national technical working groups focused on biodiversity and conservation policy. While no formal promotions have been recorded to date, these developments demonstrate increased professional visibility and recognition at both national and international levels.

5 Monitoring and evaluation

There was not any major change in the Project design, however we did make periodic changes to the Logical Framework to improve the output and outcome indicators, such as;

- Change of outcome indicators to be more realistic
- Added new indicator to reflect that government buy-in is a valid result to be measured

The Project's M&E plan was based on the Logical Framework which contains 1 Outcome, 4 Outputs and 29 indicators. We conducted a Baseline Survey which collected metrics for 10 indicators and comprised interviews with 369 farmers. We conducted a shorter and quicker Annual Data Collection in March 2023 and March 2024 and Endline Survey in March 2025.

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

The only substantial addition to the M&E plan which we made was that at Project end, we used the IPM adoption ladder. Through FGDs we compared IPM adoption by farmers included within the Project and farmers who were not included. This approach to measurement was led by PAN UK who trained BfDE staff on how to use the IPM ladder.

All partners participated in the M&E work and information was shared through quarterly review meetings and through ad-hoc meetings to discuss specific achievements.

Both a mid-term evaluation and an end-line evaluation were conducted to monitor progress and assess overall effectiveness. Mid-term evaluation focused on reviewing the progress of activities, identifying implementation challenges, and recommending necessary adjustments. This evaluation provided timely insights that allowed the team to make informed decisions.

One outcome of the mid-term evaluation was revision of the Project's outcome indicators – these were adjusted to make them more realistic and achievable within the project timeframe. Additionally, based on the evaluation findings, the government agreed to adopt and invest in the promoted technology. The number of Farmer Field Schools planned for the final year was also revised and reduced to a more practical and achievable figure, enhancing implementation quality.

End of Project survey assessed results and overall impact. It examined the extent to which Project objectives were achieved, measured key outcomes, compared findings against baseline,

and identified lessons learned and best practices. This final evaluation also helped inform future programming and sustainability planning.

6 Lessons learnt

Grass Pea IPM. We encountered significant challenges during Year 1 in assessing the Integrated Pest Management (IPM) trials for grass pea. Limitations in the initial methodology made it difficult to generate reliable and consistent data. In response, we drew on pooled experience and expertise, worked closely with our partners and developed a grass pea IPM protocol. This was completely new work. In the following year the protocol was refined. As a result, the Grass Pea Protocol, and field guidance, was refined in several key areas:

- Reduction in the number of sampling points to increase efficiency and consistency,
- Re-evaluation of the sweep netting method, considering its practicality and usefulness,
- Adoption of a natural enemy (NE) to pest ratio of 1:15 as the most appropriate threshold to guide treatment decisions,
- Standardization of a damage scale for assessing the extent of vegetation damage.

The revised Grass Pea Protocol has been written up into an Information Report on IPM and Grass Pea. This Information Report **is still in draft** and will be circulated as a Project output in coming months.

Gender issues. Women's participation in farmer field days and experience-sharing workshops was less than expected. Through targeted discussions with government officers and male household heads, some improvements were observed in women's participation, yet the level of involvement still fell short. This remains an area requiring special attention and in future project phases we will consider how to structurally re-design activities to ensure more women are able to participate.

Recommendations for others: Bees for Development works in the apiculture sector in several countries. The issue of pesticide use is increasingly being raised as a risk to beekeeping by others and the lessons we have learned will stand us in good stead as we replicate similar work in other countries. To this end the main recommendations we would make (internally and externally are as follows):

- Changing agricultural practices, especially in the face of strong alternative paradigms, can never be a small undertaking and requires resources and time and must be the main goal (not part of a multi-component project)
- Forming partnerships with agronomists with IPM or agro-ecology experience is a must
- Farmer Field School is an excellent and appropriate methodology for working with farmers to trial and demonstrate new agricultural practices.

7 Actions taken in response to Annual Report reviews

Year 1

No.	Comment	Discuss with BCFs Admin	Next half year report	Next Annual Report	No response needed
1	During this reporting period, the project has become aware that some indicators are not robust enough. Specifically, the project cannot robustly measure the impact of its training activities i.e. measuring knowledge. The project will be applying further thought to its M&E approach and it is encouraged to test the knowledge of individuals trained by the project both through questionnaires and in-field observation.			x	

To assess farmers' knowledge and understanding we employed a combination of questionnaire surveys, FGDs, and in-field observations to gather meaningful insights.

Unfortunately, ongoing conflict and insecurity in the area significantly disrupted our ability to carry out consistent fieldwork. These conditions have made it difficult for fieldworkers to spend extended time with farmers, which has inevitably affected the depth and frequency of engagement in some kebeles.

Despite these challenges, we successfully conducted annual surveys in April 2023, April 2024, March 2025. The surveys included 18 core questions related to knowledge and understanding of Integrated Pest Management (IPM) practices, many of which allowed for multiple responses to capture nuanced learning.

In addition to the surveys, we carried out in-depth interviews and focus group discussions to enable deeper exploration of farmers' understanding and to uncover reasons behind behavioural choices—specifically, why certain IPM practices were or were not adopted.

Year 2

No.	Comment	Discuss with BCFs Admin	Next half year report	Next Annual Report	No response needed
1	It would be good to have more concrete information on how the partnerships are managed.			X	
2	How will the slow knowledge-sharing noted in the review of assumptions be 'factored into the final year'?			X	
3	Data and analysis collected in Y3 should be appended to (and signposted from) the narrative report of AR3/FR.			X	
4	Consider revising indicator targets in the light of your assessment that 'we are unlikely to meet all of them by end of project' and various comments in AR2 that they could be 'improved'. This should be done as soon as possible, through the Change Request mechanism.	X		X	
5	Discuss the implications of the shortfall in matched funding (compared to the amount budgeted in the project application).			X	

Concrete information on partnerships: See section 2.

Slow-knowledge sharing. We addressed this by reducing the number of FFS implemented in the final year, instead we shifted resources and effort to supporting IPM adoption (as opposed to IPM demonstration and learning). This effort was further supported by strengthening engagement with senior government officials which resulted in Development Agents being tasked to include IPM knowledge sharing within their normal work and responsibilities. See Section 2 project partnership.

Data and analysis of Y3. See Annex 6

Revising indicator targets. This was done through Change Request mechanism. We append the most up-to-date Logical Framework here.

Implications of matched funding shortfalls. In fact this was not a problem because the Ethiopian Birr experienced a significant devaluation in 2024 and this balanced out any budget shortfalls. In addition a second team member at Bees for Development UK also supported the project (part-time) – Ciaran Clark. His salary and time is counted as matched funding as no BCF funds went to pay his salary.

8 Risk Management

One of the key risks identified at the outset of the project—civil unrest and conflict in the project area—unfortunately materialized, significantly affecting the team's ability to operate safely and effectively. The deteriorating security situation curtailed some planned activities and restricted the movement of field staff and partners.

A formal change request was submitted to the donor in late 2023, outlining the necessary adjustments to the work plan and timeline considering these challenges.

Based on this approved change request, we restructured and rescheduled certain activities (in the second half of the project period) ensuring that the project could continue within a realistic and safe operational framework to achieve its core objectives.

The team in Ethiopia are to be applauded for managing and navigating a potentially very difficult situation. Notwithstanding the serious difficulties, they managed to keep the Project on-track.

9 Scalability and Durability

Stakeholder Awareness and Engagement

At outset, familiarization workshops were organized at both regional (1 workshop) and zonal levels (2 workshops), aimed at introducing key government offices and stakeholders to the Project's objectives, strategies, and expected outcomes. Additionally, each training session included a clear communication of the Project's aims to ensure consistent messaging.

To broaden outreach, the Project was also promoted during a policy familiarization event (2023) and through a regular newsletter distributed to stakeholders, including government offices, civil society actors, and local institutions.

Practical field engagement played a critical role in demonstrating the Project's value. Field visits and Integrated Pest Management (IPM) trial result-sharing workshops were held in various kebeles of Fogera and North Mecha woredas. These sessions enabled key stakeholders—including farmers, local administrators, heads of agriculture and livestock offices, and development agents—to observe first-hand the performance of Farmer Field School (FFS)-IPM plots compared to traditional farming practices. Stakeholders directly witnessed that IPM plots achieved comparable yields while significantly reducing pesticide use.

These practical demonstrations strengthened stakeholder confidence. During the IPM result-sharing events, both government representatives and farmers highlighted the cost-effectiveness of the IPM approach. Government officials expressed interest in expanding the IPM model to additional villages and districts, while many farmers indicated a readiness to adopt IPM practices on their own farms. This has led to a notable increase in IPM adoption in the current season.

Stakeholders also raised the issue of long-term sustainability, particularly the need for a reliable supply of natural pesticides such as neem seed—both for immediate use and as a tree species to establish a local and sustainable seed source. Bees for Development Ethiopia is already addressing this by sourcing neem seeds and seedlings and distributing to farmers. This work will continue post-project (as will other work – see below).

The Project's achievements were further shared during the midterm (January 2024) and end-of-project (March 2025) evaluations, which were conducted at the regional level by relevant government authorities. These sessions involved representatives from four government departments and were aligned with Ethiopia's regulatory framework for NGO-led projects. During these evaluations, achievements, lessons learned, and ongoing challenges were presented and discussed. As a result of this engagement, the Regional Bureau of Agriculture formally committed to incorporating IPM approaches into its regular agricultural extension services, marking an important step toward long-term institutional adoption.

Evidence of interest and attractiveness to potential adopters

There is clear and growing interest from key stakeholders in adopting and scaling the Project's Integrated Pest Management (IPM) practices, as evidenced by expert testimony, evaluation feedback, and farmer behaviour.

Dr. Yeshitela Merne of the Amhara Regional Agricultural Research Institute (ARARI) expressed strong support for the **More Bees** Project, saying, "*The output and outcome results effectively demonstrate the progress of synthetic pesticide spray frequency reduction and apiculture production improvement due to IPM practice adoption.*"

Dr. Yeshitela also provided the following recommendations to enhance the Project's impact and ensure its broader applicability:

Scaling Up and Expansion: The Project's success underscores the importance of validating, promoting, and scaling IPM practices across more regions, crops, and pest types. This requires further project development and geographic expansion.

Institutionalization: Recommendations from the Project should be mainstreamed into the Bureau of Agriculture's (BoA) programs for wider implementation across existing agricultural initiatives.

Extension Approach: The Farmer Field School (FFS) approach, as used in the Project, should be institutionalized as a preferred method for promoting IPM practices and facilitating peer-to-peer learning within the BoA's extension framework.

Botanical Commercialization: The Project's findings on the use of botanicals (e.g., neem) should be linked with local universities, particularly the Department of Applied Chemistry, to extract active ingredients and develop commercial products. This approach draws on successful models in countries like Kenya and India, where products such as Azadirachtin have been commercialized.

Practical Extraction Methods: There is a need to explore and identify simple, farmer-friendly botanical extraction methods suited to rural Ethiopian contexts to support practical and cost-effective adoption.

End of Project Workshop, Bahir Dar, March 2025

Overall, feedback gathered during formal evaluations and field events confirms the Project's strong reputation among both farmers and government officials. Many farmers have already begun independently adopting IPM practices on their own farms, and there is clear demand for support in accessing and cultivating botanical inputs like neem. This shift in farmer behaviour is a direct indicator of the Project's attractiveness and perceived value at the grassroots level.

Stakeholders—especially government officers—emphasized that further time and investment are required to fully leverage the Project's scalability and policy alignment potential. Prematurely concluding the Project at its current stage may risk losing the momentum necessary for long-term sustainability and institutional uptake. It is for this reason that BfD UK has committed £90,000 (£74,000 in Ethiopia) for a further year of work – to allow for consolidation and to plan for an expansion phase in 2026.

The key plans for 2025 (post-project) include:

1. Establish/ multiply the seedlings of effective botanicals and bee floras selected by the project for sustainable seed source, example neem
2. Supporting an MSc student from Gondar University to develop a methodology for comparing species occurrence and abundance of non-Apis bee species in IPM fields versus normal practice fields
3. Awareness creation training for chemical pesticide retailers about the harmful impact of chemicals and benefit of natural pesticides

Bees for Development Ethiopia attended the FAO World Bee Day Celebration and Second International forum for action on sustainable beekeeping and pollination which took place in Jimma, Ethiopia, 20-22 May 2025. They used this opportunity to share Project results to fellow attendees. The importance of bees as pollinators and the risks posed by pesticide use formed a strong theme across the event, including within the keynote address. This demonstrates that this Project is valid, timely and chimes with current narratives and concerns. This suggests fertile ground for lasting legacy.

To date – all staff have been maintained and will continue to work on the 2025 actions – above. Capital items will be retained by Bees for Development Ethiopia and used to continue this work.

10 Darwin Initiative identity

Darwin Initiative logo has been well promoted in banners, newsletters, training materials, and presentation slides during Project launch, training sessions, workshops and field visit activities.

In Ethiopia, all projects delivered by NGOs must be approved and monitored by all relevant government departments i.e. those administratively in charge of the project location and related sectors. This presents an opportunity for Darwin Initiative and this funded Project to be strongly recognised. 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) recognise Darwin Initiative as a distinct UK based funding programme.

Through this Project Darwin Initiative is also highly recognized by federal institutes like Bahir Dar University, and The Ethiopian Biodiversity Institute.

Promotion of Project activities and achievements via social media was strongly curtailed in 2023 as Amhara was subject to a complete internet shutdown for 5 months, due to the State of Emergency declared in August 2023. BfD UK has promoted the Project by sharing news within its monthly newsletters to supporters and subscribers. This reaches 17,000 people each month.

Social media post

https://www.instagram.com/p/C4qWFN4K0Su/?img_index=1

Darwin Initiative logo has been included on publications including:

Poster on identifying beneficial insects

Poster on The Bees of Ethiopia

Manual on growing onion using IPM in Ethiopia

11 Safeguarding

[redacted]

12 Finance and administration

12.1 Project expenditure

Project spend (indicative) since last Annual Report	2024/25 Grant (£)	2024/25 Total actual Darwin Initiative 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)				
Others (see below)				
TOTAL	123,991	123,991		

Staff employed (Name and position)	Cost (£)
Janet Lowore, Project Leader	[redacted]
Tilahun Gebey, Director of BfDE and Senior Beekeeping Expert	
Getsh Kassa, M&E and Capacity Building	
Welelaw Ayehu, FFS and IPM fieldworker	
Melaku Tadesse Ambaw, FFS and IPM fieldworker	
Tadesse Amera, Director PAN-Ethiopia	
Stephanie Williamson, IPM adviser - PAN-UK	
Alex Stuart, Agroecology adviser - PAN-UK	
Adane Tesfaye, Entomologist (he is not paid by the project)	
Baye Getahun, Project Manager	
Atalo Belay, IPM specialist in Ethiopia (PAN-Ethiopia)	
TOTAL	

Capital items – description	Capital items – cost (£)
Lenovo M10 3rd Gen 10.1 inch 32GB Tablet [for monitoring, reporting and data collection] SIM free Nokia C32 64 GB Mobile Phone [for comms, images, data collection] Laptop for M&E officer in Ethiopia	[redacted]
TOTAL	

Other items – description	Other items – cost (£)
Consumables (stationary, printer cartridge, etc.) BfDE Consumables (stationary, printer cartridge, etc.) PAN-Ethiopia Motorcycle and car insurance	[redacted]
TOTAL	

12.2 Additional funds or in-kind contributions secured

Matched funding leveraged by the partners to deliver the project	Total (£)
Bees for Development UK contributed financial resources to cover some salary costs (including other staff in UK who supported the project), some overhead costs in UK and helped finance the cost of the 4WD vehicle purchased in Year 1	[redacted]
Bees for Development Ethiopia contributed use of their existing vehicle whils waiting to buy new vehicle for the project, contributed part of rent, overhead costs	

Bahir Dar University – paid for salary of Dr. Adane who supported the project	[redacted]
Mike Edwards volunteered his time and expertise at project outset and during visit to Ethiopia in 2022 (he was not paid)	
Pesticide Action Nexus Ethiopia – covered some costs of Farmer Field Schoo learning visit to Arba Minch	
Beekeepers contributed in-kind costs – materials to make beehives	
TOTAL	

Total additional finance mobilised for new activities occurring outside of the project, building on evidence, best practices and the project	**Total (£)**
More Bees 'follow-on year' 2025/2026 – 12 months consolidation (money raised by Bees for Development UK in fundraising campaign)	[redacted]
TOTAL	

12.3 Value for Money

Economy: Project does not buy a lot of materials – the main cost drivers are staff, transport and logistics. Bees for Development and Bees for Development Ethiopia remunerate their staff fairly and pay salaries commensurate with experience and qualifications. Compared to other organisations, salaries at BfDE are at the mid-range. At the end of 2023 we lost one key member of staff in Ethiopia – he left the organisation to move to a higher paying job. BfDE is working hard to maintain fair salaries, whilst keeping salaries at a sustainable and management level.

A major expense at project outset was the purchase of a vehicle. This was imported to Ethiopia tax-free. This privilege, accorded to NGOs, helps keep such costs manageable.

Efficiency: Project worked to change established farmer practice, introduce new knowledge and re-frame the narrative around sustainable agriculture – in the project area. This involved trialling, demonstrating and developing new approaches. Much of the work was new. It was imperative that we proved what was possible first, before rolling out at scale. That being said we achieved economy of scale by focussing on a small number of crops [onion, pepper, grass pea] rather than all crops grown by farmers. This allowed us to consolidate and share learning efficiently.

Project cost per beneficiary is approx. £450 per person. This is higher compared to many of our other projects e.g. beekeeping training alone – the reason being that stated above i.e. this was majorly a testing and learning project. This is comparable to other work of this kind e.g. previously delivered by Pesticide Action Nexus Ethiopia. Indeed PAN advised us that in achieving changes such as the adoption of IPM – the most expensive part of the process is the beginning – as most farmers are risk averse and only wish to adopt new practices, when others have led the way.

Effectiveness: Project has been effective in changing the narrative, raising awareness and increasing adoption – with respect to reducing pesticide use and embracing IPM. This is despite the difficulties of operating amongst the prevalent civil unrest. The key to the project's effectiveness was (a) building on experience, expertise and proven FFS methodology which was shared with us by PAN Ethiopia (b) recruiting, training and posting two fieldworkers, full time, in the project location (c) maintaining close and positive engagement with government officers, in order to collaborate on implementation and to achieve buy-in for sustainability and legacy.

Additionality: Project would not have been possible with the help from the Biodiversity Challenge Funds. In the project area there is no other organisation or government initiatives actively working to reduce the risks to honey bees and beekeeping livelihoods, posed by pesticides. Although the problem is much noted by beekeepers, commentators and researchers – no concrete action was being taken. This was the first project to integrate IPM, pesticide reduction with beekeeping livelihoods in the target location.

This Project has demonstrated what is possible and has been well-received by stakeholders at all workshops where results have been shared. This has given us the determination to continue and scale the work. We have learned lessons about gaps in taxonomy and awareness about bees in Ethiopia, apart from honey bees. Consultations with Universities and Ethiopian Biodiversity Institute revealed there to be no comprehensive reference bee collection in Ethiopia, and finding experts able to do surveys of solitary bees has been difficult. This has prompted us to started new work in 2025 – engaging and training an MSc student.

13 Other comments on progress not covered elsewhere

We faced a significant challenge in 2023/24– insecurity and unrest broke out in Amhara in August 2023 leading to a State of Emergency being declared in the region. This created numerous challenges in connection with programme delivery, especially because of internet restrictions and blockages of main roads to the project area. Latterly in 2023 we were able to get special permission via a privilege given to NGOs operating in Amhara region – allowing us access to the internet and to conduct meetings - despite the meeting ban. Our main strategy has been to conduct repeat security assessments using our strong network with the local government and social network with the community, including our beneficiaries.

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

I agree for the Biodiversity Challenge Funds to edit and use the following for various promotional purposes (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 including description, country and credit	Social media accounts and websites to be tagged (leave blank if none)	Consent of subjects received (delete as necessary)
JPEG	Attached as More Bees 1 and 2 Learning day in Enguti and onion IPM trial	"First of all, I would like to thank the professionals who worked hard for this work. It is known that the district is highly affected due to pesticides. I believe that the onion product that we visited today is very encouraging and the right way to teach farmers in practice. It would be good if you have such a demonstration on other types of vegetable crops. Finally, I call on the district to do its part so that this activity can be implemented in every farmer's field". Abiyot Biru, Manager of Koga Irrigation Scheme, Ethiopia Bees for Development Ethiopia	Bees for Development | Monmouth | Facebook Bees for Development (@beesfordevelopment) • Instagram photos and videos X @beesfordev	Yes

JPEG	Attached as More Bees 3 and 4 Learning day in Enguti and onion IPM trial	"I followed the whole onion production process. I never expected this product to be available. But now I proved in practice that it is possible to produce without chemicals and I can be a witness to others". [redacted] farmer from Enguti Kebele, Ethiopia. Bees for Development Ethiopia	as above	Yes

Annex 1 Report of progress and achievements against logframe for the life of the project

Project summary	Progress and Achievements April 2023 - March 2024	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.	Project is making steps towards reducing harm caused to insect biodiversity as a result of heavy use of Highly Hazardous Pesticides. Project is making steps towards increasing farmer income through support for beekeeping enterprises, which thrive better when pesticide use is reduced.	
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.		
Outcome indicator 0.1 Smallholder farmers adopt IPM practices and reduce frequency of application of pesticides on irrigated vegetables and pulses grown with residual moisture, by end of project. Target 1.1 is to cut frequency by at least half, against baseline, by end of project [250 farmers, 40%F]. Target 1.2 is that Smallholder farmers are assessed to have progressed to at least Level 1 on the IPM ladder [380 farmers, 40%F].	1.1 It was planned to reduce the frequency of pesticide application by 50%. The average pesticide application frequency before the intervention was 7.73 times per production season, after the intervention this number dropped to 3.20 times per season. Reduction from 7.73 to 3.2 reflects a 59% reduction in pesticide use compared to the baseline. Target was 50% 1.2 As per the FGD result 100% IPM-FFS participant farmers achieved between Level 2 and 3 in the IPM ladder– if we use the 100% to extrapolate to all who participated in the FFS this would suggest 692 (193F) are above level 2 in the IPM ladder. This exceeds our target. If we reduced our extrapolation assumption from 100% to 60% - we still exceed the target of 380 [60% of 692 is 415].	
Outcome indicator 0.2 Annual income of 200 smallholder farmers [80 former beeks all M, 60F new, 60M new] from beekeeping increases by	The average honey production per beekeeper increased from 32.9 kg (baseline) to 64.4 kg (end line), reflecting a 95.7% increase. Existing beekeepers' average income increased from ETB 8,214 to ETB 24,050	

average of GBP50 and 10kg of honey per beekeeper by end of project, against baseline. [100 are subset of IPM farmers, 100 additional]	– an almost three-fold increase. However, some of this increase is probably due to currency devaluation and not all is a 'real' increase. If converted into GBP existing beekeepers incomes increased by £6.31 and new beekeepers' average income increased by £31.48.	
Outcome indicator 0.3 No. of honeybee colonies kept by smallholders in the project increased by 50% from the baseline, by end.	Among existing beekeepers, the average number of colonies rose from 12 to 19—representing a 60% increase. For newly engaged beekeepers, the project aimed to support the establishment of 3 colonies per individual; this target was exceeded, with an average of 5.36 colonies now owned by new beekeepers.	
Outcome indicator 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.	There was a substantial increase in the number of natural enemies (NEs)—beneficial insects that help control pest populations—in the IPM-managed plots compared to traditional farmer-managed plots. Summarised results across all years and all plots indicate that the number of natural enemies in IPM plots was more than 40% greater than the number in normal farmer plots – in all cases. Grass Pea 23/24 – 381% increase in IPM plot Onion 22/23 – 116% Onion 23/24 – 304% Pepper 22/23 – 311% [see Annex 6]	
Outcome indicator 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).	Before intervention, farmers in the target areas only valued the honey bee as a beneficial insect. Now farmers' knowledge and awareness of farm ecology have significantly improved. They are now able to identify key functional groups within their production systems, including ladybirds, hoverflies, predatory spiders and wasps, bees other than honey bees. Over 20 species of solitary bees were identified around Lake Tana and the Arba Minch area, which were previously unknown or overlooked by local communities.	

Output 1 Smallholder farmers and government extension workers in Fogera and Mecha have a good working understanding of their local agro-ecosystem.		
Output indicator 1.1 & 1.2 50 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, with 10 Govt. extension workers from North Mecha moved to 24/25	124 (33F) DAs and experts received training on agro-ecology and pollinator conservation and on the detrimental effects of pesticides. Government extension workers in Fogera and North Mecha woredas demonstrated a significantly improved understanding of their local agro-ecosystem. They were able to identify key components of the system, including specific pollinators and natural enemies of pests. They began to view their agro-ecosystem as an interconnected whole—one that can be actively nurtured to enhance ecological balance.	
Output indicator 1.3 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, 32 in 23/24, 64 in 24/25].	Total of 850 (217F) farmers received training on agro-ecology and pollinator conservation, and on the detrimental effects of pesticides. As a result of the trainings, farmers in both woredas demonstrated a significantly improved understanding of their local agro-ecosystem. They were able to identify key components of the system, including specific pollinators and natural enemies of pests. This understanding underpinned IPM adoption rates.	
Output indicator 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, 44 in 23/24 and 88 in 24/25]	172 farmers (64 females) and 15 development agents (4 females) participated in agro- ecosystem walks to practically observe and understand their local agro-ecosystem and the role of ecosystem services. The agro-ecosystem walk exercise helped them to identify both pollinators and natural enemies of crop insect pests and the type of agro-ecosystem services available in their village.	
Output indicator 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.	Training has been given for 39 selected pollinators observer farmers (6 females) in year 1. Farmers were able to observe, recognize and describe a range of pollinators.	
Output indicator 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.	Achieved in Year 1, however, we updated and expanded the guide as a poster and distributed to stakeholders and farmers in year 2.	

Output indicator 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	Good achievement. 692 FFS farmers conducted NE, and pest counts in 22 IPM trail plots (from year 1 to year 3). Landscape level pollinator monitoring was conducted for one year – but was interrupted due to insecurity – no substantive results.	
Output 2. Integrated pest management approaches adopted by smallholders in Fogera and Mecha.		
Output indicator 2.1. 36 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 in 22/23 [25 in 22/23 and 10 in 23/24 and 10 in 24/25	26 in Year 1 and 10 in Year 2 and 10 in year 3= 46. Good achievement and good evidence of learning achieved. See Section 3.1. summarized in Table 1.	
Output indicator 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, 32 in 23/24 and 64 in 24/25]	172 farmers in Year 1 and 236 in Year 2. Exceeded target because we abandoned the learner/follower model and trained all. Good achievement and good evidence of learning achieved. See Section 3.1	
Output indicator 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, 8 in 23/24 and 16 in 24/25]	22 FFS and IPM –FFS trials set-up and achieved in the Project period. 6 in year 1, 8 in year 2 and 8 in year 3. These were achieved – 10 on onion, 6 on grass pea, and 6 on pepper. Analysis of all trials showed IPM to be cost-effective, and acceptable to farmers.	
Output indicator 2.4. 660 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, 240 in 23/24 and 240 in 24/45.	692 farmers (193 women) were engaged in FFS in Project period – and FGDs indicated that those who participated in FFS were adopting some IPM measure (reaching between Level 2 and 3 on IPM Ladder) . Our IPM ladder FGDs indicated that skill and knowledge is being passed to the community (non-IPM farmers), however the level the community is low (at Level 1).	
Output indicator 2.5	Two field visit programmes were conducted on IPM plots in year 1 and 2 on onion, pepper and grass pea IPM plots and a total 265 (13F) experts, DAS and farmers participated. Not done in Year 3.	

240 farmers learn results of IPM trials through field visits, together with 34 govt. staff each year. [80 different farmers each year]		
Output indicator 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]	Two IPM result sharing workshops have been conducted, one in 2024 and one in 2025. A total of 97 (15F) participants learned the results of the IPM trails on grass pea, onion and pepper in the workshops.	
Output indicator 2.7 Ten Development Agents include actions and targets within their normal annual workplans towards delivering training and support towards the adoption of IPM by farmers in their jurisdictions.	12 DAs working in 6 kebeles included IPM in their annual work plans and guided participating farmers on IPM adoption. More than 239 farmers practiced IPM on their own farms, under guidance of DAs.	
Output 3. Beekeeping enterprises established and re-established by smallholder farmers.		
Output indicator 3.1 44 Government extension workers have skills and knowledge in advanced sustainable beekeeping by end 23/24.	41 experts (10F) participated in the training from both target woredas. Achieved in Year 1.	
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]	114 new beekeepers trained and achieved satisfactory skills – see Section 3.1	
3.3 80 former/declining beekeepers [almost all formers are men] gain skills and knowledge in bee colony multiplication and top-bar beekeeping by end of ~~23/24~~ [change this to 22/23]	78 existing beekeepers trained and achieved satisfactory skills Achieved in Year 1.	
3.4 200 *** beekeepers [total of those above] know how to boost forage availability for honeybees, enrich habitat and protect colonies from pesticides [60 in 22/23, 140 in 23/24].	Achieved for 78 existing and 114 new (192 former and new beekeepers) in Year 1.	
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	Input provision was given to 78 former/declining beekeepers and 114 new beekeepers [192 total] – according to their needs, as appropriate	

3.6 200 smallholder farmers [at least 60 F] know how to get the best price for their honey by end of 24/25	143 (29F) new and existing beekeeper trained on post- harvest honey management (how to get good honey price, which includes the way how to keep the quality at the time of harvesting and handling) in Nov 2024.	
Output 4 Farmers, government extension workers and other stakeholders have good understanding about instruments and guidelines to support biodiversity-friendly agriculture.		
4.1 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 agriculture by end 22/23.	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 explain 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.	
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 24/25	Desk work has been conducted in collaboration with EBI, focused on gaps and strengths of government policies proclamations and regulations in relation to pollinators and conservation of pollinators.	Based on the desk work document, Policy analysis workshop will be organized in collaboration with EBI, by inviting respective stakeholders
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].	A basic guide to identifying beneficial insects for stakeholders – poster printed and distributed. A poster on the Bees for Ethiopia – poster printed and distributed. Growing onion using IPM practice – a manual for Ethiopia smallholder farmers, printed and distributed.	

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]	Three issues (Issue Nos I, II and III) of newsletters (more than 3000 copies) made available for partners and stakeholders.	

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

Project title: More bees: Supporting agro-biodiversity and Livelihoods in Amhara, Ethiopia

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 *Smallholder farmers adopt IPM practices, and reduce frequency of application of pesticides on irrigated vegetables and pulses grown with residual moisture, by end of project. Target 1.1 is to cut frequency by at least half, against baseline, by end of project [250 farmers[1], 40%F]. Target 1.2 is that Smallholder farmers are assessed to have progressed to at least Level 1 on the IPM ladder [380[2] farmers, 40%F].* 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.	0.1a Farmer interviews about IPM, farm visits, reports on crop protection practices, gender disaggregated, use of IPM ladder questions 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	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

	0.4 Density[3] 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).	0.5b End of project in-field evaluation with farmers, and other stakeholders.	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 36 Govt. extension workers[4] 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, with 10 Govt. extension workers from North Mecha moved to 24/25 1.3 30 lead, 90 follower farmers[5] [40% F] understand local agro-ecosystem, pollination, beneficial insects and harm caused by pesticides, by attending 4 ½ day sessions [24 in 22/23, 32 in 23/24, 64 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, 44 in 23/24 and 88 in 24/25] 1.5 Pollinator observers (extension workers, staff and farmers) [15M,15F] know how to recognise and describe groups of bees /	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.	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.

	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	1.5 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.	
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 in 22/23 [25 in 22/23 and 10 in 23/24 and 10 in 24/25 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, 32 in 23/24 and 64 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, 8 in 23/24 and and 8 in 24/25 2.4 660 FFS farmers [264 F, 396 M] gain skills and knowledge in IPM so they can apply proven measures in their farms and	2.1 Evidence of knowledge of IPM by 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	We assume that the 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

	teach others. 180 in 22/23, 240 in 23/24 and And 240 in 24/25 2.5 240 farmers learn results of IPM trials through field visits, together with 34 govt. staff [6] 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] 2.7 *Ten Development Agents include actions and targets within their normal annual workplans towards delivering training and support towards the adoption of IPM by farmers in their jurisdictions.*	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. 2.7 Interviews with Development Agents and seeing their workplans	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.
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, 3.3 80 former/declining beekeepers [almost all former are men] gain skills and knowledge in bee colony	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.	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.

	multiplication and top-bar beekeeping by end of 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 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	3.3a 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.	
4. Farmers, government extension workers and other stakeholders have good understanding about instruments and guidelines to support 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	4.1 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 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 24/25	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. 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 24/25	We assume that government remains committed to co-hosting policy familiarization and analysis workshops and advocate and enforce government policies, proclamations and regulations.

results	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 [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]	4.3a 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 24/25 4.3b Copy of booklets and dissemination records in 24/25 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.	

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

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

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

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

4.6 Conduct Integrated Pest Management trials in FFS, field workers and farmers to make weekly assessments, collect, record and analyse data

5.6	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).
6.6	Officials, Experts and Development Agents in livestock and crop production and smallholders attend workshops to learn of IPM field results.
1.6	Experts and Development Agents in livestock and crop production attend training in advanced sustainable beekeeping.
2.6	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
3.6	Former/declining beekeepers attend training in bee colony multiplication and top-bar beekeeping
4.6	All beekeepers given training in how to boost forage availability for bees, how to enrich habitat and how to protect colonies from pesticides
5.6	Small input provision procured and donated to beekeepers, based on needs assessment
6.6	All beekeepers given training in how to get the best price for their honey (in marketing, quality assurance, understanding the market)
1.4	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.
2.4	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.
3.4	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.

[1] This is 60% of year 1 and year 2 cohort

[2] This is 90% of year 1 and year 2 cohort

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

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

[5] 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.

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

Annex 3 Standard Indicators

Table 1 Project Standard Indicators

Please see the Standard Indicator Guidance for more information on how to report in this section, including appropriate disaggregation. N.B. The annual total is not cumulative. For each year, only include the results achieved in that year. The total achieved should be the sum of the annual totals.

DI Indicator number	Name of indicator	If this links directly to a project indicator(s), please note the indicator number here	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total achieved	Total planned
DI-A01	Number of govt. extension workers trained about harmful impact of pesticides and role of beneficial insects	Output In:1.1 &1.2	Number	Men-91 Women-33	72	15	37	124	100
DI-A01	Number of farmers trained about harmful impact of pesticides and role of beneficial insects	Output ind:1.3	Number	Men-633 Women-217	211	305	327	850	120
DI-A01	Number of government extension workers, and smallholder farmers gain knowledge and understanding about their agro-ecosystem through 1-day ecosystem walks	Output ind:1.4	Number	Men-119 Women-68	187			187	164
DI-A01	Number of pollinator observers (extension workers, staff and farmers) gained knowledge, how to recognise and describe groups of bees / other pollinators	Output ind:1.5	Number	Men-33 Women-6	39			39	40
DI-A04	Number of people who have adopted IPM	Outcome indic. 1.0	Number	Men-499 Women-193	240	240	212	692	660
DI-C01	Number of contributions to national policies, proclamations, and action plans	Output ind: 4.2	Number	Deskwork-1			1	1	1
DI-C01	Number of guides and knowledge products published and endorsed	Output ind: 4.3	Number	Beneficial insect poster-1 Bees of Ethiopia poster -1	1		2	3	2

DI Indicator number	Name of indicator	If this links directly to a project indicator(s), please note the indicator number here	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total achieved	Total planned
				Onion IPM Manual - 1					
DI-D03b	Number of people with improved income by to the contribution of the more bee's project	Outcome indicator 2	Number	Men-146 Women-46				192	200

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)
Integrated Pest Management for Onion Cultivation	Manual	Bees for Development and Pesticide Action Network, 2025	Male	Ethiopian	BfD, UK	Resources - Pesticide Action Network UK

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, scheme, 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 consider the best way to submit. One zipped file, or a download option, is recommended. We can work with most online options and will be in touch if we have a problem accessing material. If unsure, please discuss with BCF-Reports@niras.com about the best way to deliver the report, putting the project number in the Subject line.	
If you are submitting photos for publicity purposes, **do these meet the outlined requirements** (see section 14)?	
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.	Yes
Have you provided an updated risk register? If you have an existing risk register you should provide an updated version alongside your report. If your project was funded prior to this being a requirement, you are encouraged to develop a risk register.	No
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.	