

## Darwin Initiative Main: Annual 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: 30<sup>th</sup> April 2024**

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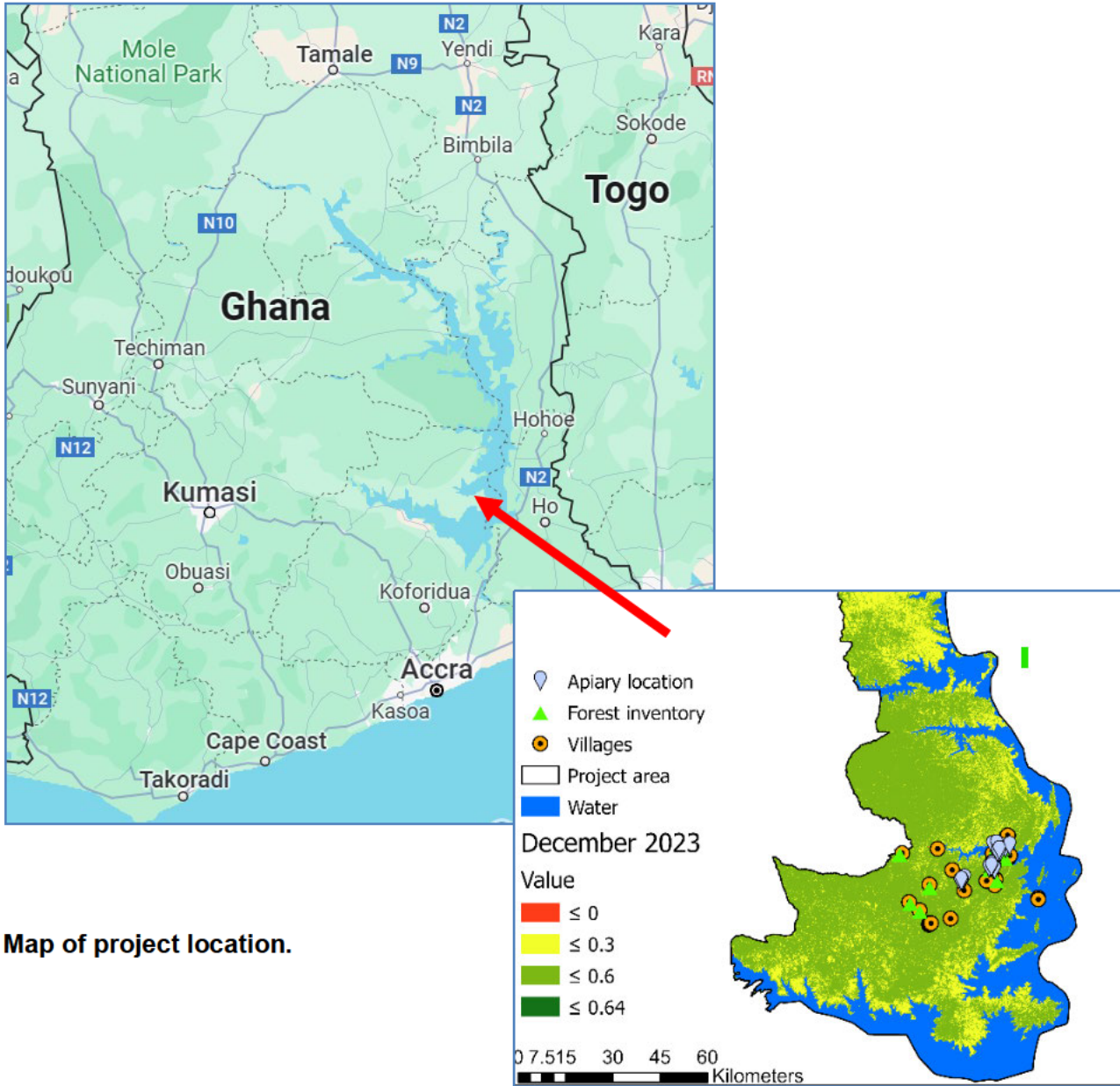
### Darwin Initiative Project Information

Project reference	30-001
Project title	Beekeepers Restore the Forests of Afram Plains
Country	Ghana
Lead Partner	Bees for Development UK
Project partner(s)	Bees for Development Ghana
Darwin Initiative grant value	£394,738
Start/end dates of project	April 2023 – March 2026
Reporting period (e.g. Apr 2023 – Mar 2024) and number (e.g. Annual Report 1, 2, 3)	April 2023 – March 2024 Annual Report 1
Project Leader name	Dr Janet [REDACTED]
Project website/blog/social media	<a href="https://beesfordevelopmentghana.org/blog/">https://beesfordevelopmentghana.org/blog/</a> <a href="https://web.facebook.com/BfDGhana">https://web.facebook.com/BfDGhana</a> <a href="https://www.instagram.com/officialbfdghana/">https://www.instagram.com/officialbfdghana/</a> <a href="https://twitter.com/BfDGhana">https://twitter.com/BfDGhana</a> <a href="https://www.instagram.com/beesfordevelopment/">https://www.instagram.com/beesfordevelopment/</a> <a href="https://twitter.com/BeesForDev">https://twitter.com/BeesForDev</a> <a href="https://www.beesfordevelopment.org/blog/">https://www.beesfordevelopment.org/blog/</a> <a href="https://www.facebook.com/beesfordevelopment">https://www.facebook.com/beesfordevelopment</a>
Report authors and date	Janet [REDACTED] & Isaac [REDACTED] April 2024

### 1. Project summary

The forests of Afram Plains, and the biodiversity within, are suffering from unsustainable exploitation, lack of management and destructive dry season fires. People in this area suffer from deep poverty and deprivation – having access to few employment and livelihood opportunities. Despite the degradation the forests support a healthy honey bee population and good floral resources from trees, shrubs and herbs. The landscape has the potential to support vibrant beekeeping activity. As bees and beehives are economic assets, beekeepers are determined to maintain the forests where their hives are located and they are fighting to protect forests from wildfires and charcoal production. This project is providing skills training, support and allies to support them in this endeavour. We are also providing a reliable and rewarding route to market for their honey and beeswax. In this project we are enrolling a further 1,000 beekeepers on our

training programme, expanding it to include wildfire management and forest restoration. Working with Ghana's Forestry Commission, we are mobilising communities to curb illegal logging and plant trees to improve the vegetation in the area. Led by Ghana National Fire service, beekeepers have been trained in bush fire prevention and mitigation. We are assessing the impact on forest recovery through forest inventory, the use of satellite imagery, monitoring burned area and vegetation trends and correlating changes with beekeeping activity.



**Map of project location.**

**2. Project stakeholders/ partners**

- We are delivering this project in collaboration with:
- Bees for Development Ghana (BfDG) - main implementing partner in Ghana
  - Afram Plains Development Organisation [APDO] – implementing partner
  - Ghana National Fire Service – implementing partner
  - Forestry Commission - implementing partner
  - CSIR College of Science and Technology [CCST]) – technical support
  - Kwahu Afram Plains North and South District Assemblies – local collaboration
  - Local communities and their traditional leaders - participants

This project originated due to demand from the host district and the local community. We have drawn together a collaboration of partners and stakeholders to ensure that the project is tailored to meet the specific needs and priorities of the local people, considering context and environment. All partners were engaged in project planning, to varying degrees, and our relationships have matured over the course of Year 1. Decision-making and planning are shared. We have built a collaborative and inclusive partnership to ensure project effectiveness and sustainability.

Some achievements of BfD's partnerships in Ghana include:

(a) stakeholder ownership – building strong partnerships with local organisations and stakeholders has empowered them to take ownership of the project. Stakeholders are actively involved in advocacy and sensitisation of local communities against bush fires and charcoal production.

(b) targeted impact – by responding to the specific needs and demands of host communities, the project has been able to achieve tangible results that directly meet the needs of local people.

(c) capacity building – collaborating with the local partners has facilitated knowledge exchange and capacity building, enabling partners to develop skills and resources for long-term development of the area.

Lessons learned and strengths of these partnerships include:

(a) cultural sensitivity – BfDG team's understanding of local customs, traditions, and values has been critical for successful collaboration and effective project implementation.

(b) adaptability – flexibility in project design and implementation has allowed partners to respond to changing circumstances and unforeseen challenges, ensuring continued progress towards project objectives.

(c) mutual benefit – partnerships are based on mutual respect, trust, and shared goals and this has fostered a sense of ownership and commitment, and BfDG has shared beekeeping skills with other stakeholders, enhancing the project's sustainability.

Challenges faced include:

(a) power dynamics – unequal power dynamics between local partners impacted decision-making processes and resource allocation, requiring a concerted effort to ensure equitable participation and representation.

(b) unavailability of community leaders – engaging some community leaders was very challenging as they had equally important duties to perform so project team had to reschedule some meetings several times. The implementing team exhibited commendable patience and perseverance – and this paid off. Securing good initial engagement with community leaders and local institutions secured buy-in and positive engagement.

These challenges have been addressed through:

(a) capacity building – we invested in training and skill development for local partners to build their capacity to effectively engage in project planning, monitoring, and evaluation.

(b) regular communication – establishment of open and transparent communication channels fostered trust and collaboration between partners, enabling us to address challenges and find solutions together. Continuous engagement with partners also helped further understanding of the project objectives and the long-term impact of the project.

(c) adaptive management – adopting a flexible and adaptive approach to project management allowed partners to adjust strategies and activities in response to changing circumstances, minimising the impact of challenges on project outcomes. Relationships remain healthy and collaborative as the project team continues to have regular discussions with partners to ensure that they are well-informed of the project progress and all parties are working together to help keep the project on track.

The project received good support from relevant stakeholders including local communities, public institutions as well as individuals and this contributed to the overall success of Year 1 and sets the basis for future collaborative work. We learned that local communities respect institutions in

their localities and they always pay attention to information coming from them. As a result, we indirectly involved the Police, Chiefs, and other opinion leaders by inviting them for project workshops and project review meetings. Their views were respected, and where applicable, incorporated in our activities.

Evidence 16

### **3. Project progress**

#### **3.1 Progress in carrying out project Activities**

A project inception workshop was held in Donkorkrom, the centre of the project area, 24-29 April 2023. This provided an opportunity to review project plans and objectives with the participating organisations, and also brief local officials and elders about the project. There was overwhelming support, which has been evidenced by the high level of participation in activities across the project area. The project is on track with targets for the first 12 months with 95% of planned activities being actioned. Frequent communication with project partners and regular project management meetings have been useful tools for keeping us on track, for being able to identify issues early on and for identifying mitigating action. It is important to state that an adjustment to the training approach was adopted. It was decided that it would be beneficial to condense the delivery of the start-up beekeeping training workshops to the second and third quarter of the year, rather than spread evenly throughout. The reason for this came from the training team who felt it would be positive for trainees if the training followed quickly after the project start, to develop momentum. Participation of women has been very encouraging with 425 of the 919 people trained to date being women.

Evidence 1 – inception report

Under Output 1: Beekeeper training workshops (Act 1.1) were delivered across 21 communities to build project beneficiaries' skills and knowledge in hive making, apiary setup and management. Nine hundred and nineteen (425 w, 494 m) people were trained over the period. Expressions of interest from un-anticipated groups such as persons with disabilities were received and this is highly encouraging, but will require adaptation on the part of the training team in Ghana. BfD will link team with BfD partnership projects in Uganda to learn from their disability inclusive approach. We have adapted training to be more convenient for women to attend, after learning through feedback that women often leave before the end of the day, to perform their domestic duties such as cooking for their families. Training delivery periods has been adjusted to be more sympathetic to this group – we did this by keeping to time and closing sessions early enough. Post-training mentoring and support is now ongoing for all who have been trained (Act 1.5). Early evidence of hive making, and apiary establishment is encouraging, notwithstanding the unusually high rainfall experienced in the area which severely affected access to villages in 2023. Training on harvesting will be done in May 2023 to coincide with the major harvesting season in the area (Act 1.2). Harvesting tools and equipment have been procured and will be distributed to beekeepers as soon as harvesting training is done (Act.1.3). Together with APDO and Radio Afram Plains FM we have instituted a weekly radio show to promote beekeeping and offer expert advice, discuss bush fires, and general forest and biodiversity conversation in Afram Plains (Act 1.4). 24 radio broadcasts done since October 2023. A total of 42 people from 21 communities were trained in December 2013 to record floral data essential to beekeeping in the area (Act 1.6). Data collection and collating are ongoing, and this will continue until January 2025.

Evidence 2 – image of beekeeping training taking place in Bebuso.

Evidence 15 – honey buckets being distributed.

Under Output 2: A new Mobile Honey System has been built (Act 2.1) to include paper forms to make it more accessible to coordinators who are not familiar with using smart phones. We have continually improved and updated the Mobile Honey System (Act 2.2) while working on completing all infrastructure work on the processing facility. Construction work on the processing facility has progressed at a steady pace and the premises are now 99% complete (Act 2.3). It is expected that fencing and borehole installation will be complete before June 2024. New honey draining tables and a new honey press have been manufactured and are in use, and additional

honey packaging materials have been procured (Act 2.4). Processes and acquisition of certification from Ghana National Fire Service (fire safety) and Food and Drugs Authority (food safety) are progressing well (Act 2.5). The training of honey collection coordinators will be done in Year 2 because given that new communities received training in July-Sept 2023, it was overly confident to expect that people would learn, start beekeeping, get bees and harvest honey in less than 6 months. As a result, the training had to be pushed to the second year of the project (Act 2.6). The centre received first batch of bucket of honeycombs from beekeepers in December 2023 (Act 2.8). Honey selling is on-going but slow – not due to lack of demand – but due to the time taken to do market research, analysis of different market channels and negotiations with potential business clients (Act 2.7 and Act 2.9).

Evidence 3 – image of honey processing centre.

Under Output 3: Fire management training started in October 2023 and Ghana National Fire Service has been delivering the training together with BfD Ghana. Community awareness meetings were held with 21 communities prior to receiving training. There was a real enthusiasm at community level for this training indicating that the threat of fire is very real. Out of the 919 people trained to become beekeepers, a total of 752 (334w, 418m) of them have undergone fire prevention, control and management training (Act 3.1). Key learning points included creating fire belts around apiaries and crop farms, causes of bush fires which included hunting, as well as regulations against causing of bush fires. Trainees were taught how they can use locally available materials to fight bush fires e.g. palm fronds, green tree branches and green shrubs. Fire awareness campaign materials are being developed for dissemination (Act 3.6). These include poster development and recordings of expert interviews on forest fire management issues. Beekeepers across 20 communities have elected 5 members to serve on the Fire management volunteer Teams (Act 3.2). They have received general training on bushfire management but are yet to undergo additional training as prescribed by the Ghana National Fire Service to complete a comprehensive training (Act 3.3). Strong channels of communication have been established between FVMTs in 20 communities and Ghana National Fire Service and BfDG team (3.4). GPS waypoints have been collected from 83 apiary sites (Act 3.5) to support GIS analysis of burned area/ vegetation changes to be correlated (if possible) with beekeeping activity. The radio programme delivered by APDO/Radio Afram Plains FM have delivered information about need to prevent and how to mitigate forest fires (Act 3.6).

Evidence 4 – image of fire control training.

Output 4: Survey of beekeepers' tree planting priorities was conducted in 21 communities (Act 4.1). Priority tree species have been selected (Act 4.3) and are being raised for distribution to the beekeepers once the rains start in May/June 2024 (Act 4.4 and 4.5). Phase 1 of the Plant Species Population and Diversity Baseline Study (forest inventory) took place within the second quarter of the first year to define the survey sites (10) and the method. Phase II (detailed survey) was conducted on these sites in November 2023 and the outcome documented (Act 4.2).

The silviculture training for BfD Ghana staff was not done in Year 1 (Act 4.6) and is planned for May 2024. Silviculture training for beekeepers (Act 4.7) and the first tree planting (Act 4.8) will be done in Year 2, followed by tree care and survival monitoring (Act 4.9). End of project forest inventory and tree survival will be done in Year 3 (Act 4.10). Negotiated agreements between beekeeping groups and the Forestry Commission to establish apiaries in forest reserves (Act 4.11) has been done – but this is on-going. We will invest more in this activity in Year 2.

Evidence 5 – Forest inventory report.

Output 5: We identified and constructively engaged charcoal producers to participate in the project with 200 being invited to join the beekeeping training (Act 5.1). The traditional authorities and other opinion leaders have been engaged and are playing an active role in raising awareness of the benefits of honey production over charcoal production (Act 5.2). Interviews with beekeepers who were former charcoal producers were done and have been aired during the

weekly radio programme (Act 5.3) with some of them featuring live to share their experiences on charcoal making and beekeeping.

Evidence 6 – photo of beekeepers on radio show.

Output 6: Documentation of our Mobile Honey System is an on-going task and we have prepared a preliminary walk-through video. The manual (Act 6.1), the animated explainer (Act 6.2) and publication and sharing (6.3) will be done in Year 2. Project showcase at Apimondia (Act 6.4) will be done at next Congress in 2025. Project news and progress has been published throughout Year 1 on BfD Ghana website, with three articles on the project published during the reporting period (Act 6.5). Several activities and progress posts – made up of photos, videos and texts – have been shared across BfD and BfDG social media handles. Activities 6.6 to 6.9 not done yet.

Evidence 7 – extract from mobile honey system.

## **3.2 Progress towards project Outputs**

### **Output 1. 1000 men and women practising sustainable beekeeping and selling honeycomb for fair and rewarding returns**

After having delivered the beekeeping training our Year 1 target was that 400 people would be keeping bees, up from a baseline of 130. Our assessment (see section on M&E) indicated 516 (88w) people have made hives and are now keeping bees – an increase of 386. We also set a target that for someone to ‘count’ as a beekeeper they should manage at least 3 colonies. In fact most people have many more than 3, the estimated range is that beekeepers are keeping between 10-60 colonies. From a baseline of 118 people selling honey (pre-project) we set a target that 300 people would sell honey by end of Year 1. We did not meet this target, but we did achieve an increase from 118 to 154 (23% increase). Given that new beekeepers received training in July-Sept 2023, it was overly hopeful to expect that they would learn, start beekeeping, get bees and harvest honey in less than 6 months. We remain optimistic that we are on track to achieve project target of 1000 by end of Year 3. Our third indicator concerned income. The indicator (in the logical framework) mentions income earned from each colony kept, on reflection this seems misplaced. It would be more logical and relevant to consider average income per person, as beekeepers are concerned primarily with their total take-home income, rather than earnings per unit (although this metric can be useful for other purposes). The average income earned by beekeepers who sold honey this season (in 2024) was £84. In the previous year the average income per beekeeper was £40. Going forward we will request to revise this indicator.

### **Output 2. Sustainable honey and beeswax trade established through BfDG Honey and Beeswax Trade social enterprise**

This output concerns the establishment, viability and financial success of the social enterprise, so that it will provide a sustainable market for beekeepers’ honey. The centre is well-established and functioning. Beekeepers have come to appreciate and learn they have access to a ready and accessible market, and this is proving to be very motivating for them. In terms of Year 1 targets we aimed to pay out £9,900 in honey purchases, earn revenue of £3,000 and buy 9 tons in volume. We achieved a pay out of £12,563 in honey purchases and purchased 8.5 tonnes. The discrepancy here i.e. higher payout compared to target volume was because BfDG changed the price offered and raised the price paid for honey – this in response to very high inflation in Ghana in 2023 (50% at one point). In terms of revenue, all income from selling honey has been invested back into buying more honey to maintain working capital and at present BfDG is holding 5.8 tonnes of honey in stock. Although we have yet to realise the profit we have calculated that we will earn a margin of about £4000 and have spent an estimated £1000 on transport and marketing – suggesting we are approaching this Output target. One interesting development which suggests that the social enterprise is moving towards financial viability is the willingness of beekeepers to bear the cost of bringing their honey to Donkorkrom to sell (rather than relying on collection). Collecting honey has high cost implications for the social enterprise, but in some cases will be justified – depending on volume. It is gratifying that beekeepers are willing to transport their own honey – as this cuts down on costs, especially whilst volumes are still relatively low.

Evidence 13 – honey in stock at centre, ready for sale.



### **Output 3. Integrated fire management practised by beekeepers**

This Output is built on the premise that beekeepers are strongly motivated to prevent or manage forest fire because they locate their hives in forests and fires are a threat to beekeeping. This premise appears to be holding true in that no beekeeper reported loss of hives to fire in 23/24 dry season – where hives are protected, so therefore the forest in these locations was not burned also. Our assessment indicated that 516 beekeepers are protecting an average of 4 apiary sites each i.e. about 800 apiary sites. With an estimated apiary site of 0.2ha of forest this equates to 400ha. This is much less than our *landscape* target of 20,000 ha. This landscape target will only be met if beekeepers extend their fire mitigation measures more broadly – to include the forest where bees forage, in addition to the plot where the hives are actually located. This, and the wider community's response to fire management training, will be measured in due course. Concerning the second target, 20 fire management volunteer teams have been formed (target = 20) with 80 members (target = 100). They have received general training but these teams are yet to receive their additional specialist training (as fire volunteers) as prescribed by the Ghana National Fire Service.

Evidence 4 – fire mitigation training.

### **Output 4. Beekeepers plant and protect trees by their apiaries, on their land, on land granted for this purpose by chiefs and on forest reserves**

Four apiaries have been established in forest reserves, with agreement by Forest Services Division (FSD), in Bubu forest reserve. The FSD is in favour of this arrangement because it gives local people a vested interest in maintaining forest and beekeepers can become extra 'eyes and ears' – checking on and reporting any illegal activity in the reserves. We will endeavour to invest more in these types of arrangements to reach the target of 20 by project end.

No trees have been planted in Year 1 – it was not possible to mobilise the tree seedling raising activity in time for the planting season which occurred within 3 months of project start. We can report that we have raised 3200 seedlings to date and will procure an additional 2000 seedlings through purchase in Year 2. The trees will be planted in June/July 2024. Once we have 'tested' our procurement, distribution and engagement on tree planting, we will scale up in Year 3 to meet our target of 20,000 trees planted. We will assess survival after trees have been planted, with guidance from FSD. Our fourth indicator concerns recovery of scarce and important indigenous tree species through natural regeneration, made possible through reduced incidence of severe dry season forest fires. The Plant Species Population and Diversity Baseline Survey has been completed by Professor Mark Appiah of CSIR College of Science and Technology [CCST]). The report showed that species richness of the project sites is low, when compared to comparable sites within the transition zone. This is believed to be due to repeat burning.

See the comments under Outcome Indicator 0.6 for more details about forest species diversity survey and predicted changes.

Evidence 14 – forest patch protected by beekeeper.

### **Output 5. People understand the negative impact of charcoal burning on honey production and advantages of beekeeping as a sustainable livelihood**

Output indicator 5.1 is proving impossible to assess (as written) because no local chiefs admit to permitting charcoal burning in their area – yet it is happening. It is not therefore possible to record a fall in permissions granted. We will request a change to this indicator in our logical framework. We will find another way of measuring the level of charcoal burning – and any changes – in the project area.

Extrapolating from our baseline survey (which included a question about involvement in charcoal making) we estimate that about 333 charcoal makers have been trained in beekeeping, near to our target of 350. We will assess and record whether people who start beekeeping, reduce their involvement in charcoal making, later on in the project.

There is strong anecdotal evidence that beekeepers are shifting away from charcoal-making. Jamal Amadu and Ismaila Issaka, from Bondaso, have given testimonies of their disengagement from charcoal making and why they have shifted to producing honey (see Evidence 6 – photo of beekeepers on radio show). We acknowledge that charcoal making is largely driven by the

*demand* for charcoal, and we are mindful that if some people decide to opt out of the activity – this doesn't necessarily reduce the demand and perhaps creates a gap for others to enter the sector and meet any unmet demand. Table here below shows financial analysis of charcoal making – evidencing the low returns, relative to time spent.

<b>DATA ON CHARCOAL PRODUCTION</b>			
This data was taken from an interview with Mr. Kwame Abubakar at Atonsu (8/9/23)			
<b>Details</b>	<b>Qty</b>	<b>Cost per unit/head</b>	<b>Amount</b>
Cost of felling one big tree and cutting it into pieces	1	300.00	300.00
Cost of packing and arranging of the logs into a heap	5	50.00	250.00
Covering of log heap with grass and soil	5	50.00	250.00
Cost of supervising a heap of charcoal over two weeks until it is fully done	1	200.00	200.00
Cost of removing the burnt charcoal and packing them into sacks	3	50.00	150.00
Cost of sack	50	3.00	150.00
Cost of clearing path to the charcoal production site	50	3.00	150.00
<b>Total</b>			<b>1,450.00</b>
Note: One big tree can be used to produce approximately 50 bags of charcoal			
Income	50 bags	35 cedis per bag (bush price)	1750.00
Profit			300.00 (£21)

Many charcoal makers report borrowing money from charcoal traders to burn the charcoal – they end up taking more money than they can earn and end up in a downward debt spiral.

**Output 6 Stakeholders interested in reversing forest degradation through honey trade have access to information, project results and a blueprint for a low-cost, digital traceability system based on the Mobile Honey System**

We have published and shared information and project results on our websites and via social media. See Table 2 below.

Over the reporting period Bees for Development Ethiopia consulted us to assist in the development of similar traceability system in connection with a forest conservation project in SW Ethiopia. We held discussions and shared learning, and we continue to work together towards its development, and we expect its first implementation trial in the second and third quarter of 2024. In Ethiopia, we adjusted the KoboCollect forms to their needs. In Ethiopia four honey cooperatives in Anderacha as well as 2 wild coffee cooperatives in Sheko, are using the system. The traceability and quality reports are shared with exporters and buyers of these products.

**3.3 Progress towards the project Outcome**

Our Project Outcome is:

Beekeeping, fire management and forest restoration by communities in Afram Plains, leads to sustainable livelihoods, less reliance on charcoal trade, reversal of forest degradation, and regrowth of scarce tree species.

We have made significant strides towards this outcome in Year 1. Communities in Afram Plains are actively engaging in beekeeping training and hive building, fire management training, and are gearing up for forest restoration efforts. They acknowledge that these efforts will eventually lead to sustainable livelihoods. They also acknowledge that reduced reliance on charcoal burning,



and trade will contribute to the reversal of forest degradation. Community members understand that scarce tree species will regrow when they protect the forests, especially apiary sites, indicating positive steps toward restoring the forest ecosystem.

Outcome indicator 0.1: *Number of people engaged in profitable beekeeping. Target by end of project = at least 1000 beekeepers, of whom 350 women (from baseline of 118 beekeepers of whom 28 women<sup>1</sup>).*

A total of 919 (494 m, 425 w) were trained in Year 1. Monitoring data collected so far suggests that about 362 have made hives and are now keeping bees.

Outcome indicator 0.2: *Number of people who disengage from commercial charcoal production by end of project, as a result of keeping bees. Target = 100 beekeepers*

Outcome indicator 0.3 *25% reduction of charcoal trade in the project area.*

These two indicators refer to charcoal making activity. Our baseline survey reports that 36% of the people we trained are involved in charcoal production and trade so if we extrapolate based on the 919 people trained within Year 1, we have reached about 333 people who are involved in charcoal production and trade. According to the testimony of a beekeeper who once made charcoal as their main source of livelihood (he could produce 400-500 bags of charcoal at a go) beekeeping is a preferable activity. When comparing, he explained that charcoal production is highly labour intensive (or expensive if you pay a labourer) and has serious health implications. In his opinion he believes that charcoal trade in the area will reduce as more people recognise the opportunity of beekeeping.

Outcome indicator 0.4: *20% increase in density and extent of vegetation through natural regeneration and tree planting, across 20 apiary cluster sites averaging 1000 hectares each, by end of project.*

Over the reporting period, beekeepers trained by BfDG, protected their apiaries against bushfire and this action is contributing to the density and extent of vegetation through natural regeneration.

Evidence 14 – apiaries in forest areas, protected from fire.

Outcome indicator 0.5: *50% reduction in burned area between December and March, across 20 apiary cluster sites averaging 1000 hectares each, by end of project.*

About 516<sup>1</sup> beekeepers with an average number of 4 apiaries have protected a cumulative area of over 400 hectares (with each apiary comprising at least 0.20 ha of land) through the adoption of fire prevention and mitigation practices. We have formed 20 fire management volunteer teams with 80 members across 20 communities to lead in raising awareness, monitoring risks, and coordinating community fire management and wildfire response. They have received general training on bushfire management but are yet to undergo additional training as prescribed by the Ghana National Fire Service to complete a comprehensive training.

Outcome indicator 0.6: *10% increase in tree species richness across 20 apiary cluster sites averaging 1000 hectares, by end of project.*

Our Plant Species Population and Diversity Baseline Study (forest inventory) revealed that the mean forest condition score was 4 (1=good, 6=poor) and vegetation cover type was largely fallow and open forests. The species richness within the project sites ranged between 35 and 93. This is lower when compared to other forest locations within the transition zone where 307 tree per hectare for stems greater than 10 cm dbh have been recorded. Most of the sites are dominated by a few species. This is an indication of a less diverse forest site in terms of tree species. The mean value of the Simpson index for the combined sites is 0.121 and reflects a less diverse forest site, with Bebuso and Avatime being the least diverse. Generally, *Fabaceae*, *Poaceae*, *Setariidae* and *Combretaceae* are the most species-rich group, recording 20.5%,

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<sup>1</sup> In this report different numbers of beekeepers are mentioned – we are trying to distinguish between those who were already beekeepers before the project started and those who have started in 2023. 516 includes some who started before 2023.

18.4%, 10.9% and 9.7% respectively of all plant species recorded within the 10 inventory plots. The plant forms in the studied sites are mostly trees (35.5) grasses (29.5) and shrubs (24.5). Herbs, vines, climbers, liana make up the remainder. There has been a notable decline in the presence of economic timber species over the years. Scarlet star species<sup>2</sup> such as *Khaya anthotica*, *M. excelsa*, *Aningeria sp.*, *Albizia ferruginea*, *Triplochiton scleroxylon*, *Entandrophragma angolense*, *Entandrophragma cylindricum*, *Entandrophragma utile*, *Guibourtia ehie*, *Pterygota macrocarpa*, and various red star<sup>3</sup> species typical of the dry semi-deciduous forest zone, are now scarce. Economically important tree species are found in low densities, often occurring in isolation, with both large trees and saplings being sparse. We expect that over the next five years, species richness will increase by approximately 6% per hectare. This increase will primarily consist of indigenous trees such as *Antiaris africana*, *Azelia africana*, *Celtis zenkeri*, *Milicia excelsa*, and various mahogany species (e.g., *Khaya senegalensis*), among others, which are expected to see a rise of 6-8% in the project area. Additionally, there is an expected increase in the density of useful shrubs and herbs by a similar percentage. These predictions are based on the outcomes of forest restoration efforts within the same ecological zone and this project intervention.

Given the work done so far, we are confident that the project will achieve the outcome by project end.

### 3.4 Monitoring of assumptions

Assumption 0.1 Demand for honey remains reliable and strong, as does demand for residue-free beeswax internationally.

Comment: This assumption still holds as honey demand remains strong and international beeswax buyers continue to demand residue-free beeswax. This is evidenced in the number of calls received from potential buyers in Ghana and abroad. Others in the business, for example Saltpond Honey Centre, indicate that they are never short of customers, but they sometimes experience a shortage of honey.

Assumption 0.2 Income from beekeeping more than compensates income from charcoal burning. Preliminary evidence of this from Bondaso community supports this assumption.

Comment: This also still holds and beekeepers who featured on our weekly radio show gave testimonies stating that honey production is more rewarding and less difficult to engage in compared to charcoal production [also see data on page 8 above].

Assumption 0.3 Charcoal production is not displaced to non-beekeepers, because beekeepers influence the traditional authorities which regulate tree felling.

Comment: We believe this assumption is still relevant up to a point, but we are mindful that the demand for charcoal (from urban consumers) will not be impacted by this project – and so displacement may occur.

Assumption 0.4 Forestry Commission continues to set tree planting targets and provide seedlings to volunteers.

Comment: Forestry Commission is the leading institution in Ghana promoting tree planting and provides seedlings to people who are interested to plant trees every year and so we are confident that we can rely on them to supply seedlings to beekeepers. We have also linked up with the [Green Ghana Initiative](#).

Assumption 0.5 Dry season not extraordinarily severe or prolonged.

Comment: We remain mindful that beekeeping and honey production can be impacted by weather extremes.

Assumption 0.6 Forestry Commission successfully broadens range of species in seedling nursery. Sufficient genetic reservoir of fire-sensitive species to allow natural regeneration.

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<sup>2</sup> Colour coding is used to identify conservation status in Ghana after Hawthorne and Abu-Juam 1995. Scarlet is under pressure from heavy exploitation and red depicts a slight lower level of exploitation.

<sup>3</sup> As above

Comment: The Forestry Commission remain interested in raising any kind of species the project may require.

Output assumptions:

1.1 Interest in beekeeping remains high. Local honey bees continue to be very prolific and occupy hives readily.

Comment: Interest in beekeeping remains high in the area. We have witnessed a very strong and increasing interest for beekeeping, integrated with forest conservation, across the Afram Plains. This is evidenced in the number of people who come to the Honey and Beeswax Processing Centre asking to join the project and be trained in beekeeping. We are responding to this demand by organising additional training sessions at the Centre. The wild honey bee population is large.

1.2 The processing centre in Donkorkrom is completed and has capacity to process the growing supply of honey. National demand for quality Ghanaian honey remains strong. We continue receiving purchase requests for beeswax from export agents.

Comment: We receive many enquiries from people asking for honey.

2.1 Market for honey and beeswax is not hit too hard by cost-of-living crisis. Cost of fuel does not increase further.

Comment: We are still at this point selling in bulk at competitive wholesale prices and we have not fully 'tested' the buying power of the end consumer by marketing our honey at the premium end of the range – which is our intention. Most sales are in urban area where people still have some reasonable purchasing power.

2.2 Price of 20GHS per kg of honeycomb continues to remain attractive for beekeepers as their volumes grow (compensating for inflation).

Comment: The price per kg of honeycomb has been reviewed upwards to GHS25 per kg to compensate for effect of inflation in Ghana. The new price is very attractive for beekeepers in Kwahu Afram Plains and has triggered some positive effect in terms of volumes of honeycombs received at the Honey and Beeswax Trade Centre. In just over a month since the price increase, we bought almost as much honeycomb as we had cumulatively purchased over the previous two years.

2.3 Access to sufficient land for new apiary sites and sufficient floral resources to sustain production – otherwise we expand number of communities where we train and register beekeepers.

Comment: This assumption holds true. There is abundant space to locate apiaries and sufficient floral resources to support honey production.

3.1 The extent of land that beekeepers will be able to protect around their apiaries will also depend on their time availability.

Comment: Conversations which beekeepers suggest that beekeeping and apiary protection is 'worth it' – when considering labour versus income.

3.2 Beyond the economic incentive to protect hives and livelihoods, FMVTs will also find motivation in good team dynamics and sharing common purpose.

Comment: Yes, in addition to the economic incentive, FMVTs and beekeepers are becoming aware of the need to work for the public good, to raise awareness, and to coordinate community fire management and wildfire response.

4.1 Beekeepers continue to be interested in reforestation and respect terms of agreement with FC to access reserves (no hunting, farming, clearing).

Comment: This remains relevant because if beekeepers break the terms of agreement with FC they will be denied access to useful beekeeping sites.

4.2 FC continues to raise tree seedlings and broadens range of species successfully, including trees that provide abundant nectar and pollen for honey bees.

Comment: We are confident that we can rely on FC to supply seedlings to beekeepers every year and they are proving amenable to specific species requests.

4.3 FC and beekeepers ensure adequate measures are taken to protect seedlings planted and to protect natural regeneration.

Comment: We have yet to test this assumption.

4.4 Sufficient genetic reservoir for natural regeneration.

Comment: We have yet to test this assumption.

5.1 Beekeepers successfully influence traditional authorities to consider the costs of charcoal production in terms of foregone honey production.

Comment: We have yet to test this assumption.

5.2 We succeed in getting across a positive message of the opportunities offered by beekeeping (rather than criticising charcoal making) so as to not alienate charcoal makers.

Comment: This remains relevant.

6.1 That no other traceability and supply chain management systems with comparable specifications and use cases are developed concomitantly, which are superior in functionalities or ease of use, and are made freely and widely available - thus reducing need/demand for the method underlying our system.

Comment: This is still relevant.

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

Target impact in application form: Thriving rural communities across Afram Plains where women and men earn stable incomes by safeguarding and restoring biodiversity in forested landscapes and sustainably managing native honey bee populations.

Our project is making an impact on biodiversity conservation by changing people's perceptions about 'the bush'. Instead of seeing the woody resources as primary material for charcoal making, more and more people are seeing these resources as providing bee forage – and so need to be maintained and nurtured to provide this bee forage. Beekeeping is quite different from charcoal making because the one involves exploitation only, with no ownership involved. The other (beekeeping) involves investment i.e. making and siting hives and maintaining and caring for the place where the hives are located, and it involves ownership. The hives, the bees within and the honey within are owned by the person who made the hives. This creates – for the first time – a sense of custodianship about the forest areas where hives are located. The ownership relationship between the local people and the forest lands in Afram Plains is normally very weak – due to migration and displacement patterns (of people), and the fact that the Forestry Commission claims ownership of all commercial trees (undermining local rights and tenure). Beekeeping is beginning to change this. After one year of the project we have anecdotal evidence of this shift, not yet evidenced by a change in vegetation cover trends. One notable result is that no beekeeper lost hives due to fire in 2023/24 dry season.

Beekeepers' enthusiasm to protect their hives, bees and bee forage is driven by their ability to sell honey. They are trying to conserve biodiversity for the main reason that they are able to earn money. The project is making a tangible impact on poverty reduction by putting money into people's pockets. 154 people have earned £12,563.57 in the 2024 honey selling season. People are spending this money on improved homes, school fees, medical bills, food, tools and seeds. Some people have earned more money in this honey season than they have ever earned at one time before, and they even asked BfDG to 'keep the money' until they needed it. APDO have strongly raised the point that some members of the community need financial literacy training and access to savings and loans mechanisms. APDO have experience of supporting communities to establish Village Savings and Loans Groups and this is something that could be beneficial in the target communities. Towards the end of Year 2 we will assess the difference that honey income has made to people's lives by asking them about their well-being using questions

about changes in housing, changes in children's schooling, about how they feel about their level of well-being compared to before they were beekeeping.

Evidence 5 – image of improved housing built with honey income in Apesika by Aremeyaw Awudu.

Evidence 7 – screen capture from mobile honey records.

#### **4. Project support to the Conventions, Treaties or Agreements**

National Level (NBSAP):

1. Reducing the rate of loss of all natural habitats, including forests, to at least half and where feasible brought close to zero, and degradation and fragmentation significantly reduced. (Aichi Target 5)

We are empowering beekeepers to address drivers of deforestation through fire management and tree planting, while also advocating to reduce communities' reliance on charcoal production. More bees in the landscape can achieve increased pollination which accelerates recovery of vegetation.

2. Maintaining the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives (Aichi Target 13)

We are promoting sustainable health and genetic integrity of native honey bee populations, through promoting sustainable beekeeping and habitat creation.

3. Restoring and safeguarding ecosystems that provide essential services, including ecosystem services (Aichi Target 14)

We are supporting beekeepers' forest restoration activities. This is because if trees, vines, shrubs and grasses are protected from fire, and not destroyed, they can provide essential habitat for wildlife, as well as food, medicine and building/crafting materials that are vital for local people. We are doing this through the delivery of fire management training in collaboration with Ghana National Fire Service.

4. Enhancing ecosystem resilience and restoration to promote the contribution of biodiversity conservation to carbon stocks and ensure restoration of at least 15 per cent of degraded ecosystems. (Aichi Target 15)

We have collaborated with Ghana National Fire Service to deliver 20 fire management training across project communities to reduce extent of vegetation lost to fire during dry season and also empowering beekeepers to plant and nurture variety of indigenous trees – beekeepers to plant about 5000 trees in May/June 2024. From literature we know African fires are responsible for 14% of global CO<sub>2</sub> emissions from fossil fuel burning. Beekeeper-led indigenous fire management is scalable, provided there is market for their products. Mobile Honey System is replicable and scalable, expanding market opportunities for African honey and beeswax.

5. Knowledge, on the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared, and transferred, and applied (Aichi Target 19).

Since December 2024 we are collaborating with beekeepers to develop floral calendars for: (1) correct timing of beekeeping activities (2) targeted planting to increase diversity of forage for bees throughout the seasons and (3) tracking of changes in seasonal patterns. With help of CSIR College of Science and Technology (CCST) research team led by Prof Mark Appiah the Project is undertaking tree population inventories. To date the baseline survey has been done. We also undertook a survey of beekeepers' tree planting priorities.

International level:

1. CBD - Addressing COP 9 Decision IX/5, (b) major human-induced threats to forest biodiversity, (f) lack of market access for value-added forest products, (g) forest-biodiversity monitoring, (k) forest restoration, and (m) involving local and indigenous communities.

Through community sensitisation and radio broadcast/campaigns the project is contributing to human-induced threats (such as bush fire and charcoal production) to forest biodiversity. Tree planting, scheduled for May/June 2024, will contribute to forest restoration. The completion of the Honey and Beeswax Trade Centre in Donkorkrom is providing market access for valuable forest products like honey – beekeepers have sold at least 10 tons of honeycombs through the centre. The project has reached over 1000 local people and about 20 indigenous communities.

2. UNFCCC – Contributing to commitment to halt and reverse forest loss by 2030 in Glasgow Declaration on Forest and Land Use (COP26). The project has raised over 3000 seedlings of different tree species to be planted in May/June 2024 by beekeepers to help reverse forest loss in Kwahu Afram Plains.

3. SDGs – We are creating income opportunities for rural poor in districts with poverty incidence between 43.6% and 59.7% (SDGs 1,2,8,9). Through the project, beekeepers have earned GHS213085.00 (£12,773.05) within the reporting period. The project is also promoting sustainable production and consumption of bee products (SDG12). Through delivery of fire management training to beekeepers we are contributing to reducing forest fires (SDGs 13,15). Again, we are working on removing barriers excluding women and persons with disability from opportunities offered by beekeeping (SDG 5).

**5. Project support for multidimensional poverty reduction**

Project is being implemented in Ghana a lower middle income country which is experiencing a number of macroeconomic crises and debt distress. This is resulting in worsening poverty levels and falling living standards of the population. The “international poverty” rate is estimated at 31.4% in 2023, a worsening of 4 percentage points since 2022 [World Bank 2024]. The project site is located in Kwahu Afram Plains North. In Kwahu Afram Plains North, 48.5 per cent of the population live in multidimensional poverty and the average intensity of poverty is 41.9 per cent. Kwahu Afram Plains North is placed 235th out of the 261 districts in terms of the percentage of population living in multidimensional poor households. Within the Eastern Region it is placed 33rd out of 33 districts (i.e. the poorest). Kwahu Afram Plains North (KAPN) is most deprived in the areas of improved toilet facilities (92.2%), housing (78.8%), and drinking water (68.1%). For 12 out of 13 indicators, Kwahu Afram Plains North had a higher deprivation than the national averages.

The beneficiaries of this project are the rural poor in KAPN.

This project is expected to have an impact on poverty levels through raising cash incomes. This is already occurring as indicated above, 154 people earned £12,563.57.

Evidence 9 - images of beekeepers selling honey.

**6. Gender Equality and Social Inclusion (GESI)**

Please quantify the proportion of women on the Project Board <sup>4</sup> .	2
Please quantify the proportion of project partners that are led by women, or which have a senior leadership team consisting of at least 50% women <sup>5</sup> .	2

<sup>4</sup> A Project Board has overall authority for the project, is accountable for its success or failure, and supports the senior project manager to successfully deliver the project.

<sup>5</sup> Partners that have formal governance role in the project, and a formal relationship with the project that may involve staff costs and/or budget management responsibilities.

<b>GESI Scale</b>	<b>Description</b>	<b>Put X where you think your project is on the scale</b>
<b>Not yet sensitive</b>	The GESI context may have been considered but the project isn't quite meeting the requirements of a 'sensitive' approach	
<b>Sensitive</b>	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.	
<b>Empowering</b>	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	<b>X</b>
<b>Transformative</b>	The project has all the characteristics of an 'empowering' approach whilst also addressing unequal power relationships and seeking institutional and societal change	

At project design a needs assessment was done in the project communities to find out the needs of both males and females. This was a deliberate action to factor in GESI and led us to budget for specific needs of women. We included a budget line to procure beehives for women, as our needs assessment indicated that women had less time available to make their own hives and less freedom to travel into the forest to collect beehive making materials and less money to buy materials to make hives. As it turned out the rate of beekeeping adoption by women has been very high and we reflected that donating hives to a few in number would not be equitable and so we changed course.

49% of people who attended the beekeeping training days, which are open to all, were women. This good level of engagement was achieved through community mobilisation through chiefs, opinion leaders and via radio broadcast. Our project partners, especially APDO, played a pivotal role in this. APDO used their existing networks and reputation to convey to women what they stood to gain from the project, and as a consequence of being a trusted local service provider, people listened to them.

Before the formal training was delivered every community was visited for mobilisation and sensitisation. During sensitisation, community members, both men and women, were given the opportunity to ask questions for further clarification and explanation especially concerning the involvement of women in beekeeping. In communities where there were already some existing female beekeepers, they were given the chance to share their experiences and successes, and to serve as role models and influencers – encouraging others.

We made a deliberate effort to reach women leaders and get them on board, as they are able to mobilize more women to get involved. One notable example is in Bebuso community where the District Assembly leader is a woman. Now that she has started beekeeping as a result of this project, other women are joining. Her influence is evident and women's participation in Bebuso is greater than elsewhere.

Some of the women trained in this project have built more hives than some of the men. The enthusiasm of women has been very encouraging. The involvement of women has helped in the success of the first year of the project. They have become advocates, talking to people about the negative effects of bush fires and tree logging.

During our baseline survey we asked respondents about their abilities/disabilities. Our baseline survey suggests that about 10% of people who attended our training workshops have various degrees of disability. We have yet to assess whether the same percentage is reflected in the number of people who have started beekeeping (following the training).



Evidence 10 – disability breakdown from baseline survey.

We conducted a gendered value chain analysis in March 2024 with a GESI consultant in Ghana. This analysis (Evidence 12 – gendered value chain analysis) revealed that women’s participation in the value chain was high at production level, but they are constrained by lack of time and capital. The analysis revealed numerous barriers facing people with disabilities. This same analysis helped situate the project approach to ensure that women are included without giving the impression that women are specifically targeted (to the exclusion of men) – as this can alienate men and can backfire. In the Muslim communities where we work, we have learned that husbands and wives must both benefit from beekeeping. If men benefit but not the wife, the husband may take another wife. If the woman benefits but not the man, this can lead to divorce. We can point to examples where husbands and wives each keep their own hives, but help one another and agree that they share the same priority of using the honey income to support their children’s education. This approach creates harmony and good outcomes for women and men.

In Year 2 we will endeavour to break down the barriers facing people with disabilities and in March we engaged with the Office of Social Affairs in Donkorkrom towards this end, and project staff have attended disability mainstreaming training in April 2024.

## **7. Monitoring and evaluation**

Overall responsibility for M&E lies with the Project Leader, Janet Lowore, who is supported by the Project Manager in Ghana, Kwame Aidoo and the wider team. Based on the Project Logical Framework we created an M&E plan at project outset which sets out baseline data and/or how to collect baseline data (where we did not have this data) against each output indicator. A baseline survey was undertaken July-September 2023 and 305 men and 273 women were interviewed. The M&E plan also included milestone targets, source of evidence, method of collecting evidence, timing of evidence collection and person responsible. We are using an M&E database within a Salesforce environment for storing (and or signposting) evidence data. The main local partner in Ghana collect data that feed into this database which means the lead partner and the main local partner in Ghana share M&E work. Regular meetings are held (online) between BfD and BfDG. During the first six months of the project these meetings were held once a week, then this was changed to once every two weeks. We held a review meeting after 6 months and after one year – these meetings were attended by representatives from all Project partners and collaborating partners during which time we examined our progress against our targets and discussed any challenges or issues.

Where possible we have built formative assessments into Project activities, for example, asking beekeepers to recall learning points from earlier training sessions, and using this feedback to inform subsequent training. Our Mobile Honey traceability system records all honey purchases and this data indicates, in real time, the rate of beekeeping adoption, success and income earned which contributes to the overall livelihood improvement. Regular beekeeper and apiary visits by BfDG teams has helped to assess the rate of beekeeping adoption, number of hives and colonies managed by beekeepers. In April 2024 we visited 15 communities to make these assessments. These steps have helped us to track progress over a period.

We understand biodiversity changes do not happen rapidly and may not be discernible until end of Project, which is why we have included a wide range of intermediary indicators including trees planted, survival rates, area of land burned by wildfire (measured using satellite imagery).

Refer to Annex 1 for specific indicators of achievement.

## **8. Lessons learnt**

In the last year very good progress has been made in beekeeping training, communicating the benefits of beekeeping and demonstrating the impact of beekeeping in terms of income generation.

What worked less well was the way we started working with our partners. We relied too much on the assumption that our partners were wholly aware and on-board with the project design and their responsibilities within. This was largely our problem – making assumptions! If we did

this again – or started a new project with new partners – we would invest more time in sharing background, concepts, project planning and endeavouring to reach shared understanding and agreement earlier in the process – rather than rushing ahead and for ‘issues’ to emerge later down the line. Whilst partners were involved during the project proposal writing stage, their engagement was relatively ‘at arms length’ until the project started. We should have invested more in laying strong foundations at project inception and in the early part of the year. We got there in the end and we now have reached solid agreement – we should have got there sooner.

Doing similar projects – partnership working is essential. With a specialist angle – such as ours (beekeeping and honey trade) it is essential that we draw on the skills and experiences of others.

We have learned that the farmers and beekeepers we are working with in remote, rural locations need support with financial literacy and access to appropriate financial services. This aspect is missing from our project. We are going to work with APDO to consider designing a new, complementary project to address this gap. It is not something we can fit into the existing Darwin Initiative grant. We feel confident that by working with APDO we should be able to source some additional funding.

In the project proposal we planned to work with Forest Services Division (FSD) and beekeepers – to arrange for beekeepers to place hives and set-up apiaries in forest reserves. We have made some limited progress towards this. We have decided to retain this plan and reinvigorate the idea in 2024. FSD remain interested in this idea.

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

This is our first Annual Review.

## **10. Risk Management**

No new risks have arisen. We have updated and attached our updated Risk Register.

## **10. Sustainability and legacy**

The project is attracting a lot of attention in the project location – largely due to two substantial reasons (1) The almost-completed Honey and Beeswax Processing Centre provides very visible and tangible evidence of economic development in the area – attracting notice and admiration. Many stakeholders are impressed not only by the building but also by the increasing quantities of honey being traded at the centre. (2) The radio programmes aired by APDO are reaching into the homes of thousands of people (target and non-target) across the Afram Plains landscape. This is creating extensive visibility and interest.

We are carrying stories, blogs and new updates on the websites and social media channels of BfD UK and BfDG.

At a recent progress review meeting we reflected that our visibility nationwide is not as strong as we would like. At a recent meeting organised by the international NGO World Vision in Ghana, several of the other NGOs who attended said they were not familiar with BfDG and its work. This served as a wake-up call that we need to be more visible and reach out to a wider network of stakeholders.

There is very strong and increasing interest for beekeeping, integrated with forest conservation, across the Afram Plains. One evidence of this is the number of people who come to the Honey and Beeswax Processing Centre asking to join the project and be trained in beekeeping. We are responding to this demand by organising additional training sessions at the Centre – so the trainees bear the cost of travelling and BfDG provides the training.

As the honey sales are picking up in more distant towns we are using the honey sales to ‘tell the story’ about the project, about the beekeepers and the impact on forest conservation. This is generating interest and demand.

There is no question about the legacy in terms of beekeeping and honey trade. More and more people are taking up beekeeping and the demand for high quality honey is high. The Honey and Beeswax Processing Centre and the honey business will last long after the project.

The impact of the growing beekeeping economy on forest recovery is still in its infancy. Anecdotally beekeepers are telling and showing forest patches that they are protecting and no beekeeper reported losing hives to fire in the dry season on 23/24. No hives lost to fire means no seedlings or saplings lost to fire in the locations where hives are located. The task now is to increase the scale of the industry so more beekeepers will protect forest from fire and more people choose to invest labour and effort into beekeeping instead of charcoal making.

Evidence 14 – apiary in protected forest location.

## 11. Darwin Initiative identity

To promote the Darwin Initiative identity, we have incorporated the DI logo on project materials, documents and presentations and we have acknowledged DI support in our communications and publications on our websites and social media handles (X, Instagram, Facebook, Blog, and YouTube). For some months now, we have been airing a jingle on radio (Farmer’s time in Afram Plains) about the project and Darwin Initiative is duly acknowledged and publicised in the piece – this will continue until the end of the project. During the project launch and inception workshop, Darwin Initiative logo was boldly displayed, and the source of funding announced to all present (the media covered this in their news bulletins). Additionally, our beekeeping, bushfire and tree planting campaign on radio – a vehicle to spread news about the project and discuss issues that will promote the conservation of biodiversity in the area – proudly acknowledges DI. Our social media posts are tagged or linked to Darwin Initiative/Biodiversity Challenge Funds. This project with Darwin Initiative funding is being recognised as a distinct project with a clear identity.

Evidence of promoting Darwin Initiative identity:

1. <https://www.facebook.com/share/p/8n5And6FQettNtgF/>
2. <https://www.facebook.com/share/p/MBbEhUWsD82AjYgF/>
3. <https://beesfordevelopmentghana.org/blog/>
4. <https://www.facebook.com/share/p/kEcR8ahsCrDCAqHK/>

The project is highly visible in Donkorkrom and the target communities and people understand very well about the project. The level of engagement with local stakeholders is high. All five major partners and other stakeholders in the area are familiar with the Darwin Initiative and are promoting visibility amongst their networks. As a result, government officials in Ghana, particularly those in the Afram Plains, are familiar with the Darwin Initiative. Community leaders within communities where the project is being implemented have knowledge of DI because they have been engaged in project activities or consultations. Researchers and academics in Ghana, especially those from CSIR College of Science and Technology who have been involved in the forest inventory are adequately aware of the Darwin Initiative. Beekeepers in the Afram Plains involved in the project are very familiar with the Darwin Initiative’s investment in supporting their activities.

Evidence 11 – DI logo in use.

## 12. Safeguarding

Has your Safeguarding Policy been updated in the past 12 months?	No
Have any concerns been reported in the past 12 months	No
Does your project have a Safeguarding focal point?	In UK – Janet [REDACTED] In Ghana the focal point is Martha [REDACTED].
Has the focal point attended any formal training in the last 12 months?	Yes – Martha [REDACTED] attended formal training with Hub Cymru Africa on 20 September 2024. Other staff in Ghana attended the same training.
What proportion (and number) of project staff have received formal training on Safeguarding?	Past: 100% - 6 people

	Planned: nothing planned at present
<p>Has there been any lessons learnt or challenges on Safeguarding in the past 12 months? Please ensure no sensitive data is included within responses.</p> <p>The area which needs constant reminding is the communication between project staff and project participants. It is necessary that project participants are told about the standard of behaviour they can expect from BfDG staff and how to report concerns. This is sometimes communicated in formal meetings – but it needs repeating from time to time.</p>	
<p>Does the project have any developments or activities planned around Safeguarding in the coming 12 months? If so please specify.</p> <p>We are planning to make a wall poster about safeguarding for the Honey and Beeswax Processing Centre – as this is a place where many beekeepers visit. We need to consider appropriate translations.</p> <p>BfDG are planning to review their safeguarding policy in 2024.</p>	
<p>Please describe any community sensitisation that has taken place over the past 12 months; include topics covered and number of participants.</p> <p>See above – at project meetings participants are told about the standard of behaviour they can expect from staff. Beyond this no community sensitisation on the subject of safeguarding has taken place in the past 12 months.</p>	
<p>Have there been any concerns around Health, Safety and Security of your project over the past year? If yes, please outline how this was resolved.</p> <p>None.</p> <p>However, we are in the process of developing a Health and Safety Policy for the Honey and Beeswax Processing Centre. This has not been done yet. Although the risks are low (no heavy machinery) – there are some risks e.g. lifting heavy buckets, using steam to process wax.</p>	

### 13. Project expenditure

All these figures are DRAFT (but near to final)

**Table 1: Project expenditure during the reporting period (1 April 2023 – 31 March 2024)**

Project spend (indicative) since last Annual Report	2023/24 Grant (£)	2023/24 Total Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below <sup>6</sup> )				
Consultancy costs				Some of the GIS work was pushed in Year 2
Overhead Costs				
Travel and subsistence				Inflation in Ghana pushed up these costs (esp. fuel)
Operating Costs				As above
Capital items (see below)				Some of the building costs came in under-budget
Others (see below)				Food was provided during training workshops – the cost of this exceeded the budget, due to inflation.
<b>TOTAL</b>	<b>£139846</b>	<b>£138228</b>	<b>-1%</b>	

<sup>6</sup> I am not sure what this 'see below' refers to?

**Table 2: Project mobilised or matched funding during the reporting period (1 April 2023 – 31 March 2024)**

	Secured to date	Expected by end of project	Sources
Matched funding leveraged by the partners to deliver the project (£)			APDO from unrestricted funds Bees for Development from unrestricted funds
Total additional finance mobilised for new activities occurring outside of the project, building on evidence, best practices and the project (£)			£0

**11. Other comments on progress not covered elsewhere**

The Ghana Fire Service recommended that we delivered all the fire awareness training in Year 1, rather than spreading it out over Years 1 and 2. They made the point that the best results in terms of fire prevention and mitigation is achieved when communities work together – so it made more sense that all should receive the same information and knowledge at the same time.

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

I agree for the Biodiversity Challenge Funds 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).

From December 2023 to March, our Honey and Beeswax Trade Centre (HBTC) social enterprise purchased 465 buckets holding 8478 kg of honeycombs. This has put GHS211949.50 (£12,563.57) in the mobile money accounts of 154 beekeepers based in 9 communities across Afram Plains. Honey extraction yielded 6768 kg of liquid honey, and this is projected to give a gross revenue of GHS282000 (£16,592.86). We are selling this in bulk to customers in Donkorkrom, Accra, and Cape Coast. Beekeepers are using the money from selling honeycombs to build more hives, build new improved houses, pay for school fees, start new petty trading, among others. For example, Abdul-Shafik Asminu told us “Beekeeping has been a transformative journey for me and my family. I sold 308kg of honeycombs and earned 7700 Ghana cedis in the first quarter of 2024. This is good money for me. I used part of the money to build 50 more hives and the rest to stock my new boutique. The honey income came at the right time as I had been wondering how I would stock my shop for some time. My mother and father also earned good money, which enabled them to rebuild their collapsed house.” Aremeyaw Awudu also indicated “I am building new improved house in this village because of my beekeeping activities. Normally I will build in Donkorkrom but I want to be closer to my hives and manage and protecting them from bushfire and pests. I earned about 5000 Ghana cedis from 4 Borasus log hives in January 2024.” Another beekeeper, Abubakari Isaka said “I have 140 installed hives with 50 bee colonies from which I earned 17000 Ghana cedis in January. I have used part of income from the honeycombs I sold to build 50 more hives.” Alimatu Sadia Abubakari, another beekeeper at Apesika village said, “I earned 1200 Ghana cedis from selling honeycombs and this has enabled

me to build 10 more hives. I encourage my fellow women to take beekeeping as a livelihood activity because beekeeping the best thing that has happened to me recently”.

<b>File Type (Image / Video / Graphic)</b>	<b>File Name or File Location</b>	<b>Caption including description, country and credit</b>	<b>Social media accounts and websites to be tagged (leave blank if none)</b>	<b>Consent of subjects received (delete as necessary)</b>
Image 1	Shafik Asminu with his buckets of honey (email attachment)	Beekeeper, Shafik Asminu, with his buckets of honey in Kojorbator, Ghana. Credit to Isaac Mbroh	Social media accounts: Instagram – @officialbfdghana and @beesfordevelopment X – @BfDGhana and @BeesForDev Facebook – Bees for Development Ghana and Bees for Development Websites – <a href="http://www.beesfordevelopment.org">www.beesfordevelopment.org</a> and <a href="http://www.beesfordevelopmentghana.org">www.beesfordevelopmentghana.org</a>	<b>Yes</b>
Image 2	Aremeyaw Awudu in front of his new house (email attachment)	Aremeyaw Awudu standing by the new house he is building at Apesika, Ghana. Credit: Janet Lowore	Social media accounts: Instagram – @officialbfdghana and @beesfordevelopment X – @BfDGhana and @BeesForDev Facebook - Bees for Development Ghana and Bees for Development Websites – <a href="http://www.beesfordevelopment.org">www.beesfordevelopment.org</a> and <a href="http://www.beesfordevelopmentghana.org">www.beesfordevelopmentghana.org</a>	<b>Yes</b>
Image 3	Alimatu Sadia Abubakari with her new hives (email attachment)	Alimatu Sadia Abubakari with her new hives at Apesika, Ghana. Credit: Isaac Mbroh	Social media accounts: Instagram – @officialbfdghana and @beesfordevelopment X – @BfDGhana and @BeesForDev Facebook - Bees for Development Ghana and Bees for Development Websites – <a href="http://www.beesfordevelopment.org">www.beesfordevelopment.org</a> and <a href="http://www.beesfordevelopmentghana.org">www.beesfordevelopmentghana.org</a>	<b>Yes</b>
Image 4	Abubakari Isaka with his new hives (email attachment)	Abubakari Isaka with his new hives at Apesika, Ghana. Credit: Isaac Mbroh	Social media accounts: Instagram – @officialbfdghana and @beesfordevelopment X – @BfDGhana and @BeesForDev Facebook - Bees for Development Ghana and Bees for Development Websites – <a href="http://www.beesfordevelopment.org">www.beesfordevelopment.org</a> and <a href="http://www.beesfordevelopmentghana.org">www.beesfordevelopmentghana.org</a>	<b>Yes</b>



## Annex 1: Report of progress and achievements against logframe for Financial Year 2023-2024

Project summary	Progress and Achievements April 2023 - March 2024	Actions required/planned for next period
<p><b>Impact</b></p> <p>Thriving rural communities across Afram Plains where women and men earn stable incomes by safeguarding and restoring biodiversity in forested landscapes and sustainably managing native honey bee populations.</p>	<p>The Beekeepers Restore Forests of Afram Plains project has led to people building and installing hives in forest land and because these hives are economic assets, this is incentivising beekeepers to protect these forest sites from bushfires, so allowing tree saplings to grow and restore degraded forests, which in turn provides habitats for bees and other animal species. Through the promotion of beekeeping as a livelihood in the Afram Plains, the project is causing a shift away from unsustainable forest use, to sustainable land use practices. In time this will lead to improved ecosystem health and resilience, benefiting both wildlife and local communities.</p>	
<p><b>Outcome</b> Beekeeping, fire management and forest restoration by communities in Afram Plains, leads to sustainable livelihoods, less reliance on charcoal trade, reversal of forest degradation, and regrowth of scarce tree species.</p>		
<p>Outcome indicator 0.1: Number of people engaged in profitable beekeeping. Target by end of project = at least 1000 beekeepers, of whom 350 women (from baseline of 118 beekeepers of whom 28 women<sup>1</sup>).</p>	<p>154 people sold honey to the processing centre as recorded in Mobile Honey System during reporting period. [39 w up from 28 at baseline, and 115 m up from 90 at baseline]. Our monitoring data (see output indicator 1.1 below) records that 362 (49 w) other people are also keeping bees but are yet to sell honey to the centre. Over 900 potential beekeepers were trained over the same period.</p> <p>Evidence 7 - mobile honey system.</p>	<p>In Year 2 we will train 200 additional beekeepers and provide follow-on support to all 21 communities.</p>
<p>Outcome indicator 0.2: Number of people who disengage from commercial charcoal production by end of project, as a result of keeping bees. Target = 100 beekeepers</p>	<p>This will be measured at the end of project through interviews with beekeepers.</p>	<p>In Year 2 we will publish and disseminate information posters about the benefits of beekeeping v charcoal making, and continue with the radio awareness campaign about the same.</p>
<p>Outcome indicator 0.3: 25% Reduction of charcoal trade in project area.</p>	<p>This has not been measured yet.</p>	<p>In Year 2 we will refine our approach to measuring scale of and trends in charcoal trade. To date this remains hard to measure.</p>



<p>Outcome indicator 0.4: 20% Increase in density and extent of vegetation through natural regeneration and tree planting, across 20 apiary cluster sites averaging 1000 hectares each, by end of project.</p>	<p>We have the first draft of the baseline survey by Measuring Vegetation dynamics in the Kwahu Afram, assessed using NDVI imagery. We have yet to record any change on baseline.</p> <p>We report that beekeepers are working hard to protect their apiaries from bushfires. They are also happy to plant trees in May/June 2024– tree seedlings have been raised awaiting distribution when the rains start.</p>	<p>We will refine our GIS analysis of vegetation (still needs some work) and seek to correlate vegetation trends with beekeeping activity on location basis.</p> <p>We launch our tree-planting programme in 2024.</p>
<p>Outcome indicator 0.5: 50% Reduction in burned area between December and March, across 20 apiary cluster sites averaging 1000 hectares each, by end of project.</p>	<p>We have the first draft of baseline survey of burned area, assessed using NASA Burned Area Product MCD64A1 in project area.</p> <p>We have yet to record changes on baseline.</p>	<p>We will refine our GIS analysis of burned area (still needs some work) and seek to correlate burned area trends with beekeeping activity on location basis.</p>
<p>Outcome indicator 0.6: 10% Increase in tree species richness across 20 apiary cluster sites averaging 1000 hectares, by end of project.</p>	<p>Plant Species Population and Diversity Baseline Study (forest inventory) revealed that that the mean forest condition score was 4 (1=good forest, 6=no forest) and vegetation cover type was largely fallow and open forests. The species richness of the project sites also ranged between 35 and 93. This is lower when compared to other forest locations within the transition zone. The mean value of the Simpson index for the combined sites is 0.121 and reflects a less diverse forest site with Bebuso and Avatime being the least diverse. Generally, <i>Fabaceae</i>, <i>Poaceae</i>, <i>Setariidae</i> and <i>Combretaceae</i> are the most species-rich groups.</p>	<p>In Year 2 more apiaries will be established and more natural regeneration will be allowed and encouraged to occur.</p>
<p><b>Output 1: 1000 men and women practising sustainable nature-based beekeeping and selling honeycomb for fair and rewarding returns.</b></p>		
<p>Output indicator 1.1: Number of people with productive apiaries and practising beekeeping independently. Target = 400 (325M, 175W) people managing 3 colonies or more, by end of Year 1 and 1000 by end of project. Baseline = 130 (90M, 28W).</p>	<p>154 people sold honey to the processing centre as recorded in the Mobile Honey System during the reporting period [See Outcome Indicator 1 above]. Our assessment (beekeeper, hive and colony census ongoing) from the field suggests that 362 people (49w) are also keeping bees but are yet to sell honey to the centre. As of now, data has been collected from 15 communities. We have not collected data from all the people that have been trained – only available beekeepers have been reached. We set a target that for someone to ‘count’ as a beekeeper they should manage at least 3 colonies. In fact, most people have more than 3, the estimated average is that beekeepers are keeping between</p>	<p>In Year 2 we will train 200 additional beekeepers and provide follow-on support to all 21 communities.</p>

	10-60 colonies. Meanwhile over 900 potential beekeepers were trained over the same period.	
Output indicator 1.2: Number of beekeepers selling honeycomb. Target = 300 by end Yr1, 600 by end Yr2, 1000 by end of project. Baseline = 118 (90M, 28W).	According to our Mobile Honey System, 154 people sold honey to the processing centre during the reporting period. See above for disaggregated breakdown.	The honey and beeswax processing centre will make it possible for all beekeepers to sell honey if they wish. We expect the number of beekeepers selling in Year 2 will increase.
Output indicator 1.3: Average beekeepers' income. Target = £16.50 per colony per annum.	Average income earned by beekeepers who sold honey during the reporting period was £84 against the previous year's average income of £40. Going forward, we will request to revise this indicator as the focus on income per colony now seems less appropriate. It is more relevant to consider average income per person, as beekeepers are concerned primarily with their total take-home income, rather than earnings per unit.	We will provide follow-up support and refresher training to beekeepers so they can successfully keep bees, harvest and sell honey.
<b>Output 2: Sustainable honey and beeswax trade established through BfDG Honey and Beeswax Trade social enterprise, so that beekeeping can be a vital source of income for more people across Afram Plains into the future.</b>		
Output indicator 2.1: Turnover of BfDG Honey and Beeswax Trade social enterprise, minus costs of honeycomb purchased from beekeepers, transport costs and marketing costs. Targets = Year 1: £3,000, Year 2: £6,000, Year 3: £10,000.	BfDG Honey and Beeswax Trade social enterprise earned a calculated £3111 on its trading activity, a little over our target of £3000. This an estimated figure based on total kg of liquid honey processed.	BfDG Honey and Beeswax Trade social enterprise will continue to buy and sell honey in coming month and years.  We will improve our analysis of profit v loss, to ensure financial viability.
Output indicator 2.2: Total sum of payments made to beekeepers through Mobile Honey System. Targets = Year 1: £9,900, Year 2: £19,800, Year 3: £33,000	Over the reporting period, GHS211949.50 (£12563.57) was the total sum paid to beekeepers, which more than our target of £9,900 for Year 1.	In Year 2 further purchases will be made.
Output indicator 2.3: Volume (kg) of honeycomb sold by beekeepers. Targets = Year 1: 9 tons, Year 2: 18 tons, Year 3: 30 tons	According to our Mobile Honey System, the total volume of honeycombs sold by beekeepers is 8478 kg (8.5 tons) which is near to target. This yielded a total of 6768 kg of liquid honey. We are yet to process the beeswax.	In Year 2 further purchases will be made.
<b>Output 3: Integrated fire management practised by beekeepers across 20 communities in Afram Plains, in collaboration with Ghana National Fire Service</b>		
Output indicator 3.1: Number of apiaries and hectares of land where beekeepers are adopting fire prevention and mitigation practices.	About 516 beekeepers with an average number of 4 apiaries have protected a cumulative area of over 400 hectares (with each apiary comprising at least 0.20 ha of land) through the adoption of fire prevention and mitigation practices.	Year 2 – further apiaries will be established by beekeepers, supported by Bees for Development Ghana field team.

Output indicator 3.2: Number of fire management volunteer teams working effectively throughout the dry season to raise awareness, monitor risks, and coordinate community fire management and wildfire response. Target: 20 teams (At least 100 volunteers)	20 fire management volunteer teams with 80 members have been formed across 20 communities. They have received general training on bushfire management but are yet to undergo additional training as prescribed by the Ghana National Fire Service to complete a comprehensive training.	Year 2 the volunteer teams will receive additional specialist training.
<b>Output 4: Beekeepers plant and protect diverse selection of indigenous trees with economic value by their apiaries, on their land, on land granted for this purpose by traditional authorities, in buffer zones between communities and forest/wildlife reserves, and on reserves – working closely with the Forestry Commission of Ghana.</b>		
Output indicator 4.1: Number of apiary sites established within the fringing forest reserves under an agreement between beekeeping associations and the Forestry Commission. [Target: 20 apiary sites.]	A total of four (4) apiary sites have established within the fringes of forest reserves over the reporting period.	Year 2 – further arrangements will be made to establish apiaries in forest reserves.
Output indicator 4.2: Number of seedlings distributed and planted by beekeepers. Target = 5,000 by end of year 1, 10,000 by end of year 2, 20,000 by end of project.	Due to start date of the project which was so close to tree-planting season, tree-planting will be done in Years 2 and 3. We can report that we have raised 3200 seedlings and purchased 2000 seedling for planting in May/June 2024.	Year 2 - 5200 seedlings will be received and planted by beekeepers.
Output indicator 4.3: 70% survival rate of seedlings planted at end of project.	Not done.	This will be assessed in the third quarter of Year 2.
Output indicator 4.4: Populations of now scarce and important species (e.g., <i>Vitellaria paradoxa</i> , <i>Khaya ivorensis</i> , <i>Triplochiton scleroxylon</i> ) recovering, as measured by increase in number of seedlings in plots near apiaries. Target = to be established following tree population inventory at baseline.	Plant Species Population and Diversity Baseline Study (tree population inventory survey) confirms that species richness of project site is lower compared to other forest locations within the transition zone. Most of the sites are dominated by a few species with <i>Fabaceae</i> , <i>Poaceae</i> , <i>Setariidae</i> and <i>Combretaceae</i> being the most species-rich groups. The plant species surveyed shows about 36% trees with the rest being grasses, shrubs, vines, herbs, climbers, and liana. With adequate protection of natural regeneration it is expected that the following indigenous trees will regenerate: <i>Antiaris africana</i> , <i>Azelia africana</i> , <i>Celtis zenkeri</i> , <i>Milicia excelsa</i> , and various mahogany species (e.g. <i>Khaya senegalensis</i> ).	Year 2 – this indicator will be refined based on the results of the forest inventory survey. Next assessment will be done in Year 3.
<b>Output 5: People understand the negative impact of charcoal burning on honey production and the advantages of beekeeping as a sustainable livelihood</b>		
Output indicator 5.1: Increase in the number of permissions denied charcoal burners by traditional authorities in beekeeping communities. Target = 50%	This is yet to be assessed.	Year 2 – we will revisit this indicator as it is proving hard to establish a baseline.
Output indicator 5.2: Number of people involved in charcoal production and trade who attend our beekeeping training workshops. Target = 350 in Year 1 and 350 in Year 2.	Based on baseline survey 36% of the people we trained are involved in charcoal production so if we extrapolate based the 919 trained in year 1, we report that 333 people who are involved in charcoal production and trade were trained in	

	beekeeping. This suggests that we are close to achieving our target of 350 for year 1.	
Output indicator 5.3: Number of beekeepers who reduce their involvement in charcoal production and trade. Target = 50 beekeepers by end of Year 2 and 100 by end of Year 3.	This indicator is yet to be assessed.	
<b>Output 6: Stakeholders interested in reversing forest degradation through honey trade have access to information, project results and a blueprint for a low-cost, digital traceability system based on the Mobile Honey System</b>		
Output indicator 6.1: Number of downloads of how-to-manual based on Mobile Honey System from the Bees for Development Resource Centre. Target = 300 by end of project.	The development of the how-to-manual based on Mobile Honey System is under way and should be completed and published by the end of Year 2.	How-to-manual will be developed.
Output indicator 6.2: Number of requests for support/consultancy to develop similar systems received by BfD and BfD Ghana. Target = 20 by end of project.	Over the reporting period Bees for Development Ethiopia consulted us to assist in the development of similar traceability system in Ethiopia. In Ethiopia four (4) honey cooperatives in Anderacha as well as 2 Wild Coffee cooperatives in Sheko, are using the system. The traceability and quality reports are shared with exporters and buyers of these products. Also in support of forest conservation.	
Output indicator 6.3: Case studies of agribusinesses replicating our traceability, quality assurance and supply chain system. Target = 5 by end of project.	We can report that we are working with six (6) agribusinesses including four beekeeping cooperatives (namely Editi cooperative, Shunobegati cooperative, Shunoyerida cooperative and Buloyerina cooperative) in Ethiopia. They are replicating our traceability system.	
Output indicator 6.4: Number of people reading articles written in Bees for Development Journal, BfD and BfDG websites about the link between honey trade, fire mitigation and forest recovery. Target = 1000 each year of project.	As of 17 April 2024, 335 people (143 people on BfDG website and 192 people on BfD) have read articles written on about the link between honey trade, fire mitigation and forest recovery.	

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

Project summary	SMART Indicators	Means of verification	Important Assumptions
<b>Impact: Thriving rural communities across Afram Plains where women and men earn stable incomes by safeguarding and restoring biodiversity in forested landscapes and sustainably managing native honey bee populations</b>			
<p><b>Outcome:</b></p> <p>Beekeeping, fire management and forest restoration by communities in Afram Plains, leads to sustainable livelihoods, less reliance on charcoal trade, reversal of forest degradation, and regrowth of scarce tree species.</p>	<p>0.1: Number of people engaged in profitable beekeeping. Target by end of project = at least 1000 beekeepers, of whom 350 women (from baseline of 118 beekeepers of whom 28 women1).</p> <p>0.2: Number of people who disengage from commercial charcoal production by end of project, as a result of keeping bees. Target = 100 beekeepers</p> <p>0.3: 25% Reduction of charcoal trade in project area.</p> <p>0.4: 20% Increase in density and extent of vegetation through natural regeneration and tree planting, across 20 apiary cluster sites averaging 1000 hectares each, by end of project.</p> <p>0.5: 50% Reduction in burned area between December and March, across 20 apiary cluster sites averaging 1000 hectares each, by end of project</p> <p>0.6: 10% Increase in tree species richness across 20 apiary cluster sites averaging 1000 hectares, by end of project.</p>	<p>0.1 Registered users and purchase form records on our Mobile Honey System.</p> <p>0.2 End of project interviews with beekeepers.</p> <p>0.3 Charcoal Conveyance Certificates issued by Ghana’s Forestry Commission.</p> <p>0.4 Baseline and end of project comparison by remote sensing (NDVI/FAPAR scores analysis based on data from Copernicus Global Land Service).</p> <p>0.5 Annually through remote sensing with NASA Fire Information for Resource Management System.</p> <p>0.6 Baseline and end of project forest plot inventories measuring all tree species greater than 10cm dbh and down to 5cm dbh every 5 quadrats (standard set by Forestry Commission of Ghana for off-reserve inventories). Analysis of change using Simpson/Shannon indices.</p>	<p>0.1 Demand for honey remains reliable and strong, as does demand for residue-free beeswax internationally.</p> <p>0.2 Income from beekeeping more than compensates income from charcoal burning. Preliminary evidence of this from Bondaso community supports this assumption.</p> <p>0.3 Charcoal production is not displaced to non-beekeepers, because beekeepers influence the traditional authorities which regulate tree felling. This is what we are seeing in communities where the number of beekeepers is increasing.</p> <p>0.4 Forestry Commission continues to set tree planting targets and provide seedlings to volunteers.</p> <p>0.5 Dry season not extraordinarily severe or prolonged.</p> <p>0.6 Forestry Commission successfully broadens range of species in seedling nursery. Sufficient genetic reservoir of fire- sensitive species to allow natural regeneration.</p>

<p><b>Output 1 1000 men and women practising sustainable nature-based beekeeping and selling honeycomb for fair and rewarding returns.</b></p>	<p>1.1 Number of people with productive apiaries and practising beekeeping independently. Target = 400 (325M, 175W) people managing 3 colonies or more, by end of Year 1 and 1000 by end of project. Baseline = 130 (90M, 28W).</p> <p>1.2 Number of beekeepers selling honeycomb. Target = 300 by end Yr1, 600 by end Yr2, 1000 by end of project. Baseline = 118 (90M, 28W).</p> <p>1.3 Average beekeepers' income. Target = £16.50 per colony per annum.</p>	<p>1.1 Registered beekeepers and purchase form records on our Mobile Honey System</p> <p>1.2 Mobile Honey System records</p> <p>1.3 Money paid through Mobile Honey System to beekeepers</p>	<p>1.1 Interest in beekeeping remains high. Local honey bees continue to be very prolific and occupy hives readily.</p> <p>1.2 The processing centre in Donkorkrom is completed according to plans with capacity to process the growing supply of honey. National demand for quality Ghanaian honey remains strong. We continue receiving purchase requests for beeswax from export agents.</p>
<p><b>Output 2 Sustainable honey and beeswax trade established through BfDG Honey and Beeswax Trade social enterprise, so that beekeeping can be a vital source of income for more people across Afram Plains into the future.</b></p>	<p>2.1 Turnover of BfDG Honey and Beeswax Trade social enterprise, minus costs of honeycomb purchased from beekeepers, transport costs and marketing costs. Targets = Year 1: £3,000, Year 2: £6,000, Year 3: £10,000.</p> <p>2.2 Total sum of payments made to beekeepers through Mobile Honey System. Targets = Year 1: £9,900, Year 2: £19,800, Year 3: £33,000</p> <p>2.3 Volume (kg) of honeycomb sold by beekeepers. Targets = Year 1: 9 tons, Year 2: 18 tons, Year 3: 30 tons</p>	<p>2.1 Accounts of social enterprise (BfDG HBTC)</p> <p>2.2 Vodafone cash and MTN MoMo merchant statements</p> <p>2.3 Mobile Honey records + conversations with beekeepers to gauge how much (if any) is sold outside of system</p>	<p>2.1 Market for honey and beeswax is not hit too hard by cost-of-living crisis. Cost of fuel does not increase further. We are still at this point selling in bulk at competitive wholesale prices (not fully exploiting our point of difference). Most sales still within Kumasi/Accra range.</p> <p>2.2 Price of 20GHS per kg of honeycomb continues to remain attractive for beekeepers as their volumes grow (compensating for inflation).</p> <p>2.3 Access to sufficient land for new apiary sites and sufficient floral resources to sustain production – otherwise we expand number of communities where we train and register beekeepers.</p>
<p><b>Output 3: Integrated fire management practised by beekeepers across 20 communities in Afram Plains, in collaboration with Ghana National Fire Service</b></p>	<p>3.1 Number of apiaries and hectares of land where beekeepers are adopting fire prevention and mitigation practices.</p> <p>3.2: Number of fire management volunteer teams working effectively throughout the dry season to raise awareness, monitor risks, and coordinate community fire management</p>	<p>3.1a Records from our mobile honey system.</p> <p>3.1b Interview beekeepers.</p> <p>3.1c Apiary visit by the project team.</p> <p>3.1d Remote sensing data with NASA Fire Information for Resource Management System.</p>	<p>3.1 The extent of land that beekeepers will be able to protect around their apiaries will also depend on their time availability.</p> <p>3.2 Beyond the economic incentive to protect hives and livelihoods, FMVTs will also find motivation in good team</p>

	and wildfire response. Target: 20 teams (At least 100 volunteers)	3.2a FMVTs register 3.2b WhatsApp group including all FMVT's local firemen and project staff. 3.2c Record of number of FMVTs trained 3.2d Activity workbook (Record of FMVTs' activities)	dynamics and sharing common purpose.
<b>Output 4: Beekeepers plant and protect diverse selection of indigenous trees with economic value by their apiaries, on their land, on land granted for this purpose by traditional authorities, in buffer zones between communities and forest/wildlife reserves, and on reserves – working closely with the Forestry Commission of Ghana.</b>	4.1: Number of apiary sites established within the fringing forest reserves under an agreement between beekeeping associations and the Forestry Commission. [Target: 20 apiary sites.] 4.2: Number of seedlings distributed and planted by beekeepers. Target = 5,000 by end of year 1, 10,000 by end of year 2, 20,000 by end of project. 4.3: 70% survival rate of seedlings planted at end of project. 4.4: Populations of now scarce and important species (e.g., <i>Vitellaria paradoxa</i> , <i>Khaya ivorensis</i> , <i>Triplochiton scleroxylon</i> ) recovering, as measured by increase in number of seedlings in plots near apiaries. Target = to be established following tree population inventory at baseline.	4.1a Agreements negotiated by Forestry Commission 4.1b Visits to apiary sites by project team 4.2 Records of seedling distribution kept by BfD Ghana staff 4.3 Survival of planted trees monitored during end of project tree population inventory 4.4 Baseline and end of project tree population inventories in 20 apiary cluster sites (through sampling)	4.1 Beekeepers' continue to be interested in reforestation and respect terms of agreement with FC to access reserves (no hunting, farming, clearing) 4.2 FC continues to raise tree seedlings and broadens range of species successfully, including trees that provide abundant nectar and pollen for honey bees. 4.3 FC and beekeepers ensure adequate measures taken to protect seedlings planted and generating naturally. 4.4 Sufficient genetic reservoir for natural regeneration.
<b>Output 5: People understand the negative impact of charcoal burning on honey production and the advantages of beekeeping as a sustainable livelihood</b>	5.1: Increase in the number of permissions denied to charcoal burners by traditional authorities in beekeeping communities. Target = 50% 5.2: Number of people involved in charcoal production and trade who attend our beekeeping training workshops. Target = 350 in Year 1 and 350 in Year 2. 5.3: Number of beekeepers who reduce their involvement in charcoal production	5.1 Interviews with traditional authorities 5.2 Workshop attendance lists 5.3 Annual project surveys with a sample of beekeepers.	5.1 Beekeepers successfully influence traditional authorities to consider the costs of charcoal production in terms of foregone honey production. 5.2 We succeed in getting across a positive message of the opportunities offered by beekeeping (rather than criticising charcoal making) so as to not alienate charcoal makers.



	and trade. Target = 50 beekeepers by end of Year 2 and 100 by end of Year 3.		
<b>Output 6: Stakeholders interested in reversing forest degradation through honey trade have access to information, project results and a blueprint for a low-cost, digital traceability system based on the Mobile Honey System</b>	<p>6.1: Number of downloads of how-to-manual based on Mobile Honey System from the Bees for Development Resource Centre. Target = 300 by end of project.</p> <p>6.2: Number of requests for support/consultancy to develop similar systems received by BfD and BfD Ghana. Target = 20 by end of project.</p> <p>6.3: Case studies of agribusinesses replicating our traceability and supply chain system. Target = 5 by end of project.</p> <p>6.4: Number of people reading articles written in Bees for Development Journal about the link between honey trade, fire mitigation and forest recovery. Target = 1000 each year of project.</p>	<p>6.1 BfD Online Resource Centre use statistics.</p> <p>6.2 Direct enquiries to BfD and BfD Ghana.</p> <p>6.3 Interviews with agribusiness directors replicating our system.</p> <p>6.4. BfD Online Resource Centre use statistics.</p>	<b>6.1</b> That no other traceability and supply chain management systems with comparable specifications and use cases are developed concomitantly, which are superior in functionalities or ease of use, and are made freely and widely available - thus reducing need/demand for the method underlying our system.
<p><b>Activities</b> (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)</p> <p>Output 1: 1000 men and women practising sustainable nature-based beekeeping, and selling honeycomb for fair and rewarding returns</p> <p>1.1 Coordinating beekeeper training workshops across at least 20 communities, from hive making through to post-harvest handling</p> <p>1.2 Training community-based harvesting teams to support new beekeepers at this delicate time in their first season</p> <p>1.3 Providing essential harvesting equipment for harvest teams</p> <p>1.4 Promoting beekeeping and broadcasting seasonal advice on local radio programme 'Farmers' time'</p> <p>1.5 Ongoing mentoring and support to beekeepers across all communities, working with honey collection coordinators</p> <p>1.6 Recording of floral data with honey collection coordinators through Mobile Honey WhatsApp group, feeding into production and distribution of floral calendars</p> <p>Output 2: Sustainable honey and beeswax trade established through Donkorkrom Honey and Beeswax Trade Centre, so that beekeeping can be a vital source of income for more people across Afram Plains into the future</p> <p>2.1 Development of interface for Mobile Honey System so that beekeeper registration, bucket release and honey buying data can be integrated and queried in one database</p> <p>2.2 Continuing improvement and updating of Mobile Honey System 2.3 Completion of processing facilities infrastructure</p>			

2.4 Refitting of processing equipment and procurement of additional containers and packaging materials 2.5 FDA Licensing of Donkorkrom Honey and Beeswax Trade Centre

2.6 Training of at least another 10 honey collection coordinators

2.7 Broadening of honey marketing and client database

2.8 Direct purchase of honeycomb from beekeepers through Mobile Honey System, with working capital provided by Bees for Development 2.9 Direct wholesale of honey to packers serving domestic urban markets, bulk sale of beeswax to export agents

Output 3: Integrated fire management practised by beekeepers across 20 communities in Afram Plains, in collaboration with Ghana National Fire Service

3.1 Ghana National Fire Services deliver Forest Fire Management Training to 1000 beekeepers across at least 20 communities

3.2 Beekeepers across at least 20 communities elect 5 members to serve on Fire Management Volunteer Teams (FMVTs)

3.3 FMVTs members benefit from additional training in wildfire response and community fire management with Ghana National Fire Services

3.4 Strong channels of communication established between FMVTs in different communities and Ghana National Fire Service through WhatsApp group

3.5 Collection of apiary coordinates and quarterly mapping of apiary cluster sites and monitoring of burned area therein 3.6 Forest fire awareness raising through broadcast on local radio programme 'Farmers' time'

Output 4: Beekeepers plant and protect diverse selection of indigenous trees with economic value by their apiaries, on their land, on land granted for this purpose by traditional authorities, in buffer zones between communities and forest/wildlife reserves, and on reserves – working closely with the Forestry Commission of Ghana

4.1 Survey of beekeepers' tree planting priorities

4.2 Tree population inventory baseline study led by Prof Appiah (CCST) spanning 10 hectares across 5 sites

4.3 Selection of species for beekeepers' planting activities, informed by survey of their preferences and baseline study

4.4 Procurement of seedlings from Forestry Commission nursery and other local nurseries

4.5 Establishment and maintenance of nurseries to grow selected species that are in low supply at local nurseries

4.6 Intensive silviculture training for BfD Ghana field staff provided by Forestry Commission

4.7 Basic silviculture training for beekeepers provided by BfD Ghana staff

4.8 Delivery of free tree seedlings for beekeepers

4.9 Ongoing support for and monitoring of tree planting by beekeepers

4.10 Tree population inventory and survival rates assessment led by Prof Appiah as part of end of project evaluation

4.11 Negotiation of agreements between beekeeping groups and Forestry Commission to establish apiaries on forest reserves

Output 5: People understand the negative impact of charcoal burning on honey production and the advantages of beekeeping as a sustainable livelihood

5.1 Constructive engagement with charcoal producers in target communities, inviting them to take part in beekeeping training

5.2 Constructive engagement with traditional authorities to raise awareness of trade-offs between charcoal and honey production

5.3 Interviews with beekeepers who were former charcoal producers to be broadcast on local radio programme 'Farmers' time'

Output 6: Stakeholders interested in reversing forest degradation through honey trade have access to information, project results and a blueprint for a low-cost, digital traceability system based on the Mobile Honey System

- 6.1 Following another two seasons of implementation, expansion, testing and improvement, BfD and BfD Ghana co-produces a how-to manual for low-cost digital traceability based on the experience of developing and implementing the Mobile Honey System in Afram Plains.
- 6.2 Production of an animated explainer video explaining how the Mobile Honey System works and what it is for.
- 6.3 Publication of above-mentioned video and manual on BfD Online Resource Centre, BfD Ghana website, Wikifarmer, The Africa Report, KoboToolbox blog and other web-based platforms, alongside press release in both UK and Ghana.
- 6.4 Presentation reviewing project approach and impact at Apimondia 2025 (Project Leader and Master Beekeeper)
- 6.5 Project news and progress published twice quarterly throughout implementation on BfD Ghana website
- 6.6 Publication(s) of tree population inventories and impact studies of improved fire management on vegetation and forest restoration
- 6.7 Publication of floral calendars for Afram Plains on BfD Online Resource Centre
- 6.8 Mid-term and end of project review workshops with local stakeholders
- 6.9 Articles published in Bees for Development Journal about the link between honey trade, fire mitigation and forest recovery.

## Annex 3: Standard Indicators

**Table 1 Project Standard Indicators**

DI Indicator number	Name of indicator	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
DI-A04	Outcome indicator 0.1: Number of people engaged in profitable beekeeping.  [Number of people reporting that they are applying new capabilities (skills and knowledge) 6 (or more) months after training].	People	Men / Women	516 [88 women]				1000 [350 w]
DI-A11	Output indicator 1.2: Number of beekeepers selling honeycomb.  [Number of sustainable livelihood enterprises that are profitable (at least a year after establishment)].	Number	Men / Women	154 [39 w]				1000 [350 w] (same as above)
DI-B09	Outcome Indicator 0.2. Number of people who disengage from commercial charcoal production by end of project, as a result of keeping bees.  [Number of individuals / households reporting a decrease in unsustainable practices as a result of project activities].	People	Men / Women	0  [anecdotal evidence to date suggest at least 10 people]				100 (sub-set of above)
DI-C01	Output 6.1 Number of downloads of how-to-manual based on Mobile Honey System from the Bees for Development Resource Centre. Target = 300 (downloads) by end of project.  [Number of best practice guides and knowledge Products published and endorsed.]	Number	Mobile Honey Traceability System	0 (we are using the system – but not published yet)				1
DI-C02	Outcome indicator 0.6: 10% Increase in tree species richness across 20 apiary cluster sites averaging 1000 hectares, by end of project.  [Number of new conservation or species stock assessments published]	Number	Flora. Forest inventory and diversity assessments carried out in project site in Afram plains. Forestry Commission of Ghana inventory	1 (baseline)				1 species richness, species diversity and species evenness assessment at baseline and end of project)

DI Indicator number	Name of indicator	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
			methodology was used.					
DI-C11	Output Indicator 6.4 Number of people reading articles written in Bees for Development Journal, BfD and BfDG websites about the link between honey trade, fire mitigation and forest recovery.  [Average monthly number of Website Visitors]	Number	Disaggregated by time spent on page. Our target is at least 1 minute.	335				1000
DI-D01	Output Indicator 3.1 Number of apiaries and hectares of land where beekeepers are adopting fire prevention and mitigation practices.  [Hectares of habitat under sustainable management practices]	Hectares	Customary forest land owned by chiefs, used by local people	Not yet measured				20 clusters of 1000ha each = 20,000 ha

**Table 2 Publications**

Title	Type (e.g. journals, best practice manual, blog post, online videos, podcasts, 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)
Beekeepers Restore the Forests of Afram Plains	Blog Post	Isaac Mbroh, 2023	Male	Ghanaian	BfDG website, Saltpond	<a href="https://beesfordevelopmentghana.org/beekeepers-restore-the-forests-of-afam-plains/">https://beesfordevelopmentghana.org/beekeepers-restore-the-forests-of-afam-plains/</a>
Buzzing Success: How Radio Broadcast is amplifying BfD Ghana's Beekeepers Restore Forests project	Blog post	Isaac Mbroh, 2023	male	Ghanaian	BfDG website, Saltpond BfD website, Monmouth	<a href="https://beesfordevelopmentghana.org/buzzing-success-how-radio-broadcast-is-amplifying-bfd-ghanas-beekeepers-restore-forests-project/">https://beesfordevelopmentghana.org/buzzing-success-how-radio-broadcast-is-amplifying-bfd-ghanas-beekeepers-restore-forests-project/</a>
Empowering Lives Through	Blog post	Isaac Mbroh, 2023	Male	Ghanaian	BfDG website, Saltpond	<a href="https://beesfordevelopmentghana.org/empowering-lives-through-beekeeping-adamu-hameds-journey/">https://beesfordevelopmentghana.org/empowering-lives-through-beekeeping-adamu-hameds-journey/</a>

<b>Title</b>	<b>Type</b> (e.g. journals, best practice manual, blog post, online videos, podcasts, CDs)	<b>Detail</b> (authors, year)	<b>Gender of Lead Author</b>	<b>Nationality of Lead Author</b>	<b>Publishers</b> (name, city)	<b>Available from</b> (e.g. weblink or publisher if not available online)
Beekeeping: Adamu Hamed's Journey					BfD website, Monmouth	
Plant Species Population and Diversity in BfD Project Sites at Afram Plains, Ghana	Internal report (not publicly published)* (link provided)	Mark Appiah, 2023	Male	Ghanaian	BfDG website, Saltpond	<a href="http://beesfordevelopmentghana.org/wp-content/uploads/2024/04/Forestry-Inventory-Report-Donkorkrom-area-2023-BfDG-FINAL.pdf">http://beesfordevelopmentghana.org/wp-content/uploads/2024/04/Forestry-Inventory-Report-Donkorkrom-area-2023-BfDG-FINAL.pdf</a>
Beekeeping knowledge sharing: A buzzing success story of John and Ametus	Blog post	Isaac Mbroh, 2023	Male	Ghanaian	BfDG website, Saltpond	<a href="https://beesfordevelopmentghana.org/beekeeping-knowledge-sharing-a-buzzing-success-story-of-john-and-ametus/">https://beesfordevelopmentghana.org/beekeeping-knowledge-sharing-a-buzzing-success-story-of-john-and-ametus/</a>

## Annex 4: Onwards – supplementary material (optional but encouraged as evidence of project achievement)

No supplementary material

### 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 <b>correct template</b> (checking fund, type of report (i.e. Annual or Final), and year) and <b>deleted the blue guidance text</b> before submission?	Check
<b>Is the report less than 10MB?</b> If so, please email to <a href="mailto:BCF-Reports@niras.com">BCF-Reports@niras.com</a> putting the project number in the Subject line.	Check
<b>Is your report more than 10MB?</b> If so, please discuss with <a href="mailto:BCF-Reports@niras.com">BCF-Reports@niras.com</a> about the best way to deliver the report, putting the project number in the Subject line.	No
<b>Have you included means of verification?</b> You should not submit every project document, but the main outputs and a selection of the others would strengthen the report.	Check
If you are submitting photos for publicity purposes, do these meet the outlined requirements (see Section 16)?	Yes
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.	