Darwin Initiative Main Annual Report

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Darwin Project Information

Project reference	26-007
Project title	Enhancing Tanzania human-wildlife coexistence through corridor restoration and livelihood projects
Country/ies	Tanzania
Lead organisation	Southern Tanzania Elephant Program
Partner institution(s)	Morogoro Regional Administration, National Land Use Planning Commission, Tanzania Forestry Services, Reforest Africa, Associazione Mazingira
Darwin grant value	£241,796
Start/end dates of project	April 2019 to March 2022
Reporting period (e.g. Apr 2020 – Mar 2021) and number (e.g. Annual Report 1, 2, 3)	April 2020-March 2021, Annual Report 2
Project Leader name	Trevor Jones
Project website/blog/social media	www.stzelephants.or.tz
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1. Project summary

The project will address the fundamental drivers of human-wildlife conflict in the Kilombero Valley, Tanzania through restoration of a key wildlife corridor and facilitation of community-led livelihood projects along the corridor. A bottom-up land use planning process will be followed to create and manage the corridor. Working with farmers and the wider community, beehive fence projects, agroforestry, community banks and coexistence tourism will increase and diversify incomes, reduce crop losses from wildlife and conserve biodiversity and ecological connectivity (Map in Appendix 0).

2. Project partnerships

Morogoro Regional Administration and Kilombero District Council: The Regional Commissioner and his Regional Security Committee received a presentation from STEP in July 2020 on project progress, after which he and the Committee expressed their support for the project (Appendix 1). Previously, the Regional Administrative Secretary (RAS) had directed District Executive Director (DED) and the Kilombero District Land Use Planning (PLUM) Team to lead the participatory process of preparation and planning for the wildlife corridor, together with the District Game Officer, District Agriculture Officer, and District Natural Resources Advisor, in alignment with national goals and policy. However, in late July 2020 the District Administration was changed from Kilombero District Council to Ifakara Town Council, resulting in some changes of leadership at District level and a new PLUM team. This led to some delays in operations while the new team were sensitized and orientated. The Regional Natural Resources Officer (RNRO) has been assigned to support activities on the ground whenever required. During this period, STEP worked closely with the Regional team, conducting sensitization meetings with the village governments and farm owners in three villages to discuss perspectives on human-elephant conflict, the importance of Land Use Planning, and the corridor as a permanent solution (Appendix 2 and 2.1). As of January 2021, the Kilombero District Commissioner has stepped up to lead the corridor restoration effort, chairing meetings with stakeholders and the three village communities, chairing the Corridor Management Committee, and spurring his colleagues in the District Council to move the project forward with greater haste.

National Land Use Planning Commission: The NLUPC continues to work together with STEP and provide technical support to the District Administration and the District Land Use Planning Team, to complete the LUPs for the three villages through which the wildlife corridor passes. We worked closely with NLUPC throughout this period, with members attending farm owners' sensitisation meetings, and regular strategy discussions with the former Director-General who remains a key advisor of the project. In January 2021, of his own initiative, the former DG appointed a new Eastern Zone Manager with specific instructions to focus on restoration of the Kilombero Elephant Corridor. The Zonal Manager has arranged an extensive and productive meeting with the new Director-General at the STEP office, conducted training of the new PLUM team of Ifakara Town Council, and coordinated the first Corridor Management Committee meeting in collaboration with STEP (Appendix 3).
Tanzania Forestry Services: STEP is in the process of negotiating a new MOU with TFS after the previous one, established in 2018, expired in late 2020. TFS will collaborate on restoration of the corridor as well as on livelihood projects including beekeeping. TFS have already agreed to placement of beehive fences within the boundary of Magombera NR and to participating in sensitization and education activities with communities in support of the corridor solution (Appendix 4). In Year 2, TFS donated an additional 20 hives to Ujasiri Beekeeping Group in Magombera village. The main purpose of these hives is to attract bees to the hives in the fence (the new hives have been hung in trees off the fence) and to increase the rate of honey harvest. It has been somewhat unclear how to manage monitoring, maintenance and harvest of the TFS hives. Initially, TFS expected the farmers' group to maintain the hives for free and to not have access to the honey. We are working towards a formal agreement that ensures farmers have *some* access to the honey in the TFS hives or are at least compensated for their labor on hive maintenance. We are also talking with TFS about potential honey market access and support.
Reforest Africa: Experts in African forest and habitat restoration who will lead this component within the corridor area, also bringing match funding towards support of their team and work. Additionally, Reforest Africa entered into a partnership with TFS in 2019 to coordinate management of the new Magombera Forest Nature reserve, including patrolling by Village Game Scouts. STEP is supporting additional patrols of the corridor-adjacent area while designation of the corridor is on-going. 20 patrols were conducted during this period. Reforest Africa is preparing a habitat restoration plan for the corridor.
Associazione Mazingira: Mazingira contributes to the community outreach and education aspects of the project: through their tree nursery scheme in schools, tree planting and agroforestry within and outside of the wildlife corridor, environmental education in schools and through their community outreach, supporting village sensitization to the aims and outcomes of the project. They will also assist with monitoring and evaluation by recording and providing data and feedback on all the above activities. Among their activities completed during this performance period were delivery of environmental education to 3620 students, 60 farmers trained in agroforestry and support to three tree nurseries in schools.

3. Project progress

3.1 Progress in carrying out project Activities

Output 1: Beehive fences established and operational and managed independently by registered farmers' cooperatives in four new villages. To enhance human elephant coexistence and reduce crop loss in the Kilombero valley STEP implemented the beehive fence module, as research shows elephants are afraid of bees (King, Douglas-Hamilton and Vollrath, 2011). The beehive fence module includes two poles and in-between each pair a beehive is placed, this beehive is attached to the poles using wire. When an elephant attempts to cross the fence multiple hives are shaken, it causes bees to be disturbed and they come out of the hives. The fence is made up of real hives which can be occupied with bees as well as dummy hives. Dummy hives are a piece of wood that resembles an actual hive. When an elephant sees this hive they believe it is a real hive. STEP focuses on this project being farmer led, hence in each project village we work to formulate a farmers group which is responsible for the beehive fence. Each farmers' group forms a Community Based Organization (CBO). It is critical that farmers are involved from inception and that they contribute labor to help create a sense of ownership and ensure sustainability of the project once it is handed over by STEP. In Year 2, STEP formed a new Community Based Organization (CBO) in Sole village. Sole village is adjacent to the Udzungwa Mountains National Park (UMNP). An overview of the group formation process is found in Appendix 5.

1.1 Training local elephant monitors to record elephant activity in each village. This is an ongoing activity throughout the duration of the project. During Year 2, our locally-based team provided monthly follow up visits together with refresher training to the Local Elephant Monitor (LEM) Team. This included use of GPS to collect tracklogs and waypoints, correct protocol for filling in data sheets (Appendix 6-9) and continued improvement in interactions with farmers when recording crop damage. In Year 2, STEP replaced the local elephant monitor in Msolwa Station, one of the villages in which we work with our first female member. To support our first ever female local elephant monitor STEP's HEC Coordinator (who is also female) works closely with her and has monthly check-ins to discuss both successes and challenges in the workplace (Appendix 9).

1.2 Establishing four farmers' groups and registering CBOs. In Year 2, STEP established one new CBO supported with matched funding (Appendix 10 and 11). This is the fourth farmers' group established under this grant. The group called UTEWASO (Udzungwa Tembo wa Sole) has 30 members (13 females and 17 males). UTEWASO is the first farmer's group STEP has established which has selected a female chairperson. A beehive fence has not yet been established as the selected area is quite close to a road construction site, The Sole fence will play a critical role in funneling elephants into the Kilombero Elephant Corridor entrance. As expanded upon in 1.4, UTEWASO Group has been given a beehive hut as a way to start producing honey and generating income. They have 50 beehives in the beehive hut (Appendix 12, 12.1).

1.3 Determining optimal beehive fences configuration through ground surveys. When configuring beehive fences, STEP uses elephant movement and crop damage data collected by LEMs to prioritize areas. After candidate sites are identified, ground surveys are conducted with village government representatives to determine the suitability and potential risks in terms of bee habitat, elephant trail and corridor location, land ownership and flood risk. As mentioned in 1.3, the Sole Fence will help to funnel elephants to the entry of the underpass marking the beginning of the Kilombero Elephant Corridor. Therefore ground surveys were not required. An example is included from Year 1 (Appendix 13). We however continue to use ground surveys to establish locations for trials of novel elephant deterrents such as smelly repellent and solar-powered strobe lights.

1.4 Constructing beehive fences. As explained under 1.1-1.3, a beehive fence was not constructed during Year 2 (See Appendix 5 and Appendix 14). However, when financially possible, STEP has supported the creation of beehive huts to support occupancy on adjacent beehive fences and to increase honey production (Appendix 12,12.1). In September 2020, STEP supported the construction of a beehive hut in Katurukila. There has been a 50% increase in occupancy between January 2019 and December 2020. In January 2019, 10% of beehives were occupied. In September, before the construction of the hut, 36% of hives were occupied. In December, 60% were occupied. STEP built a beehive hut for UTEWASO group in October 2020 with matched funding. As part of a more diversified and realistic honey production strategy, we hope to build beehive huts (or renovate existing huts) for all farmers' groups within Year 3. As expanded upon below, beehive fences alone are not currently able to produce sufficient yields to generate income to reach targets as proposed. Together with continuing to improve occupancy, optimize production in occupied hives, better manage bee populations and improve harvest practices, we hope beehive huts will increase honey production as well.

1.5 Monitoring and maintenance of beehive fences by farmers' groups. STEP supports the farmers' groups to monitor and maintain the beehive fences on an approximately weekly basis with follow up from locally-based Human-Elephant Coexistence (HEC) Officers. In order for the fence to be effective, it has to be occupied with bees. In order for bees to occupy the hives, the environment must be suitable. Bees are quite particular: hives must be clean with no other insects present. This means the area must be carefully maintained to ensure there are no shrubs or grass providing 'bridges' to the hive. Hives should be out of direct sunlight but well-sealed so that they stay dry during the rainy season. The STEP Team has years of experience with bees in the area, therefore the weekly support of HEC Officers is critical on groups' weekly visits to provide advice and guidance. In Year 2, STEP's Kilombero-based team visited all CBOs almost weekly (44 monitoring visits conducted) while the Kilombero Coordinator conducted 10 visits of more than two weeks each. Heavy rain can limit the ability of both group members and STEP staff to reach the location of a beehive fence. Especially during the 2019-2020 rainy season, the heaviest in a generation, there were periods in which hives were difficult to access (Appendix 15). There is also a drop in fence monitoring frequency during periods of heavy agricultural activity (planting, weeding, harvesting) when groups postpone fence maintenance or meetings.

1.6 Monitoring of elephant crop damage by local elephant monitors. Local elephant monitors (LEMs) in each village collected data for a minimum 10 days per month. STEP's Research Officer met with each local monitor to collect datasheets, download GPS units and provide performance feedback at least once per month. Between April 2020 and March 2021, LEMs recorded 442 crop loss incidents across 10 villages (Appendix 9).

Output 2: Establishment and development of sustainable and gender equitable income-generating opportunities for local people increase outcomes for 220 people through beekeeping, VSLAs and coexistence tourism. While COVID-19 has significantly affected this Output, there are other opportunities for improvement in our approach towards developing sustainable and productive income opportunities for local communities. While VSLA attendance has dropped slightly and weekly performance indicators are minimally down, all VLSAs have either held their total credit steady or have increased the amount of credit distributed *back* into communities. The 93 loans distributed this year paid for school fees, medical care, food and essential agricultural activities for families in the Kilombero Valley. We continue to learn more about optimizing efficiency in our beehives fences and are boosting production by setting up farmers' groups with beehive huts, but we continue to struggle with maximizing production, harvesting and, most critically, honey sales. A marketing strategy that focuses on only a high end market is not sustainable, especially in the uncertain economic conditions brought on by COVID-19.

Coexistence tourism efforts have also been impacted by COVID-19. Tanzania's tourism future remains uncertain in Year 3.

2.1 Beekeeping and financial skills training for farmers' groups. As noted in 1.2, in October 2020 STEP supported the formation of Udzungwa Tembo wa Sole (UTEWASO) Group in Sole village, a community based organization, with matched funding support. As part of group establishment, STEP provides both theoretical and practical beekeeping training from qualified beekeepers as well as consistent in-situ field follow up. For UTEWASO, STEP used its oldest and most experienced beekeeping group, Njokomoni Farmers' Group (established in 2011) to provide the practical module via peer to peer learning. UTEWASO had a 96.7% participation at their training in November 2020 (Appendix 16, 16.1-16.2). In Year 2, STEP's Kilombero-based team visited all CBOs almost weekly (44 monitoring visits conducted) while the Kilombero Coordinator conducted 10 visits of more than two weeks each. As noted in 1.5, weather, agricultural activities and village activities can sometimes cause a group to postpone weekly meetings (or fence maintenance). During these visits, STEP staff attend VSLA meetings where they observe routine activities (loan repayment, buying shares). It is during these visits that staff gain insight which can inform the need for additional skills training.

2.2 Establishment of VSLAs with farmers' groups and monthly monitoring of progress. Village Savings and Loans Associations (VSLAs) are small-scale, community-organised systems which enable people who do not have access to formal financial services to save, invest and access loans. A VSLA involves 15-30 people who buy shares on a weekly basis, providing capital for loans. Loans are typically issued to members for a three-month period and are repaid with interest. Members also contribute an agreed-to amount in a social fund that is available to members experiencing emergencies as an interest-free loan. The share value, interest rate, and social fund contribution are decided by the group at a meeting prior to the start of each annual VSLA cycle. At the end of the yearly VSLA cycle (lasting 12 months), a share-out is held whereby members are repaid the value of their shares plus interest. To help buffer farmers financially from crop losses to elephants, STEP operates VSLAs together with beehive fences. During Year 2, STEP did not establish any new VSLAs, despite starting a new CBO. As we continue to operate VSLAs, we learn more about optimal conditions for their operation. In Kilombero, the vast majority of households depend on agriculture, either primarily on rice or sugar cane. While the Kilombero Valley supports year-round agriculture, there are distinct seasons for both crops. As agriculture is the primary source of income for community members in VSLAs and often the primary activities which VSLA loans support, loan repayment depends on aligning the timing of VSLAs with income flows (Appendix 17). As initial qualitative research has shown (Appendix 18), outside of STEP-operated VSLAs, farmers have few safe and fair options for lending outside of the formal financial sector (often prohibitively expensive or too far away). Therefore, a badly-timed loan could offset its 'benefits' by causing a family to seek alternative ruinous credit options for repayment. This can not only cause a family to go further into debt, it can affect food security as crops are often grown both for sale and home consumption (especially rice). We have therefore identified the best time for starting UTEWASO's first VSLA cycle as between June-August 2021. Strict adherence to the VSLA Guidelines (as written by CARE) mandate that shares should be purchased for three months before lending in order to generate sufficient capital within the group. If the cycle is started too late (i.e. close to the key time of need for agricultural activities), groups will often push to start lending before three months have elapsed, limiting available credit. By starting a cycle in June-August, it ensures sufficient capital will be generated, through the purchase of shares, to enable meaningful lending opportunities. Table 1 presents an overview of groups started by STEP during the project period. Table 1a presents an overview of groups started by STEP before the project period during which time repayment dynamics were less well understood.

Table 1. Start Dates for VSLA Cycles in Kilombero During the Project Period

VSLA Group	Status During Reporting Period	Current Cycle Start Date	Current Cycle End Date	Optimal Timeline?
Katurukila Beekeeping Group	Full Cycle Within Period	March 8 2020	March 8 2021	Medium
Ujasiri Beekeeping Group	Full Cycle Within Period	March 3 2020	March 3 2021	Medium
Kanyenja Beekeeping Group	Partial Cycle Within Period	February 16 2020	February 16 2021	Medium

Table 1a. Start Dates for VSLA Cycles in Kilombero Before the Project Period

VSLA Group	Status During Reporting Period	Current Cycle Start Date	Current Cycle End Date	Optimal Timeline?
Udzungwa Beekeeping Group	Partial Cycle Within Period	November 27 2020	November 27 2021	Low, peak ag. season
Uadilifu Beekeeping Group	Partial Cycle Within Period	December 24 2019	December 24 2020	Low, peak ag. season

2.3 Monitoring of beehive occupancy, hive condition and honey yields. As explained on in 1.6, STEP supports the farmers groups to monitor and maintain the beehive fences on a weekly basis with follow up from locally-based Human-Elephant Coexistence Officers when possible. Table 2 (Beehive Occupancy Figures, Appendix 19) summarizes key performance indicators for beehive fences during the reporting period. Figure 1 (Beehive Occupancy Figures, Appendix 19) shows beehive occupancy throughout the project period. Table 3 (Beehive Occupancy Figures, Appendix 19) looks at occupancy per quarter for all groups in 2019 as compared to 2020. The 2019-2020 rainy season was extreme with once in a generation rains caused by an Indian Ocean dipole. We are still seeking to understand what impact this extreme has had on bee activity in our project area. Two groups, started before the project period, Njokomoni Group and Uadilifu Group in Msolwa Station had the same or similar average occupancy (+/-10%) as 2019 levels but did not harvest *at all* within the 2020 calendar year. Anecdotally, groups noted that honey took "longer" than in previous years to "finish," meaning that bees were slower to completely fill combs. This could mean that bees were not producing 'surplus food,' either because there was not enough nectar or pollen due to heavy rains *or* because there was food in abundance and the bees did not need to prioritize storage. It is difficult to assess the issue but we need to continue to learn more about what can impact production in an occupied hive. Severe flooding also limited groups' ability to follow up with their hives regularly (Appendix 15), which could point towards bees consuming the honey as a cause for low production.

2.4 Harvesting, processing and selling honey. Between April 2020 to March 2021, farmers' groups harvested 149 liters of honey (Table 4, Beehive Occupancy Figures, Appendix 19). This is an increase from harvest in Year 1 which totaled 70 liters. In the Year 1 Report, we combined data from 2018, before the project period began, resulting in the reported 223 liters. As outlined in 2.3, we are still learning how the heavy rains of the 2019-2020 season have impacted honey production. For example, in Table 3 (Appendix 19), we see an anomaly in Q3 2020 hive occupancy in 2020 as compared to Q3 2019 for Uadilifu Group (one of the two that did not harvest at all in 2020) as a *possible* explanation for a drop in harvest output, but the average annual occupancy still stayed at 41% throughout 2020 for Uadilifu Group. We have determined the need to seek technical consultation with regards to understanding how beehive occupancy influences honey production output and what other factors could contribute to lack of honey production by an occupied hive.

Processing has gone on in Year 2 as it did in Year 1 but we are exploring improvements to our Honey Collection Center that may allow us to better control water content, a key issue in our production. Honey is highly hygroscopic which presents challenges in a damp area like the Kilombero Valley. We have recently been connected with Central Park Beekeeping, a private Tanzanian company that sells equipment and provides processing consultation. They also offer on-site consultation with regards to production and hive output so we think they would be useful experts to help understand our production limitations in 2020. Due to the impacts of COVID-19, the 'high end' tourist-focused market targeted by STEP in the proposal and in Year 1 of this project is not viable. This has exposed flaws in our approach, in our logic and reinforced the importance of a diversified marketing strategy. In Year 1, honey sales focused 100% on a high end market. 32.5 liters were sold as 91 500 gram jars. [redacted] Tsh (£[redacted] was generated, representing £[redacted] per liter. Within Year 1, even before the global pandemic, we reviewed our marketing strategy (Appendix 20) and determined that it was not sufficient to generate the economic impact outlined in this proposal and, more importantly, as communicated to our beekeeping group members. While £[redacted] per jar shows significant revenue potential, the market remains difficult to find and is sporadic. Less than 50% of honey harvested was sold in 2019. That high end market completely disappeared in Year 2 as the impact of COVID-19 spread. As part of our diversified marketing strategy (Appendix 20), we expanded to 'lower-end' markets. Due to honey's immune boosting properties, farmers had a constantly available local market where they were able to sell honey for the highest price (local honey tends to sell for between [redacted] In Year 2, sale of jars contributed just 7.7% of total revenue made from honey sales. In total, [redacted]) were made from honey sales during Year 2, where 94% of honey harvested was sold.

2.5 Developing elephant-friendly honey market by increasing links with the tourism industry and honey retailers. As alluded to in 2.4, the project proposal over-estimated the extent of a premium honey market in Tanzania. From anecdotal communication with a hive manufacturer and honey seller in the southern highlands of Tanzania, the Tanzanian Forestry Service set a [redacted] per kilogram price point which is used as the 'standard' price point in Tanzania for mid-upper honey markets. This translates to [redacted] Tsh per liter. This price has not been adjusted for inflation or to take into account the increased costs of modern honey production (using top bar hives, etc.). From basic market analysis, we find that mid-range and even some premium markets (in expat focused markets in Dar es Salaam and Arusha) hold to this price point. As Appendix 21 elaborates, premium prices within urban and high end markets, assessed in 2014, both within Tanzania and within the region often do not exceed $[redacted]/kg. This translates to $[redacted] per 500g or nearly three times the price point ([redacted] that STEP first communicated to farmers' groups for a 500 gram jar of honey. While tourists visiting a protected area may pay this price for the story of elephant friendly honey, there is simply too much competition at the local/urban level to sell at these prices and, even without the impact of COVID-19, the volume of sales from this high end market is inconsistent. If we want to generate consistent revenue for farmers' groups, a diversified sales

approach, as outlined in Appendix 20, is required. In July 2020, we partnered with a local honey aggregator and producer to sell honey at a mid-range price level. We sold 74L, more than 40% of honey that had been sitting in the Honey Collection Center for over six months. The price was ultimately lower than that which groups were able to pursue in locally available markets, so they preferred to sell using that avenue. It remains to be seen whether this local high price remains as COVID-19 runs its course.
By focusing fully on tourist and expat-oriented markets, our initial marketing strategy made honey sales especially vulnerable to the impacts of COVID-19. As tourism inevitably recovers, we hope to reestablish the market links outlined in our proposal. If our efforts to expand coexistence tourism recover, we also hope to specifically market honey sales via this activity. We do believe that a small premium market does exist. However, in order to ensure our farmers' groups receive the optimal return on their honey (thereby engaging our theory of change that seeing value from conservation adjacent activities will build tolerance for elephants) we will work with both a production (to address the occupancy vs. production question alluded to in 2.3-2.4 as well as harvest, processing and storage improvements) and marketing consultant to build a more diversified sales strategy. With this, we hope to fully map the premium market so as to accurately assess its potential. It is impossible to overhaul our approach to the extent required with STEP's current staff bandwidth.
2.6 Training 100 farmers in agroforestry by partner Associazione Mazingira Aimed at promoting and implementing nature conservation and environmental awareness while improving the livelihoods of people living in Kilombero Valley (adjacent to the Kilombero Elephant Corridor), STEP's partnership with Associazone Mazingira-Tanzania focused on introducing agroforestry and woodlot farming in Kanyenja, Mang'ula A and in schools along the corridor area (Appendix 22). 60 farmers (23% women) and 8 government officials (2 Village Chairpersons, 2 Forestry Officers, 2 Village Executive Officers, 2 Ward Development Officers) attended training in February- March 2021. 40,800 seedlings have germinated and will be distributed to 25 plots, totaling 15-17 acres. Seedlings will be transplanted to plots in April-May. This builds on progress made in Year 1 during which Associazione Mazingira trained 117 (45% women) farmers on sustainable agricultural techniques and agroforestry practices, including alley cropping, woodlots, and soil management and enrichment. Of the 60 farmers trained in 2020/2021, 25 were new farmers (56% women) who had not previously received training. Farmers were selected according to the following parameters: land property and extension, project awareness and ownership, motivation, and reliability. In 2020/2021, a total of 142 farmers (47% women) were practicing agroforestry (65 farmers) or woodlots (77) farmers.
2.7 Developing and marketing coexistence tourism package in collaboration with tour operators. Towards the end of Year 1 and into Year 2, STEP rehabilitated its first beehive fence, together with the farmers' group that manages it with the goal of creating a tourism site where visitors can learn more about the beehive fence model and human-elephant coexistence. While the Njokomoni Beehive Fence continues to be refurbished and an international communications volunteer was able to improve an existing informational flier, the impacts of COVID-19 have been devastating to the development of coexistence tourism. In March 2020, STEP engaged an international volunteer, experienced in communications, with the hope of improving our tourism-focused communications materials, building relationships with tour operators and working to market coexistence tourism opportunities. She stayed in Tanzania for three weeks before she was called home to Denmark as international borders closed. In that time she was able to improve the flier we hope to distribute at the Udzungwa Mountains National Park Visitors' Center (Appendix 23). We hope to re-engage her when it is safe to travel again and once we have a sense of the recovery of tourism in Tanzania. We hope to improve our existing materials and experiences, better market them to tour operators and camps and to develop new opportunities that showcase our dynamic solutions. Coexistence tourism is an emerging field and one with significant growth potential. Due to the impacts of COVID-19, even visits from other organizations have declined in Year 2. The exception was a visit from a TAWA Rapid Response Unit, part of the National Human Wildlife Conflict Strategy, who came to learn about the beehive fence model from the STEP Team (Appendix 24).
2.8 Monitoring tourist visitation to coexistence projects. As elaborated in 2.7, there are no updates to this activity during the project period.

Output 3: Restoration and community-managed protection of Udzungwa-Selous wildlife corridor
During Year 2, the project has made big strides towards this goal. Year 1 was focused on extensive sensitization, consultations and education with communities as well as Government stakeholders to build consensus for the corridor restoration. Continuation of this component was challenged by COVID-19 preventing group meetings, however we shifted to one-on-one and small group meetings. Through the second half of 2020, we began and developed the land use mapping and valuation of farms within the corridor for compensation, and Tanzania's first Elephant Underpass was constructed. In the first quarter of 2021, the Kilombero Elephant Corridor Management Committee was formed, met for the first time and developed the implementation plan for the next phases. Chair of the Committee, the District Commissioner, together with his team, met with the three Village Councils and Village Assemblies to update them on the Government support for the corridor. A new PLUM Team was created and trained, and have begun work in the villages to complete the valuation and compensation process, before moving

to the Joint Village Land Use Plan. Planning is also in process for corridor demarcation and habitat restoration.

3.1 Ongoing sensitization and discussion meetings in corridor villages In Year 2, sensitization and discussion meetings were initially impacted by COVID-19. In January to March 2020, STEP conducted successful meetings with the newly elected Village Council of Mang'ula A about the corridor project, who confirmed their ongoing support. However, since the project involves land use planning, final decisions on this have to be decided by the Village Assembly which could not convene due to COVID-19. Also in Year 2, sensitization meetings shifted focus to compensation and land valuation, together with the District Land Officer. Initial sensitization about compensation was done in one-on-one meetings with farm owners. A challenge was that some of the owners of farm pots within the corridor do not live in the respective villages while others rent out their plots, making them less directly impacted by elephant damage. We conducted meetings with over 288 farm owners located within the proposed wildlife corridor. These discussions led farmers to accept the process of land valuation by the PLUM Team (Appendix 25).

3.2 Formation of Corridor Management Committee involving all stakeholders In September 2020, the STEP Team, with partners, held a key Stakeholder Workshop with contributions from stakeholders from local, regional and national levels. After considering all input, regulatory guidance and advice from stakeholders, STEP formed a provisional Corridor Management Committee to help with the corridor restoration process (Appendix 26). In January 2021, the first Kilombero Elephant Corridor Committee (KECC) meeting was conducted, chaired by the Kilombero District Commissioner with stakeholders from different Government sectors (Appendix 27). The meeting agreed that a technical sub-committee will govern the implementation of the Kilombero Elephant Corridor, and the Zonal Manager of NLUPC, DC and RAS will lead the process of implementation (Appendix 28 and Appendix 29). In March 2021, KECC conducted another meeting and ratified an action plan to push for faster restoration of the corridor. The Committee also appointed STEP and African Wildlife Foundation (AWF), partners in the Kilombero Valley, to be permanent invitees of the KECC (Appendix 30).

3.3 Preparation, finalization and approval by all stakeholders of technical corridor implementation plan The technical corridor implementation plan for completion of valuation, compensation and land use planning has been drafted already and is in the final stages of ratification by the KECC. In reality, activities of the implementation plan were approved at the KECC meeting and are on-going on the ground as we write, led by the Zonal Manager of NLUPC and the District PLUM Team.

3.4 Physical demarcation and legal gazettement of corridor

STEP facilitated the PLUM team and District GIS expert coordinator to work on Kanyenja Land Use Planning to map the Corridor. In June 2020, in collaboration with the Village government of Kanyenja, the District Land Valuer did a reconnaissance survey of the Land Valuation. This exercise provided a good overview of the land valuation and compensation estimate, allowing STEP to fundraise for the compensation payments to farmers. A provisional revised land use plan for Kanyenja village was also produced (Appendix 31). In September 2020, the formal Land Valuation exercise was led by the Senior Land Valuer of Ifakara Town Council, Land Authorized Officer, Land Surveyors, and Land Valuer from Ifakara Town Council and Mlimba District (Appendix 32). During this phase, the team managed to gather data of farm owners' plots along the whole corridor, recording size of each plot, type and maturity of crops, number of trees, and other relevant features, in order to calculate compensation amounts (Appendix 32-33). About 95% of the corridor was surveyed and a total of 288 farm owners identified (Appendix 32-33). There then followed a pause in progress due to the November 2021 General Election and its aftermath, including some change of personnel in the District Administration. In March 2021, the new PLUM team was formed and trained, and starting in April 2021 they plan to finalise the form no 69 with all of the farmers that will allow physical demarcation of the corridor and the compensation payments to farm owners (Appendix 34).

3.5 Initiate agroforestry along corridor boundary. As elaborated in 2.6, 177 farmers have been trained in Years 1 and 2 on sustainable agricultural techniques and agroforestry practices, including alley cropping, woodlots and forestry management. Training in February-March 2021 focused on woodlot establishment, and 142 farmers continue to practice agroforestry (65 farmers) or woodlots (77 farmers).

3.6 Habitat restoration led by Reforest Africa (primarily planting of indigenous saplings from local school tree nurseries) within corridor. Our partners at Reforest Africa, led by tropical forest restoration expert Dr. Andy Marshall, are in the preparatory phase for habitat restoration once the corridor compensation and demarcation is completed. They continue to nurture indigenous sapling in their own and local partner school tree nurseries for this purpose, and are preparing a specific corridor habitat restoration plan which will consider elephant food plants, but also seek to strike a balance between creating attractive habitat and cover for elephants to pass along the corridor, while wanting them to make the crossing to the core habitat at either end rather than lingering within the corridor, adjacent to farmland.

3.7 Ongoing fundraising for road and rail underpass. STEP secured funding from the European Union for Tanzania's first Elephant Underpass. Construction began in May 2020 and is nearing completion. During August 2020 and January 2021, STEP hosted the Director of Wildlife, the Director General of the National Land Use Planning Commission, the Kilombero District Commissioner, Chief

Park Warden of the Udzungwa Mountains National Park and several other stakeholders at the construction site (Appendix 35). STEP is still in the initial stage of discussions with Tanzania Zambia Railways about a rail underpass.

3.8 Surveillance and patrolling of corridor for habitat and wildlife protection. STEP has partnered with Reforest Africa to support patrols of the Magombera Forest Nature reserve at the eastern end of the corridor, prior to commencement of corridor patrols once the corridor is designated. From January to March 2021, 20 patrols covering 413 km were successfully completed by Village Game Scouts (304 person-patrol days). See Appendix 36 for more details.

3.9 Monitoring of corridor use by elephants and other wildlife. STEP's research team ground-truths any attempted and successful crossing by elephants of the whole corridor area by walking and tracking the entire route taken by the elephant(s). We have documented 4 successful elephant crossings and minimum 10 unsuccessful crossing attempts between October 2018 and March 2021, demonstrating that elephants continued to make attempts to cross between Magombera and Mwanihana but face challenges without a well-managed corridor to follow (approximately a quarter of movement attempts are successful). We are also using camera traps to monitor use of the corridor and its endpoints by elephants and other wildlife. In Year 1, we placed camera traps on elephant trails used to exit and enter corridor endpoints in Mwanihana forest (6 cameras) and Magombera forest (12 cameras). These cameras were maintained through monthly checks in Year 2. As soon as the corridor is demarcated and secure, we will also deploy camera traps along the corridor route. Camera traps detected 20 mammal taxa at corridor endpoints, including elephants, buffalo, hippopotamus, African wild dog, forest antelopes and primates. Between June 2019 and December 2020, elephants were detected on 478 unique occasions (unique events are defined as detections of one or more elephants when images are > 15 minutes apart). More results are included in Appendix 9.

3.10 Monitoring of elephant use of corridor endpoints via dung surveys. To monitor elephant use of Mwanihana and Magombera forests, STEP's research officers walk four foot transects (6 km in length) every month to count and record the location of elephant dung piles. STEP began this monitoring in Mwanihana forest in late 2015. Between 2016 and 2020, three of the Mwanihana transects (Campsite 3, Sonjo, and Sanje) showed an increase in dry season dung encounter rates. The Magombera transect, begun in 2019, has demonstrated year-round presence of elephants in this forest, though dung encounter rates were higher in the dry season (Appendix 9).

Output 4: Increased knowledge and research on human-wildlife coexistence (HWC) and ecological connectivity at local and national level

While COVID-19 impacted our plans to continue school level education, we were able to continue with adult education via film nights and community engagement. Our partners continued with their educational outreach via schools and tree nursery establishment. We continued research collaborations began in Year 1. STEP is a major stakeholder and actor in Tanzania's National Corridor Action Plan on which progress has been made in Year 2.

4.1 Conducting community meetings and awareness days about human-wildlife coexistence and ecological connectivity. In Year 2, STEP provided education to adults in eight villages through film nights, building on the success of film nights conducted in Year 1. This education was prioritized for villages that border Udzungwa and Nyerere National Parks and Magombera Nature Reserve. At film nights, the Human-Elephant Coexistence Team provided education to attendees on three topics: (i) Elephant biology and behaviour, (ii) elephant ecology and (iii) wildlife corridors. We distributed 1,000 copies of a flier designed by STEP, modified from our Human-Elephant Coexistence Booklet completed in 2019 (Appendix 37). The fliers contain information about human elephant coexistence, methods to stay safe when you come across an elephant, benefits of elephants, life of elephants and mitigation strategies to reduce human elephant conflict. We reached a total of 1,510 adults and 785 children in 8 villages (Appendix 38, 38.1, 38.2).

4.2 Environmental education and raising awareness about biodiversity conservation in 10 schools in corridor area by Association Mazingira. In Year 2, our partner, Associazione Mazingira taught environmental education in 14 primary and 4 secondary schools, reaching 3,620 pupils. Topics included basics of environmental conservation, forest biodiversity and conservation, energy use and sustainable energy sources, tree nurseries, and climate change. STEP's work in Year 2 is expanded upon in 4.3. In Year 1, STEP's education officer taught three supplementary modules: 1) elephant ecology, behaviour and conservation, 2) human elephant coexistence and 3) wildlife corridors and connectivity, reaching 2210 students via Module 1, 2309 students via Module 2 and 1870 students via Module 3.

4.3 Monitoring and evaluation of environmental knowledge in schools involved in environmental education program. 3,620 pupils participated in an environmental education program administered by Associazione Mazingira in Year 2 of the project. 95% of students passed the annual exam with a score of A or B. In August 2020, STEP met with the Kilombero District Education Coordinator to get a permit for providing education in primary and secondary schools within the Kilombero valley. The District were supportive of STEP's initiative however, due to COVID-19, they were behind schedule on their planned annual curriculum. They had rescheduled exams for the period that STEP had selected (October-

November 2020). The District requested STEP to postpone our education work until 2021. We are currently in the process of redesigning the educational materials based on lessons learned from Year 1 and on new information developed in the National Human Wildlife Conflict Strategy that STEP helped to create (Appendix 39, 39.1). We will engage a new Education Officer and have conducted interviews with potential candidates. We expect to begin this program in May 2021 in four secondary and nine primary schools in eight villages.

4.4 Establishment of tree nurseries in 10 local schools for corridor habitat restoration (Association Mazingira and Reforest Africa). Associazione Mazingira established one new tree nursery at Kanyenja Primary School and continued to support existing tree nurseries in two schools, with a total of 2,000 seedlings provided in Year 2 of the project: 900 seedlings to Bokela Secondary School, 600 seedlings to Mang'ula Primary School, and 500 seedlings to Kanyenja Primary School. The total number of tree nurseries established at schools is six, and tree nurseries focused on five indigenous tree species.

4.5 Recruit researchers for studies on beehive fence and corridor projects, writing of popular articles with Dr. Katarzyna Nowak. In Year 2, we continued research collaborations with the University of Kent, the Agrisys project at the University of Newcastle (PI: Marion Pfeiffer), and Colorado State University, which will focus on 1) understanding drivers of community tolerance of elephants in the Kilombero valley, 2) identifying predictors of crop loss hotspots and modelling and evaluating changes in crop losses to elephants as a result of corridor restoration, as well as changes to well-being of farmers and crop productivity, health and damage following corridor restoration and 3) an economic cost-benefit analysis of corridor restoration. One popular article on lessons learned about beehive fences is currently in preparation by STEP's HEC Coordinator. We also submitted one article to the Darwin newsletter in Year 2 (Appendix 40).

4.6 Updating of Tanzania Wildlife Corridors website and creation of interactive website for Udzungwa-Selous corridor. Updating of www.tzwildlifecorrdors.org by the consultant is proceeding well 'behind the scenes', in preparation for the live launch. We are working closely with the team from USAID PROTECT, Ministry of Natural Resources and Tourism and the Tanzania Wildlife Research Institute on preparation of the National Corridor Priority Action Plan (NCAP) project (2019-20), to which STEP CEO Trevor Jones is a technical advisor. In a major boost and honour for the site, agreement was reached to include all new maps, data and information gathered during the process of this project on to the website. NCAP has held two consultative workshops (attended by STEP) with local corridor experts between September 2019 and January 2020, and further regional workshops were planned for spring 2020, however they had to be postponed due to COVID-19. They are currently strategizing how to complete the project and provide all their updated information for the website by June 2020. In the meantime, other preparatory and development work completed on the website includes: migration of the website and domain and development of site set up on new, low-carbon server, upgrading to https, updating theme and structure, preparing new content (provided by STEP), testing content in place and testing for going live.

3.2 Progress towards project Outputs

Output 1: Beehive fences established and operational and managed independently by registered farmers' cooperatives in four new villages. Beehive fences have been established and are operational and managed independently by registered farmers' cooperatives in three villages.

1.1 Four farmers' groups (30 members each, 50% women) are registered as CBOs with KLB District by end of Year 2.

Table 5. Table of Current and Original Members Since April 2019: CBOs in Katurukila, Magombera, Kanyenja and Sole villages

Village	*Year of Establishment*	*Number of Original Members*	*Number of Original Female Members*	*Number of Original Male Members*	*Current Members*	*Current Female Members*	*Current Male Members*
Katurukila	2018	33	17	16	24	14	10
Magombera	2019	35	16	19	23	11	12
Kanyenja	2019	33	14	19	19	10	9
UTEWASO	2020	31	13	18	30	13	17

As evident in Table 5, there have been changes in membership throughout the project period thus far. In most groups, this is largely due to rules, within the groups' Constitution, that govern VSLAs and CBOs (beehive fence groups): if a member misses three meetings in a row without providing a sufficient

explanation to the group, they are removed (Appendix 41, VSLA Constitution with relevant section highlighted and translated).

- Katurukila group has lost three female members and six male members, all due to poor attendance that violated the guidelines of the VSLA.
- Kanyenja has lost ten male members and four female members, all due to poor attendance that violated the guidelines of the VSLA.
- Ujasiri Group has lost five female members and seven male members (one female member and two male members were removed due to attendance issues).
- UTEWASO group has lost one male member due to poor attendance that violated the guidelines of the VSLA.

Attrition Surveys conducted in November 2020 focused on understanding why farmers left these groups. In Ujasiri Group in Magombera, three farmers interviewed said that they left the group because they were frustrated to not have sold honey within their first year of fence establishment. Indeed, Ujasiri Group had a long period of fence construction due to wet conditions. These wet conditions continue to create obstacles to occupancy and harvest; the group did not harvest honey until 17 months after fully setting up the fence. Since working with this group, STEP now manages expectations with other farmers' groups, working towards construction and occupancy goals in the first year rather than harvest and honey sales goals. Two other farmers interviewed left the group for personal and health reasons. A subset of Attrition Surveys focused on female members of Ujasiri Group in Magombera and Kanyenja Beekeeping Group. Women from Magombera Group confirmed that both men and women left the group due to unmet expectations. Members from Kanyenja Group said that men who left "were not patient and they complained that they worked on the fence and they didn't see any benefits." There were no gender-specific reasons for female members to leave the group identified by these interviewees. Appendix 42 expands on these reasons in detail.

1.2 Beehive Fences are constructed by farmers' groups in four villages by the end of Year 2
Beehive fences have been completed in Katurukila, Magombera and Kanyenja villages during the project period thus far. As explained in 1.4, Sole's beehive fence has not yet been constructed due to pending construction of the Kidatu-Ifakara highway.

1.3 33% of beehives are occupied by the end of Year 2. Current occupancy figures (Appendix 19) show that 28% of beehives are occupied as of the end of Year 2. This is largely due to reasons expanded upon in activities 2.4-2.5.

Output 2: Establishment and development of sustainable and gender equitable income-generating opportunities for local people increase outcomes for 220 people through beekeeping, VSLAs and coexistence tourism. 96 individuals are involved in beekeeping in the four new villages in which STEP began working during the project period. Of those, 66 individuals are involved in Village Savings and Loan Associations. 142 farmers were in agroforestry during Year 2, totaling 238 individuals.

2.1 Annual honey yields of 175L per group by the end of Y3 with £2745 in annual sales revenue per group by end of Y3 (115L and £550 in Y2). Honey yields are above projected Year 2 figures with 149 liters harvested in Year 2. However, as expanded upon in 2.4-2.5, sales targets are far off. Farmers' groups have collectively earned 1,246,000Tsh (£394.05) so far in Year 2, a slight increase from £364 earned in Year 1.

2.2 Number of farmers (target 40 farmers from 5 groups, 50% women) trained in honey processing and packaging at HCC by Year 3. All members of all farmers' groups started by STEP have been trained on processing and packaging at the center. Within the project period thus far, 123 farmers (56.9% women) have been trained.

2.3 Number of farmers (target 120 in four villages, 50% women) participating in VSLAs by Year 2.
By the end of Year 2, 66 farmers in 3 villages, 53% women, were actively participating in VSLAs. Output indicator 1.1 has more detail on why farmers have been removed from groups as part of constitutional compliance.

2.4 Each VSLA disburses a minimum of £[redacted] in loans over the project timeframe (£[redacted] Y1, £1170 Y2, £1300 Y3). In Year 2, VSLAs disbursed a total of 93 loans with a value of [redacted] TSH (£[redacted] Activity 2.2 and Appendix 18 have more detailed information on impact. Kanyenja Group distributed [redacted] (£[redacted] via 49 loans with an average loan size of [redacted] Ujasiri Group distributed [redacted]) via 48 loans with an average loan size of [redacted] (£[redacted] and Katurukila Group distributed [redacted] via 27 loans with an average loan size of [redacted] While not technically started during the project period, the performance of Uadilifu Group in Msolwa Station is noteworthy: Uadilifu Group distributed [redacted] via 55 loans with an average loan size during the project period of [redacted]). This was almost double the total loans issued in Year 1. As in Year 1, all groups exceeded the target set in the initial proposal, with the exception of Katurukila.

2.5 Number of farmers (target: 100 farmers (50% women) have increased capacity for agro-forestry and are involved in agroforestry in Y3. 60 farmers (23% women) were trained by Association Mazingira in agroforestry in Year 2. In 2020/2021, a total of 142 farmers (47% women) were practicing agroforestry (65 farmers) or woodlots (77) farmers. 117 have been trained throughout the project period.

2.6 150 tourists visit coexistence projects (corridor, fences) in Y3, generating £1176 in revenue. As outlined in the report thus far, there have been no visits to coexistence projects in Year 2. In Year 1, 54 tourists visited the fence. This generated [redacted] revenue. It remains difficult to predict if or when tourism will return to former levels but it is safe to say that this target will not be achieved.

Output 3: Restoration and community-managed protection of the Udzungwa-Selous Corridor
3.1 Number of Village Land Use Plans approved (target 3, one per village) by Year 2. None yet due partially to delays in the process caused by COVID-19, however this can be completed within three months. Significant progress was made towards the Kanyenja Land Use Plan, including surveys and mapping with all farm owners, approval of VLUP waiting for the Joint Land Use Planning of all three villages (Appendix 31).
3.2 Number of corridor Management Plans approved by end of Year 2 (1) Significant progress was made for preparation of the implementation action plan waiting to be finalised by the Kilombero Elephant Corridor Committee (KECC).
3.3 50% of corridor area has undergone habitat restoration by end of Y3 (2018 baseline 0%)
This activity has not been started in Year 2, and will follow corridor designation.
3.4 Number of community patrols of the corridor by Village Game Scouts (target: 52) by end of Year 3. The corridor per se is not yet patrolled pending completion of the designation process, however 20 patrols of the corridor area along the edge of and within the adjacent Magombera forest (which forms one end of the corridor) were completed by Village Game Scouts in January-March 2021.
3.5 Elephants and minimum four other species are documented to use the corridor by end of Y3.
From October 2018 to March 2021, STEP recorded 4 successful crossings of the corridor area by elephants, and minimum 10 unsuccessful attempted crossings (defined as movements >1km in length from the forest edge with a clear orientation toward either corridor endpoint) (Appendix 9). These all occurred prior to completion of corridor restoration. In addition, camera traps detected elephants and 19 other mammal taxa at corridor endpoints. We will continue to monitor wildlife use of the entire corridor following corridor designation.

Output 4: Increased knowledge and research on human-wildlife coexistence (HWC) and ecological connectivity at local and national level
4.1 Number of Community members in four project villages showing increased understanding of ecological connectivity and HWC in Y3 (Target: relative to pre-project baseline)
In Year 2, STEP provided education to adults in eight villages (including the four targeted in the proposal) through film nights. The Human-Elephant Coexistence Team provided education on elephant biology and behavior, elephant ecology and wildlife corridors. We distributed 1,000 copies of a flier designed by STEP. The events reached a total of 1,510 and 785 children.
4.2 3000 school children show increased understanding of ecological connectivity and HWC in Y3 relative to pre-project baseline. In Year 2, 3,620 pupils were reached by Associazione Mazingira's environmental education program (building on 2,991 pupils reached in Year 1). A subset of these pupils (approximately 2,000 students) were reached by STEP's module on human-elephant coexistence and wildlife corridors and connectivity in Year 1 of the project. STEP has planned to continue educational activities in 2021 that were delayed in 2020 by the impacts of COVID-19.
4.3 Number of research articles (target: 1) and popular articles (target: 3) published at end of Y3.
Baseline is zero. STEP established three research collaborations in Year 1. No research articles or popular articles published in Year 2, however a paper on lessons learned from the corridor restoration project was written for submission to a journal, and a popular article on beehive fences is in preparation for submission to an online magazine. Publishing is a priority for Year 3 using results from our research collaborations.
4.4 Number of visitors to TZ Wildlife Corridors website. Baseline from April 2018 to March 2019 was 7,126 unique visitors. The number of visitors was 5,642 in Year 1 and 7,329 visitors in Year 2. The lack of increase is because we have still not launched the new website as we are waiting for the finalization of the new National Corridor Priority Action Plan (NCAP). Our consultant is well prepared 'behind the scenes' for a live launch. Our preparatory work is outlined in the Activity review above.

3.3 Progress towards the project Outcome

Elephant crop losses are significantly reduced and retaliatory killing of elephants is eliminated. Environmentally-friendly and sustainable enterprise increases incomes for 220 people. A crucial ecological corridor is restored with community support.

0.1: 50% reduction in the number of elephant visits to farms per year protected by beehive fencing by project end relative to pre-project baseline of 34 days with crop losses in 2018-2019. Due to expanded coverage and increased survey effort in Year 1 (LEMs began data collection in April 2019 in Magombera and Kanyenja villages), our Year 1 data serves as a better baseline because of improved data coverage and quality. In Year 2, we recorded 442 crop-loss incidents across 10 villages,

compared to 305 crop-loss incidents in Year 1. We suspect this increase in crop-loss incidents in Year 2 could be due to increased elephant use of the project area, as indicated by the increasing trend in dung encounter rates along transects in Mwanihana and Magombera forests. The current beehive fences do not block all elephant trails into farmland along the forest-farm boundary. In Year 2, we constructed 3 km of linear smelly repellent fencing (with funding from WildAid and Elephant Crisis Fund) along the forest-farm interface to address some of these gaps, without blocking elephant access to the corridor.

0.2: Zero elephant mortality from retaliatory killing or Problem Animal Control in project area by project end relative to 2009-2017 baseline (0.6 elephants killed/year). Zero elephant mortality in Year 2.

0.3: By project end, 220 project beneficiaries report an increase in income from beekeeping, agroforestry and coexistence tourism relative to project baseline of zero. To date, 96 people are involved in beekeeping activities and Village Savings and Loan Associations. Eight individuals are involved in initial coexistence tourism efforts at one of the beehive fences. 142 individuals are involved in agroforestry. STEP plans to conduct a baseline survey in the next three-six months, depending on COVID-19, see more information in 0.6.

0.4 Gazettement of Udzungwa-Selous corridor completed by project end, relative to no protected status at pre-project baseline. Good progress made towards completion of valuation and compensation of farm plots and joint land use planning for the corridor; Corridor Management Committee formed; therefore on track towards this objective.

0.5: By project end, there will be a 50% increase in the proportion of Village Council members and community members who support gazettement of the Udzungwa-Selous corridor relative to the pre-project baseline (65% of 132 village council members in Jan-March 2019). 100% of the three corridor village council members (total 90 members) have agreed on the corridor restoration, as well as about 95% of the farm owners, therefore on track towards this objective.

0.6 By project end, there will be a 50% increase in the proportion of community members who demonstrate tolerance for elephants relative to the pre-project baseline. Establishment of formal baseline tolerance levels through questionnaire surveys was planned to begin in March 2020 in collaboration with MSc student Caitlin Melidonis from the University of Kent (funding secured). However, this work was postponed due to the continued risks posed by conducting in-person questionnaire surveys due to COVID-19. We hope to begin this work, if the situation permits, in Q2 of Year 3.The Programs Manager will also compile a conglomerate picture of baseline tolerance from various data sources (including focus groups, key informant interviews, film night data and knowledge retention from school training). STEP is in the process of revising its tolerance framework.

3.4 Monitoring of assumptions

01. Beehive fencing continues to deter elephants from farmers (no habituation). **Comment**: To monitor this assumption, local elephant monitors survey beehive fences twice per week to determine if and where elephants have crossed beehive fences, and if elephants crossed between hives which were occupied or unoccupied by bees. This monitoring shows that elephants generally do not cross beehive fences between occupied hives. 68% of elephant breaches of beehive fences in 2020 occurred between a dummy hive and a real hive. In 77% of these cases, the real hive was not occupied. As elephants do sometimes walk around beehive fences and learn to cross between unoccupied hives, we continue to work on increasing beehive occupancy, and through matched funding, are trialling additional elephant deterrents (solar-powered strobe lights and smelly repellent) as options for reinforcing beehive fences and extending deterrents into areas along the forest-farm boundary that are currently lacking in crop protection methods.

0.2 Crop protection efforts, corridor conservation, beekeeping training and benefits and education are effective in fostering tolerance of elephants. **Comment:** To monitor this assumption, we planned a questionnaire survey to identify drivers of tolerance and the role of interventions in fostering tolerance to begin in March 2020 in collaboration with an MSc student from the University of Kent. However, this questionnaire survey was postponed due to COVID-19, and will be resumed at the earliest possible date.(See more above in Output Indicator 0.6).

0.3 Other motives for elephant killing (i.e. poaching for ivory) do not override increased tolerance of elephants. **Comment:** STEP records incidents of elephant mortality to monitor this assumption. In Year 1, there was zero elephant mortality on village land, suggesting this assumption holds true. Questionnaire surveys on tolerance (Assumption 2) will further shed light on this assumption.

0.4 Health of local bee populations: Seasonal variation in occupancy data. **Comment:** To monitor this assumption, STEP records beehive occupancy for all beehive fences at least twice every month. In Year 2 there was variation by village in beehive occupancy trends, but, overall, there was an increase in beehive occupancy in the early dry season (June to August), and drops in occupancy during the wet season (January and February), perhaps due to exceptionally heavy rainfall due to the Indian Ocean

Dipole in the 2019-2020 season. In Year 2, in two groups, we observed that occupancy did not correlate to honey production. This necessitates further consultation with a technical expert.
0.5 Political interference does not negatively affect communities' support for corridor conservation.
Comment: Intra-village politics between the two main political parties raised some challenges in one of the corridor villages (Mang'ula A) in the lead-up to the nationwide Village Council (VC) elections in November 2019, however the elections resolved these issues when all villages in the area elected the Ruling Party CCM (see previous annual Report). During 2020, a small faction of maximum 10 villagers who do *not* farm within the corridor sought to recruit the local MP to mobilise communities against the project, however the increased involvement and leadership of the District Commissioner and other Government officials meant that this effort came to nothing. Moreover, the recent meetings between the DC and Village Assemblies have demonstrated the majority support among the communities for the corridor restoration.

1.1 Following comprehensive beekeeping training and set up of a monitoring system, farmers' groups will conduct proper maintenance of beehives. **Comment:** So far this assumption holds true. Weekly monitoring by the HEC Team shows an average 54.2% attendance at weekly fence maintenance during the project period across all groups. As noted in 0.4, more research and technical support is needed with regards to negative correlations between hive occupancy and honey production.

1.2 The project area continues to maintain a healthy bee population. **Comment:** See comment for Assumption 0.4. This assumption remains true (without conducting a rigorous bee population assessment). Occupancy levels have not dropped substantially in the last two years of the project, nor have other beekeepers made comments about the status of the population in general, see 0.4.
1.3 That group membership remains steady throughout the project period. **Comment**: This is expanded widely on in Output 1.

2.1 There will be a continued market for elephant friendly honey (and that this market was accurately assessed at project inception). **Comment:** The assessment of the market for elephant friendly honey made at the time of this application was insufficient. Based on research referenced in Appendix 20-21, better phrasing would have been "There **is** a market for elephant friendly honey." The tourism challenges brought on by COVID-19 limited the potential for a high end market access in Year 2. As outlined through activities 2.4-2.6, a professional assessment of harvest, production, processing and market potential will be conducted in Year 3.

2.2 There is continued interest and buy in from members of members for VSLAs. **Comment:** This assumption still holds true. Weekly attendance of 54% shows that a slight majority of members attend weekly meetings. Group members are buying an average of (35.8 shares) per week per group. Each individual is buying an average of 3 shares per week. We track the number of shares purchased per attendee as a key performance indicator weekly in our HEC Dashboard to monitor participation which was shared as an appendix in Year 1. For the new groups, 100% of members have taken loans. This is indicative of need, demonstrating that there is considerable interest in access to credit. As expanded upon in Appendix 18, our initial qualitative assessments show that residents of several villages did not have access to safe credit before STEP's VSLAs began operating. We can thereby infer that interest will continue while this is the case. The project period has been a difficult one for farmers in the Kilombero Valley due to extreme weather and the economic ripple effects of COVID-19. VSLA members repeatedly share with our Team that "there is no money" and that 2020 is more challenging than previous years.

2.3 Tourist operators continue to show interest in coexistence projects as a tourist attraction and that international tourism recovers from the impact of COVID-19.
Comment: This assumption likely should have been phrased as "tourist operators **show interest**" in coexistence projects in our application materials. Research conducted during the reporting period shows that coexistence tourism is still an emerging concept in tourism in Tanzania and the level of existing interest may have been overstated. We do not yet know how tourism in Tanzania will look after the impacts of COVID-19. Popular articles point to an emerging trend in 'more conscious travel' based on social justice movements and increased awareness of ecological impacts of travel as a result of the events of 2020, however it is too early to affirm this statement with any certainty.

2.4 Tanzania remains peaceful and a popular destination for international tourists and that international tourism recovers from the impact of COVID-19. **Comment:** The impacts of COVID-19 have continued throughout Year 2 of this project. Tanzania's response to COVID-19 for most of 2020 (which has continued through Q1 of 2021) to not publicly monitor or report case data as well as, throughout 2020, deny the existence of the virus and refuse vaccination support, may continue to extend negative impacts of the virus. However, Tanzania's new president, inaugurated in March 2021, may shift the country to more transparent monitoring and more active management of the virus. Again, it remains too early to predict how tourism will look in Year 3.

3.1 No negative changes in Tanzanian law pertaining to corridor conservation. **Comment:** No negative changes have occurred. The Tanzanian government continues to view corridors as a conservation priority, and is engaged in a national corridor prioritization exercise.
3.2 Political interference does not negatively affect communities' support of corridor conservation
Comment: See comment for Assumption 0.5.

3.3 Wildlife accept the corridor as safe enough to use. **Comment:** Once the corridor is designated, we will increase camera trapping along the full extent of the corridor to monitor this assumption. Experience from other corridor projects (e.g. Mount Kenya Elephant Corridor) suggest this assumption is likely to hold true.

4.1 Outputs 1-4 lead to greater understanding of ecological connectivity and increased tolerance of wildlife
In Year 1, STEP delivered an educational program about human-elephant coexistence and wildlife corridors to >2,000 students in the project area. There was a 12% increase in the number of students who perceived wildlife corridors to be important at the end of the program. Before the program, most students were not aware of the reasons why wildlife corridors are important. In the endline questionnaire, students provided a range of answers, including reducing human-wildlife conflict (36.8%), and habitat and wildlife conservation (14.8%). A broader understanding of how corridor restoration and human-elephant coexistence interventions impact on understanding of ecological connectivity and tolerance will be investigated through questionnaire surveys, which were delayed due to restrictions resulting from COVID-19.

4.2 Self-funded academic partners will conduct relevant and timely corridor research. **Comment**: COVID-19 has hampered fieldwork by academic partners. STEP continues to provide data collected by our own team to academic partners to enable analysis and write-up to continue.

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

The intended impact of the project is enhanced human-elephant coexistence, growth of sustainable local livelihoods linked to biodiversity conservation and restoration of landscape ecological connectivity in the Kilombero Valley, Tanzania. The project contributes to biodiversity conservation by enhancing connectivity for the elephant meta-population of southern Tanzania, which comprises >50% of East Africa's elephants, by restoring a historical corridor that runs across the Kilombero Valley between Nyerere National Park (formerly Selous Game Reserve) and the Udzungwa Mountains. At present, elephants continue to make dispersal attempts through this corridor, but only about a quarter of attempts are successful in the absence of a well-managed corridor for them to follow. Research has shown a highly positive correlation between the presence of elephants and large mammal diversity within corridor areas, meaning that a protected elephant corridor will also benefit greater biodiversity (Epps et al. 2011). We estimate that the corridor will benefit eleven mammal species for which recent/historical connectivity has been documented, including the endemic and endangered Udzungwa Red Colobus (Procolobus gordonorum), African lion (Panthera leo), leopard (Panthera pardus), and buffalo (Syncerus caffer). Following corridor designation, we will measure wildlife use of the corridor through camera traps.

The project will contribute to human development and wellbeing by building the capacity of farmers to reduce crop losses to elephants, to access safe and reliable credit enabling increased investment in agriculture, improvements to household quality of life and an increased ability to respond to major financial stressors as well as, to a more limited extent, diversify income streams through agroforestry, beekeeping, and coexistence tourism. We have baseline data on 305 crop loss incidents in Year 1 and 442 crop loss incidents in Year 2 prior to corridor designation, and we will measure the change in crop loss incidents following corridor designation. To date, the project has capacitated 142 farmers in agroforestry and 123 farmers in beekeeping via training, and enabled membership in VSLAs for 66 farmers (108 are VSLA members in the larger project area). Through education programs, the project aims to increase community knowledge and skills for land use planning and managing human-elephant interactions, including how to manage potentially dangerous encounters with elephants. Furthermore, through a collaboration with the Agrisys project at the University of Newcastle, we will be able to evaluate the impact of corridor restoration on two additional measures: 1) well-being of farmers (baseline data on 467 households from 2019) and 2) crop productivity, health, and damage (baseline data on 72 plots from 2019).

4. Contribution to the Global Goals for Sustainable Development (SDGs)

SDG 1: End Poverty. This project contributes to this goal by diversifying livelihoods and improving food security among the rural poor in southern Tanzania. We continue to reduce crop losses from elephants, as measured against data from Years 1 and 2, through beehive fences and eventually/projected by

corridor restoration. The project will increase household resilience to economic shocks through Village and Savings and Loan Associations, increasing access to reliable credit. VSLAs also enable investment to develop existing or new enterprises, diversifying household incomes. The project aims to increase access to additional income sources from beekeeping, agroforestry and coexistence tourism and enhance local capacity for decision making around land use planning. In Years 1-2, in the project area, 177 farmers were trained in agroforestry, 123 farmers were trained in beekeeping, and 66 farmers gained access to VSLAs.

SGD 2: Zero Hunger. While we have not conducted a rigorous assessment of food security in the region, STEP's work contributes to food security directly by protecting crops from elephant damage. It contributes indirectly by providing access to safe and reliable sources of credit via VLSAs, giving farmers another option for financial support that does not require selling their harvest.

SDG 5: Gender Equality. This project contributes to gender equality by promoting women's participation and leadership in economic and nature conservation activities through involvement in CBOs and VSLAs. VSLAs provide women and youth with much needed access to loans and savings mechanisms, capacity building and business training. The four new farmer groups include 48 women, and women comprise 50% of members at the end of Year 2. In each group, the leadership committee comprises three main leaders, a chairperson, secretary and treasurer. STEP ensures that at least one out of the three leaders is a female. For the first time, our newest group UTEWASO has a chairperson who is a female, with 99% of the group members voting for her to lead the group. In addition, as mentioned above, we have also hired our first ever female local elephant monitor. Over the project period, 67 women have been trained in agroforestry.

SDG 15: Life on Land. The project is making progress towards restoring a historical corridor between two forests and will therefore contribute to the maintenance of biodiversity and associated ecosystem services at the landscape scale. These forests serve as important water catchments which provide water for households, irrigation for agriculture and electricity generation for Tanzania's natural grid. Through STEP's collaboration with the Agrisys project, we will be able to measure the change in farmer well-being and crop productivity and health following corridor restoration.

5. Project support to the Conventions, Treaties or Agreements

The project is aligned with Tanzania's CBD strategy and contributes to three of the Aichi Targets outlined in Tanzania's National Biodiversity Strategy and Action Plan (2015-2020; no new Action Plan has been made public to date). By facilitating villages to conduct joint land use planning to restore a corridor, we intend to reduce degradation and fragmentation of ecosystems by connecting two important protected areas and restoring degraded habitat (Target 5). The project provides positive incentives for biodiversity conservation via reduction of human-wildlife conflict and sustainable use of natural resources via beekeeping (a total of 96 farmers in four CBOs involved in beekeeping in Year 2) and agroforestry (142 farmers active at the end of Year 2) (Target 3). Furthermore, the project helps communities to restore and safeguard essential ecosystem services through protection of water catchment forests while taking into account the needs of women, youth and rural poor, which we consulted on through 16 Focus Group Discussions in Year 1 (Target 14). While no direct contact has been made with the Tanzanian focal point for the convention, STEP has worked closely on the corridor restoration project with a range of government partners including the Tanzania Wildlife Research Institute, Tanzania National Parks, the National Land Use Planning Commission, Tanzania Wildlife Management Authority, the Wildlife Division in the Ministry of Natural Resources and Tourism. The project also contributes towards the implementation of Tanzania's first National Human-Wildlife Conflict Strategy (Appendix 39, 39.1) which was initiated by the Director of Wildlife, led by STEP's CEO Dr. Trevor Jones, and launched by the Minister of Natural Resources and Tourism in October 2020.

6. Project support to poverty alleviation

The project contributes to human development and wellbeing by reducing crop losses to elephants, increasing access to safe and reliable capital and, to an extent, diversifying incomes. Furthermore, through education programs, the project aims to increase community knowledge and skills for land use planning and managing human-elephant interactions, including how to manage potentially dangerous encounters with elephants.

We continue to strengthen capacity for crop protection and thereby food security, among three farmers cooperatives (established during this period, seven in total) through the implementation of beehive fence projects to deter elephants from farmland. As of Year 2, 96 farmers in four established farmers cooperatives (in the landscape) continued to actively manage beehive fences, and an additional 50 farmers are engaged in beehive fence projects in the wider project area (started before this project period). In the short term, we expect that elephant visits to farmland and crop damage across the project area will decrease, contributing in the longer term to improvements in food security. We will measure change against a baseline of 305 crop loss incidents in Year 1 and 442 in Year 2. While this number of incidents has increased in Year 2, this figure contains data from more villages and reflects improvements in the abilities of our Local Elephant Monitor Team through training and follow up.

The project continues to increase household resilience to the financial impact of HWC and other major economic shocks, to enable investment in existing and new enterprises, diversifying household economies and contributing the economic empowerment of women and youth via VSLAs. As of Year 2, 108 farmers in the wider project area (in all VSLAs operated by STEP) have access to loans, savings mechanisms and a social insurance fund. In Year 2, in the three groups started within this project period, 93 loans were taken with a value of [redacted] for a variety of activities, elaborated in Output 2 and Appendix 18. Critically, many of these farmers lacked access to safe and reliable credit before STEP established these VSLAs. In many communities, a lack of credit access means that farmers have to sell crops for up to a third of their total value to access funds when needed. This not only represents a major loss in future profit but can result in food insecurity if a family has to sell three bags of rice for the income that one bag would generate.

To a more limited extent in Year 2, the project continued to diversify and increase incomes for four farmers' cooperatives via beekeeping, coexistence tourism, and agroforestry. In Year 2, the project capacitated 25 new farmers (60 total) (56% women) in agroforestry (total of 177 across Years 1-2) and trained 30 additional farmers in beekeeping (96 total active members). As expanded upon previously, no income has been generated by coexistence tourism projects in Year 2.

Corridor restoration and community-led management of the corridor are expected to reduce poverty by significantly reducing the current economic losses to households caused by crop losses to elephants in the landscape. Corridor restoration is also expected to increase ecosystem services, and through a collaboration with the Agrisys project at the University of Newcastle, we will be able to evaluate the impact of corridor restoration on farmer well-being and crop productivity, health, and damage. Employment of Village Game Scouts, corridor ecotourism and corridor-associated activities such as beekeeping and agroforestry are all likely to benefit local households economically. The corridor project is also beginning to attract enterprise support programs for small businesses such as the LIFT initiative by IUCN-NL.

7. Consideration of gender equality issues

Women face cultural and practical barriers to involvement in the formal economic sector, including primary responsibility for childcare and domestic tasks, as well as lack of access to capital, resources and training, that can pose a challenge to their participation in human-elephant coexistence projects. We continue to consider women in all HEC operations by insisting on equal representation in groups, meeting times that accommodate all types of labor and leadership quotas. Our newest group, UTEWASO has 13 women (43%) and a female chairperson. We also continue and to seek feedback through focus groups and key informant interviews. As mentioned in regards to Output Indicator 1.1, key informant interviews were conducted to ascertain whether there was a gender-specific reason for group attrition (Appendix 42). In January 2021, STEP hired its first female Local Elephant Monitor. As our farmers' groups have mentioned, our female Kilombero Elephant Coordinator is a role model for women who hold leadership positions. We hope our female LEM will also be seen this way. We also conduct gender sensitive project monitoring to ensure women, youth and men benefit equally from project involvement. Of the three new groups, women and youth constitute 63% of members in Katurukila, 79% in Kanyenja, and 54% in Magombera. In Year 2, 26 women (in the groups formed during this project period) took out 49 loans from VSLAs (53% of total loans) with a total value of TZS [redacted] primarily for renting farmland, purchasing agricultural inputs, and paying children's school fees.

8. Monitoring and evaluation

Data is still collected as broadly outlined in the M&E plan: we use Local Elephant Monitors to monitor elephant crop loss and assess the impact of beehive fences. They record crop losses using GPS units and standardized datasheets (Appendices 6-8). LEMs record incidents of elephant damage to farms, incidents of elephant movement into village land and human and elephant injuries/deaths. STEP's long time presence in the Kilombero Valley grants us access to local knowledge networks in which news of retaliatory killings might be shared. To increase the efficiency of this Team, STEP will train all LEMs on mobile data collection and we will no longer collect (and enter) data using paper phones. Immediate access to this data will improve our ability to analyze and use data to inform real time decisions. It may also allow us to increase the scope of LEMs work, perhaps beginning one-on-one education and awareness-raising as we do in Rungwa-Doroto, our other landscape.

In a shift from our submitted M&E plan, farmers' groups/CBOs no longer record data on fence conditions and beehive occupancy solely; this information is currently recorded by the HEC Team to improve consistency and quality. Together, the HEC Team and farmers' groups monitor trends in occupancy and honey yields, pinpoint priorities for fence maintenance and identify successful strategies for increasing hive occupancy and safeguarding bee colonies. As outlined above, this information is entered weekly into the HEC Dashboard and reviewed by the STEP HEC Team to direct follow up and support in the field. The HEC Team is also moving towards mobile data collection for beehive fence and honey production monitoring. While the Dashboard is a powerful tool, there is still a need to update it regularly

which is often deprioritized in the face of other urgent issues and due to the limited internet connectivity in Kilombero. Mobile data collection will make data even more accessible, allowing for more frequent and comprehensive analysis. While we track occupancy and honey production, we only infrequently look at how these data interact. This needs to change!

In Year 2, STEP has expanded its assessment of VSLAs, looking beyond quantitative indicators. As evident in Appendix 18, the impact of VSLAs goes far beyond interest earned on shares as posited in the original theory of change. Asking members about how they accessed credit before joining a VSLA reveals that many had to part with valued and limited assets (harvest) in order to access credit, often required to start the coming agricultural season. The infusion of capital that comes from a loan during a well-timed VSLA cycle can allow a member to expand their agricultural operations or respond to a critical household shock without the effects of ruinous credit. The flexibility afforded by using shares to manage repayment, something originally frowned upon in our first year, is now recognized as one of the VSLA's biggest assets. In Year 3, we will expand these qualitative indicators to reach each loan and each farmer. This data will also help us to orient VSLA timelines optimally in the agricultural season so they can have the most impact. STEP is exploring managing VSLAs through a software designed by CARE International, built to increase oversight, compliance and efficiency of groups. Primarily to help groups with record keeping, equity and transparency, the application would also increase the quality and accessibility of data used by STEP. It would free up more time for staff to collect detailed information about loan uses and repayment methods.

The Corridor Team has greatly improved record keeping and systematic monitoring of their approach. The dynamic nature of the corridor project often means intense periods of highly adaptive, dynamic activity which does not necessarily 'fit' with a rigorous M&E framework. The STEP Programs Manager has monthly meetings with the Corridor Coordinator to work on more dynamic M&E indicators and methods.

9. Lessons learnt

- A focus on beehive occupancy does not necessarily translate to increased honey production. We need to expand our knowledge of the factors that influence honey production and work to integrate these with a focus on occupancy in our field follow up. We also need to increase the frequency with which we review our key performance indicators **in relation to one another**. A positive trend in occupancy is not important if it does not result in an increase in honey harvest!
- A beehive fence alone is not sufficient to generate honey harvests that can sustain a reliable source of income. Our project proposal overestimated the potential honey production and sales possible from a beehive fence. To boost production, we are gradually equipping farmers' groups with beehive huts, proven ways to increase occupancy and harvests. Engaging a consultant will help to determine if there are other methods we can integrate.
- An elephant friendly honey market does not exist without tourism and its potential was overstated in the project proposal. COVID-19 helped expose a flaw in our marketing approach that was already becoming apparent. A diversified marketing strategy has been outlined elsewhere in this document.
- Managing expectations of revenue earned from honey sales among farmers' groups is critical to sustaining motivation and long term participation.
- VSLA impact goes far beyond income earned at the end of a cycle. Appendix 18 expands on this in depth. We are working to expand our M&E to assess this impact comprehensively.
- The timing of the start of a VSLA cycle should be informed by a detailed understanding of income flows in the project area. Without ensuring that there is a source of income for repayment, particularly if a loan is used for an emergency, an ill-timed VSLA cycle can lead to financial ruin. We are slowly trying to get existing groups onto a more suitable timeline. New groups (UTEWASO, for example) are not allowed to start their VSLA until it is an optimal time with regards to agricultural potential.

We also reported on several lessons learned from the corridor restoration process in Year 1 regarding the project introduction and consultation process, communication about the corridor, and the composition of the consultation team. We won't repeat these here but refer the reader to the Year 1 report, and provide updated on lessons learnt in Year 2 by the corridor team.

- A key lesson learnt during Year 2 of the project was that discussions with Government on compensation funds should start early in the project. Although the issue of compensation is addressed through the Land Act and the Land Use Planning Act, it is currently a blind spot in the Corridor Regulations. Considering that most, if not all, wildlife corridors run through village land, some form of land acquisition usually has to take place when designating a corridor. To compensate landowners fairly is also likely to be the most expensive component of any corridor restoration project, and presents a major fundraising challenge, especially since some donors are reluctant to pay for land acquisition or compensation. The Government compensates landowners when acquiring land for development projects like roads and railways, but not yet for wildlife corridors. Ideally, the authorities who are mandated to support the LUP process, e.g. TANAPA, TAWA, District Council,

should commit to the compensation process. In the case of the Kilombero Elephant Corridor, up to now, no funds have been committed by Government for compensation, and the NGO actors have had to drive the fundraising. Given the small number of donors globally that fund land acquisition, and the significant number of corridors that require restoration in Tanzania, this will not be a sustainable approach for the future. We propose that Government and donors coordinate their efforts to address this challenge, and that in the future, such discussions take place during the conception of corridor projects.

- Another lesson learnt is that broad support for wildlife corridors is critical to securing support for infrastructure. If the wildlife corridor being restored requires major infrastructure such as road or rail underpasses or overpasses, this presents additional challenges because (a) it will be one of the most expensive aspects of the project, requiring significant extra fundraising; and (b) political support is required from numerous Ministries and Agencies. These two challenges are inter-related in the sense that established wide support for the Corridor helps to overcome the concerns of both donors, and the Government bodies and officials from whom permission for construction is necessary. In the case of the Kilombero Elephant Underpass, we convinced the lead donors of the rehabilitation of the Kidatu-Ifakara highway, the European Union, to agree to modification of the project budget to pay for the Underpass. Key to convincing them was the support of the Morogoro Regional Administration and the Ministry of Natural Resources and Tourism. Additionally, the modification required the permission of the Ministry of Finance and TANROADS, who assigned an assessment team. Again, the support of the MNRT (Director of Wildlife and Director-General of TANAPA) was key to convincing this team to approve the construction of the Underpass. It took several meetings with all of the above over 1.5 years to finally obtain all the authorization required.
- A final lesson learnt by the corridor restoration team is that engaging the private sector is hard but worth pursuing. In order to engage all stakeholders in the project for the purpose of integrated landscape management, major private companies in the landscape should be included, and invited to contribute to the project, even though this can be challenging. In the Kilombero Valley, the largest company and employer is the Kilombero Sugar Company Limited, with whom we held several meetings to engage and elicit collaboration. The idea of in-kind support by the company for construction was explored. It took several months to move forward, mostly due to the difficulty of meeting the appropriate managers in the company, who all have busy schedules. This could be expected with companies for whom conservation or development are not their primary goal or business. Another factor was the company requiring a very precise timeframe and other details of the activities and work to which they are committing, before signing an agreement. This presented a challenge since those details could not be specified until closer to the construction phase of the project; however, this problem was overcome by reaching agreement in principle, explaining why the precise details are not available, and then keeping the company updated regularly on project progress. Reassurance was also enhanced by inviting KSCL staff to one or more of the project's stakeholders meetings, including with community partners. The process of engaging a company that operates a core business which does not depend directly on biodiversity conservation can be a very time-consuming process, and from the NGO perspective, there is a trade-off judgment between capacity to push for the agreement, and the value of the eventual support. However, engagement may have significant impacts if the company is a key player in the landscape.

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

Clarify whether the project is working with or intending to collaborate with TANAPA and TAWA:

- STEP has a five year MOU with TAWA and works closely with TANAPA for protection, research and human-elephant coexistence in both Udzungwa Mountains National Park and Nyerere National Park.

Clarify whether Katurukila Beekeeping Group, registered in September 2019 had an existing VSLA program since its VSLA cycle start date is given as December 2018 in the Annual Report:

- Katurukila Beekeeping Group did indeed exist before it was registered. The group's first Chairman stole money that the group allocated for group registration. While legal action was taken in the village, STEP had to pause on registration support. For ease, we waited to streamline the registration process with another group (Ujasiri Group) in Magombera.

11. Other comments on progress not covered elsewhere NA

12. Sustainability and legacy

There has been significant interest in the project from the Tanzanian Government, as demonstrated through 1) Regional, District and National support for corridor restoration; 2) STEP's involvement in a National Corridor Priority Action Plan; and 3) STEP's CEO being asked to lead the development of Tanzania's first National Strategy on Human-Wildlife Conflict, to be launched in mid-2020, which includes

a chapter on land use planning and corridor restoration and highlights the Kilombero Elephant Corridor as a case study. Increased emphasis on land use planning and corridor conservation in Tanzania will be an important aspect of this project's legacy.
Sharing of results and lessons was done through quarterly and annual progress reports to project partners. Analysis of human-elephant interaction and corridor monitoring data was shared with project partners and Tanzania Wildlife Research Institute. In addition, a paper on lessons learned to date throughout the corridor restoration project is in preparation, led by STEP's CEO and in collaboration with partners from the National Corridor Priority Action Plan project.
A key component of our exit strategy remains to build the capacity of farmers groups to take charge of the maintenance of beehive fences by project end through training and on-going capacity-building. One crucial aspect of sustainability for farmers groups is their links to honey markets and income from honey sales and coexistence tourism, and progress on this front is still not satisfactory. We continue to work towards a 'portfolio approach' to honey sales with groups whereby groups may opt to sell a percentage of harvest via a high end, opportunistic market and a percentage of harvest to a slightly lower-end but constant market. If conditions for beehive fence handover (as stipulated in MOUs with farmers groups) are not met by project end, STEP will honour these agreements beyond the lifetime of this grant if this were to occur, to ensure that handover is completed in a just and sustainable manner. A diversified market strategy, which employs a variety of both locally available and more remote markets will be more sustainable than a high end market that requires constant management, a working knowledge of English and often relies on networks that are not fully equitable.
The exit strategy for the corridor restoration component of this project is as follows. Following completion of the joint land use planning and compensation process, and official and legal corridor designation, a long-term Corridor Management Committee will be formed, consisting of representatives of the communities, all key stakeholders, and STEP. The Committee will be in charge of corridor management and protection (employing the Village Game Scouts), and development of corridor ecotourism and other income-generating activities such as beekeeping and agroforestry. However, STEP and partners are all committed to providing long term technical guidance and assistance. For contingency purposes, and especially in light of COVID-19-related uncertainties, STEP is and will continue to be engaging with other potential donors for additional fundraising needs for the project and community support.

13. Darwin identity

The Darwin Initiative, DEFRA and UKAid logos will be included in STEP's Annual Report for 2020 and continue to be featured on the STEP website and on a Swahili language booklet about human-elephant coexistence (Appendix 42). Darwin Initiative funding was also recognised in quarterly reports to Kilombero District and other partners as funding towards STEP's larger human-elephant coexistence program. STEP hosted a visit by the last British High Commissioner for Tanzania in 2020 and shared a presentation on the work being done under the Darwin Initiative project. In 2021, STEP's CEO also met the new British High Commissioner on his first visit to Iringa and updated him on our activities. STEP has social media accounts on Facebook (16,632 followers), Instagram (923 followers) and Twitter (1,581 followers). We tagged the Darwin Initiative in five social media posts on Facebook and eight posts on Instagram. STEP was featured in the September 2020 Darwin Newsletter (Appendix 40).

14. Impact of COVID-19 on project delivery

The article we submitted to the September Darwin Newsletter (Appendix 40) explains our COVID-19 response quite fully. As outlined elsewhere in the report, the inconsistency of the GoT's response made it difficult to stick with a consistent plan. The impacts of COVID-19 have been outlined throughout the report and range between delayed exams in the school calendar impacting our ability to conduct educational activities to wiping out our efforts at building coexistence tourism. We continue to check in with our Kilombero-based Team to understand the situation on the ground as best we can in terms of managing risk with our beneficiaries and our staff. We are as yet unsure as to how and when tourism will recover in Tanzania. This impacts our coexistence tourism work directly, our honey sales prospects and our ability to work with international researchers and volunteers. Our Baseline Survey work has been significantly delayed. We will certainly continue with remote meetings, more remote work for our Team to accommodate their personal needs and continue to prioritize hygiene.

15. Safeguarding

Please tick this box if any safeguarding or human rights violations have occurred during this financial year. If you have ticked the box, please ensure these are reported to ODA.safeguarding@defra.gov.uk as indicated in the T&Cs. ☐

No safeguarding or human rights violations occurred in Year 2. A Safeguardng Policy has been included in our revised Operations and Human Resources Manual, a draft of which is included as an Appendix

(Appendix 44). We are finalizing minor elements for compliance to Tanzanian labour law. STEP continues to be a member of the Association of Tanzania Employers, which shares regular guidance on legal requirements for employers in Tanzania.

16. Project expenditure

Table 1: Project expenditure during the reporting period (1 April 2020 – 31 March 2021)

Project spend (indicative) since last annual report (Draft until Actual Claim)	2020/21 Grant (£)	2020/21 Total Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)	[redacted]			
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items (see below)				
Monitoring & Evaluation (M&E)				
Others (see below)				
TOTAL				

References:

Epps CW, Mutayoba BM, Gwin L, Branshares JS. 2011. An empirical evaluation of the African elephant as a focal species for connectivity planning in East Africa. Diversity and Distributions: 17(4): 603-612.

King, L.E., Douglas-Hamilton, I. & F. Vollrath. 2011. Beehive fences as effective deterrents for crop-raiding elephants: field trials in northern Kenya. African Journal of Ecology 49: 431-439.

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2020-2021

Project summary	Measurable Indicators	Progress and Achievements April 2020 - March 2021	Actions required/planned for next period
Impact Enhanced human-elephant coexistence, growth of sustainable local livelihoods linked to biodiversity conservation, and restoration of landscape ecological connectivity in the Kilombero Valley, Tanzania		Significant progress on corridor establishment and management, deeper understanding of qualitative economic impacts of VSLAs, valuable lessons learned about optimizing local livelihoods.	[redacted]
Outcome Elephant crop-losses are significantly reduced and retaliatory killing of elephants is eliminated. Environmentally-friendly and sustainable enterprise increases incomes for 220 people. A crucial ecological corridor is restored with community support.	0.1: 50% reduction in number of elephant visits to farms per year protected by beehive fencing by project end relative to pre-project baseline of 34 visits in 2018-2019. 0.2: Zero elephant mortality from retaliatory killing or Problem Animal Control in project area by project end relative to 2009-2017 baseline (0.6 elephants killed/year) 0.3: By project end, 220 project beneficiaries report an increase in income from beekeeping, agroforestry and coexistence tourism relative to project baseline of zero 0.4 Gazettement of Udzungwa-Selous corridor completed by project end, relative to no protected status at pre-project baseline. 0.5: By project end, there will be a 50% increase in the proportion of Village Council members and community members who support gazettement of the Udzungwa-Selous corridor relative to the pre-project baseline (65% of 132 village council members in Jan-March 2019). 0.6 By project end, there will be a 50% increase in the proportion of community members who demonstrate tolerance for	0.1: Due to expanded coverage and increased survey effort in Year 1, we see this (305 incidents) as a better baseline than 34. In Year 2, we recorded 442 crop loss incidents across 10 villages. We suspect this increase could be due to increased elephant use of the project area as indicated by increasing encounter rates in our research data via dung transects. Beehive fences do not block all trails. 0.2: Zero elephant mortality in Year 2. 0.3: To date, 246 people are involved in beekeeping, coexistence tourism and agroforestry. COVID-19 continues to delay our baseline survey efforts, a critical research collaboration. 0.4: Good progress made towards completion of valuation and compensation of farm plots and joint land use planning for the corridor. Corridor Management Committee formed. 0.5 100% of three corridor village council members have agreed to restoration, along with 95% of community members. 0.6: Establishment of formal baseline tolerance levels through questionnaire surveys was planned for March 2020 in collaboration with a Masters student. This has been delayed due to COVID-19.	0.1: Beehive fences do not block all elephant trails into farmland. We are trialling a linear smelly repellent fence and a linear strobe light fence to expand our arsenal of mitigation methods. 0.3 Conduct baseline survey using a revised coexistence framework. 0.4 Complete valuation and land use planning. On track to begin fencing. 0.5 – 0.6 Proceed both with formal, rigorous questionnaire-based tolerance baseline assessments in collaboration with Masters student. Programs Manager will work on 'baseline assessment' based on existing data.

	elephants relative to the pre-project baseline.		
Output 1. Beehive fences established and operational and managed independently by registered farmers' cooperatives in four new villages	1.1 Number of farmers trained (target: 120 farmers in 4 villages by Year 2, 50% women) trained in beehive fence construction, maintenance and beekeeping 1.2 Number of farmers participating in management and maintenance of beehive fences (target 120 farmers in 4 villages by Year Two, 50% women). 1.3 etc. 1.3 50% of beehive fences are occupied by bee colonies by end of Year 3 (33% in Y2, relative to pre-project baseline of 0%).	1.1 132 farmers (45% women) trained on beehive fence construction, honey processing and basic beekeeping. 96 farmers currently active in those groups (50% women). See Output 1.1, Appendix 41 and 42. 1.2. 96 farmers currently participating in management and maintenance, 50% women. See Output 1.1, Appendix 41 and 42. 1.3 28% occupancy across all beehive operations at the end of Year 2. See activities 2.4 - 2.5 and Appendix 19.	
Activity 1.1 Conducting community meetings and gender focus groups at 4 new project sites		Completed for all groups.	Pending progress on the Kidatu-Ifakara highway, begin construction of the beehive fence in Sole Village.
Activity 1.2 Training local elephant monitors to record elephant activity in each village		On-going throughout Year 2.	Shift to mobile data collection. Continue to monitor data quality and provide training accordingly. Create more opportunities for the LEM Team to meet together and share challenges.
Activity 1.3 Establishing four farmers groups and registering CBOs		Completed for all groups.	Continue to support groups through monitoring
Activity 1.6 Monitoring and maintenance of beehive fences by farmers' groups		On-going throughout Year 2, the HEC Team meets with farmers' groups at least twice a month (if not weekly) to support.	Continue to support groups through active monitoring. Work with technical consultants to understand more about the factors that influence production. Continue to build beehive huts where possible.
1.7 Monitoring of elephant crop damage by local elephant monitors		On-going. LEMs collect data at least ten days per month. In Year 2, LEMs recorded 442 crop damage incidents across 10 villages.	Shift to mobile data collection. Continue to monitor data quality and provide training accordingly. Create more opportunities for the LEM Team to meet together and share challenges.
Output 2. Establishment and development of sustainable and gender equitable income-generating opportunities for local people increase incomes for 220 people through beekeeping, VSLAs and	2.1 Annual honey yields of 175L per group by the end of Y3 with £[redacted] in annual sales revenue per group by end of Y3 (115L and £[redacted] in Y2) 2.2 Number of farmers (target 40 farmers	2.1 149 L harvested in Year 2. Annual sales revenue of £[redacted] 2.2 123 farmers have been trained in total in honey processing and packaging at the Udzungwa Honey Collection Center	

coexistence tourism.	from 5 groups, 50% women) trained in honey processing and packaging at HCC by Year 3. 2.3 Number of farmers (target 120 in four villages, 50% women) participating in VSLAs by Year 2. 2.4 Each VSLA disburses minimum of £[redacted] in loans over project timeframe [redacted] 2.5 Number of farmers (target: 100 farmers (50% women)) have increased capacity for agro-forestry and are involved in agroforestry in Y3 2.6 150 tourists visit coexistence projects (corridor, fences) in Y3, generating £1176 in revenue.	2.3 By the end of Year 2, 66 farmers in 3 villages (53% women) are actively participating in VSLAs. 2.4 In Year 2, each VSLA disbursed an average of £[redacted] in loans. 2.5 177 farmers have been trained by Mazingira in agroforestry. 142 remain active (47% women) 2.6 No tourists visited the fence in Year 2. 54 tourists visited the fence in Year 1. Total revenue generated sits at £80.	
Activity 2.1. Beekeeping and financial skills training for farmers' groups		UTEWASO Group received practical and theoretical beekeeping training. See Output 2, Appendix 16, 16.1-16.2. STEP team conducted 44 visits.	Engage a technical advisor to support with improving production in occupied hives. Continue to develop more robust financial training for VSLAs, possibly via use of a mobile app for record keeping by groups.
Activity 2.2 Establishment of VSLAs with farmers' groups and monthly monitoring of progress		44 monitoring visits conducted by the STEP Team. See Output 2, Appendix 17, 18	Establish a VSLA with UTEWASO (Sole) during the optimal period.
Activity 2.3 Monitoring beehive occupancy, hive condition and honey yields		44 monitoring visits conducted by the STEP Team. See Output 2, Appendix 15, Appendix 19	Continue to provide weekly follow up and monitoring. Engage a technical advisor to support with improving production in occupied hives. Continue to develop more robust financial training for VSLAs, possibly via use of a mobile app for record keeping by groups.
Activity 2.4 Harvesting, processing and selling of honey		Groups harvested 149 L of honey. See Output 2, Appendix 20, Appendix 21.	Work with technical advisors to develop our understanding of the factors that influence production. Work to establish beehive huts for all groups to boost production. Work with production and marketing consultants to improve harvest and storage practices. Conduct a market assessment of high end sales opportunities to further develop the portfolio sales approach.
Activity 4.6 Training 100 farmers in agroforestry by partner Associazione Mazingera		60 farmers (25 new) received training.	Continue with planned activities.

Output 3. : Restoration and community-managed protection of Udzungwa-Selous wildlife corridor	3.1 Number of Village Land Use Plans approved (target 3, one per village) by Year 2. 3.2 Number of Corridor Management Plans approved by end of Year 2 (target: one). 3.3 50% of corridor area has undergone habitat restoration by end of Y3 (2018 baseline 0%) 3.4 Number of community patrols of the corridor by Village Game Scouts (target: 52) by end of Year 3. 3.5 Elephants and minimum four other species are documented to use the corridor by end of Y3.	3.1 None yet due to delays in the process caused by COVID-19, however this can be easily completed. Significant progress made towards Kanyenja Land Use Plan, including surveys and mapping with all farm owners. 3.2 Significant progress made on preparation of implementation action plan, waiting for finalization from Kilombero Elephant Corridor Committee. 3.3 This activity is not yet started. 3.4 The corridor per se is not yet patrolled pending completion of the designation process, however 20 patrols of the corridor area along the edge of and within the adjacent Magombera forest (which forms one end of the corridor) were completed by Village Game Scouts in January-March 2021. 3.5 From 2018-March 2021, STEP recorded 4 successful crossings of the corridor area by elephants (Appendix 9).
3.1 Ongoing sensitization and discussion meetings in corridor villages		In Year 2, sensitization shifted focus to compensation and land valuation, together with the District Land Officer. Meetings were held with over 288 farm owners within the corridor area. See Activity 3.1, Appendix 25.
3.2 Formation of Corridor Management Committee involving all stakeholders		A provisional workshop was held in September 2020 (Appendix 25). The Committee was formed in January 2021 (Appendix 27-29). See Activity 3.2.
3.5 Initiate agroforestry along corridor boundary		142 farmers have been trained since project inception on sustainable agricultural and agroforestry practices such as alley cropping, woodlots and forestry management. See Activity 3.5.
3.8 Surveillance and patrolling of corridor for habitat and wildlife protection		From January to March 2021, 20 patrols covering 413km were completed by Village Game Scouts. See Appendix 36 for more details.
Output 4. : Increased knowledge and research on human-wildlife coexistence (HWC) and ecological connectivity at local and national level.	4.1 Number of Community members in four project villages showing increased understanding of ecological connectivity and HWC in Y3 (Target: relative to pre-project baseline) 4.2 3000 school children show increased understanding of ecological connectivity and HWC in Y3 relative to pre-project baseline 4.3 Number of research articles (target: 1) and popular articles (target: 3) published at end of Y3. 4.4 Number of visitors to TZ Wildlife Corridors website	4.1 In Year 2, STEP provided education to adults in eight villages (including the four targeted in the proposal) through film nights. The Human-Elephant Coexistence Team provided education on elephant biology and behavior, elephant ecology and wildlife corridors. We distributed 1000 copies of a flier designed by STEP. The events reached a total of 1,510 and 785 children. 4.2 In Year 2, 3,620 pupils were reached by Associazione Mazingira's environmental education program (building on 2,991 pupils reached in Year 1). A subset of these pupils (approximately 2,000 students) were reached by STEP's module on human-elephant coexistence and wildlife corridors and connectivity in Year 1 of the project. STEP has planned to continue educational activities in 2021 that were delayed in 2020 by the impacts of COVID-19. 4.3 No research articles or popular articles were published in Year 2. See more in Output 4.3

		4.4 The new website is still delayed pending the launch of the National Corridor Priority Action Plan. 7,329 visits were recorded in Year 2.
4.1 Conducting community meetings and awareness days about HWC and ecological connectivity	STEP provided education to adults and children in 8 villages via film nights. 1,510 adults and 785 children were reached. See Appendices 37-38.2	Engage a new education officer to complete planned education activities in schools along the corridor. Integrate aspects of the National Human Wildlife Conflict Strategy into curriculum content.
4.4 Establishment of tree nurseries in 10 local schools for corridor habitat restoration (AM, RA)	Associazione Mazingira established one new tree nursery at Kanyenja Primary school and continued to support existing nurseries in two schools. A total of 2000 seedlings were provided in Year 2. See Activity 4.4	Continue with planned activities.

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

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Impact: Enhanced human-elephant coexistence, growth of sustainable local livelihoods linked to biodiversity conservation, and restoration of landscape ecological connectivity in the Kilombero Valley, Tanzania .			
Outcome: Elephant crop-losses are significantly reduced and retaliatory killing of elephants is eliminated. Environmentally-friendly and sustainable enterprise increases incomes for 220 people. A crucial ecological corridor is restored with community support.	0.1: 50% reduction in number of elephant visits to farms per year protected by beehive fencing by project end relative to pre-project baseline of 34 visits in 2018-2019. 0.2: Zero elephant mortality from retaliatory killing or Problem Animal Control in project area by project end relative to 2009-2017 baseline (0.6 elephants killed/year) 0.3: By project end, 220 project beneficiaries report an increase in income from beekeeping, agroforestry and coexistence tourism relative to project baseline of zero 0.4 Gazettement of Udzungwa-Selous corridor completed by project end, relative to no protected status at pre-project baseline. 0.5: By project end, there will be a 50% increase in the proportion of Village Council members and community members who support gazettement of the Udzungwa-Selous corridor relative to the pre-project baseline (65% of 132 village council members in Jan-March 2019). 0.6 By project end, there will be a 50% increase in the proportion of community members who demonstrate tolerance for elephants relative to the pre-project baseline.	0.1 Monitoring of elephant crop damage on farms via trained enumerators 0.2 District Government, STEP and wildlife authority records 0.3 Pre- and post-project survey 0.4 Legal documentation 0.5 Pre- and post-project surveys 0.6 Pre- and post-project surveys	0.1 Beehive fencing continues to deter elephants from farmers (no habituation). 0.2 Crop protection efforts, corridor conservation, beekeeping training and benefits and education are effective in fostering tolerance of elephants. 0.3 Other motives for elephant killing (ie poaching for ivory) do not override increased tolerance of elephants 0.4 Health of local bee populations 0.5 Political interference does not negatively affect communities' support for corridor conservation.
Output 1 Beehive fences established and operational and managed independently by registered farmers' cooperatives in four new villages	1.1 Number of farmers trained (target: 120 farmers in 4 villages by Year 2, 50% women) trained in beehive fence construction, maintenance and beekeeping 1.2 Number of farmers participating in management and maintenance of beehive fences (target 120 farmers in 4 villages by Year Two, 50% women). 1.3 etc.	1.1Training attendance records, post training evaluation 1.2 Weekly Attendance Records 1.3 Beehive occupancy monitoring by farmers' groups, verified by STEP.	1.1 Following comprehensive beekeeping training and set up of a monitoring system, farmers' groups will conduct proper maintenance of beehives. 1.2 The project area continues to maintain a healthy bee population 1.3 That group membership remains steady

	1.3 50% of beehive fences are occupied by bee colonies by end of Year 3 (33% in Y2, relative to pre-project baseline of 0%).		throughout the project period.
Output 2 Establishment and development of sustainable and gender equitable income-generating opportunities for local people increase incomes for 220 people through beekeeping, VSLAs and coexistence tourism.	2.1 Annual honey yields of 175L per group by the end of Y3 with £[redacted] in annual sales revenue per group by end of Y3 (115L and £[redacted] in Y2) 2.2 Number of farmers (target 40 farmers from 5 groups, 50% women) trained in honey processing and packaging at HCC by Year 3. 2.3 Number of farmers (target 120 in four villages, 50% women) participating in VSLAs by Year 2. 2.4 Each VSLA disburses minimum of £[redacted] in loans over project timeframe (£[redacted] Y3) 2.5 Number of farmers (target: 100 farmers (50% women)) have increased capacity for agro-forestry and are involved in agroforestry in Y3 2.6 150 tourists visit coexistence projects (corridor, fences) in Y3, generating £1176 in revenue.	2.1 Production and financial records by farmers' groups, verified by STEP 2.2 Training Attendance Record 2.3 VSLA Attendance Records 2.4 VSLA records, verified by STEP 2.5 Post-training survey, post-project 2.6 Monitoring of visitor numbers, financial records of farmers' groups and Corridor Management committee	2.1 There will be a continued market for elephant friendly honey (and that this market was accurately assessed at project inception) 2.2 There is continued interest and buy in from members from members for VSLAs 2.3 Tourist operators continue to show interest in coexistence projects as a tourist attraction and that international tourism recovers from the impact of COVID-19. 2.4 Tanzania remains peaceful and a popular destination for international tourists and international tourism recovers from the impact of COVID-
Output 3 Restoration and community-managed protection of Udzungwa-Selous wildlife corridor	3.1 Number of Village Land Use Plans approved (target 3, one per village) by Year 2. 3.2 Number of Corridor Management Plans approved by end of Year 2 (target: one). 3.3 50% of corridor area has undergone habitat restoration by end of Y3 (2018 baseline 0%) 3.4 Number of community patrols of the corridor by Village Game Scouts (target: 52) by end of Year 3. 3.5 Elephants and minimum four other species are documented to use the corridor by end of Y3.	3.1 Signed approval of VLUP and CMP by Village and District Government Officials 3.2 Signed approval of Corridor Management Plan 3.3 Ground-truthing and mapping of corridor vegetation 3.4 Corridor Management Committee patrol records 3.5 Camera trapping and spoor surveys	3.1 No negative changes in TZ law pertaining to corridor conservation 3.2 Political interference does not negatively affect communities' support of corridor conservation 3.3 Wildlife accept the corridor as safe enough to use.

Output 4 Increased knowledge and research on human-wildlife coexistence (HWC) and ecological connectivity at local and national level.	4.1 Number of Community members in four project villages showing increased understanding of ecological connectivity and HWC in Y3 (Target: relative to pre-project baseline) 4.2 3000 school children show increased understanding of ecological connectivity and HWC in Y3 relative to pre-project baseline 4.3 Number of research articles (target: 1) and popular articles (target: 3) published at end of Y3. 4.4 Number of visitors to TZ Wildlife Corridors website	4.1 Pre- and post-project Focus Group Discussions 4.2 School Test Results 4.3 Academic journals, magazines, websites 4.4 website traffic analytics	Outputs 1-4 lead to greater understanding of ecological connectivity and increased tolerance of wildlife 4.2 Self-funded academic partners will conduct relevant and timely corridor research

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

1.1 Conducting community meetings and gender focus groups at 4 new project sites
1.2 Training local elephant monitors to record elephant activity in each village
1.3 Establishing four farmers groups and registering CBOs
1.4 Determining optimal beehive fence configuration through ground surveys
1.5 Constructing beehive fences
1.6 Monitoring and maintenance of beehive fences by farmers' groups
1.7 Monitoring of elephant crop damage by local elephant monitors

2.1 Beekeeping and financial skills training for farmers' groups
2.2 Establishment of VSLAs with farmers' groups and monthly monitoring of progress
2.3 Monitoring beehive occupancy, hive condition and honey yields
2.4 Harvesting, processing and selling of honey
2.5 Developing elephant-friendly honey markets by increasing links with tourism industry an honey retailers
4.6 Training 100 farmers in agroforestry by partner Associazione Mazingira
2.7 Developing and marketing coexistence tourism package in collaboration with tour operators
2.8 Monitoring tourist visitation to coexistence projects

3.1 Ongoing sensitization and discussion meetings in corridor villages
3.2 Formation of Corridor Management Committee involving all stakeholders
3.3 Preparation, finalization and approval by all stakeholders of technical corridor implementation plan
3.4 Physical demarcation and legal gazettement of corridor
3.5 Initiate agroforestry along corridor boundary
3.6 Habitat restoration led by Reforest Africa (planting of indigenous saplings from local school tree nurseries within corridor
3.7 Ongoing fundraising for road and rail underpasses
3.8 Surveillance and patrolling of corridor for habitat and wildlife protection
3.9 Monitoring corridor use by elephants and other wildlife
3.10 Monitoring of elephant use of corridor endpoints via dung surveys

4.1 Conducting community meetings and awareness days about HWC and ecological connectivity 4.2 Environmental education and raising awareness about biodiversity conservation in 10 schools in the corridor area by A.M. 4.3 Monitoring and evaluation of environmental knowledge in schools involved in environmental education program 4.4 Establishment of tree nurseries in 10 local schools for corridor habitat restoration (AM, RA) 4.5 Recruit researchers for studies in beehive fence and corridor project, writing of popular articles with Dr. Nowak 4.6 Updating TZ Wildlife Corridors website an creation of interactive website for U-S Corridor

Annex 3: Standard Measures

Table 1 Project Standard Output Measures

Code No.	Description	Gender of people (if relevant)	Nationality of people (if relevant)	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
Established codes								
5	Training for Local Elephant Monitors	Male	Tanzanian	6	1		7	
6A	Training for Primary and Secondary School Students	Male and Female	Tanzanian	2991	3620		66111	
6A	Training for Community Members (Group Members)	Male and Female	Tanzanian	197				
6A	Training for Community Members (Film Nights)	Male and Female	Tanzanian		2295			
9	Species Habitat Management Plans (HWC Strategy, National Corridor Action Plan			1	1			
14 B	Conferences Attended	Male, Female	British, Dutch	1				

Table 2 Publications

Title	Type (e.g. journals, manual, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available online)

Checklist for submission

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