Illegal Wildlife Trade (IWT) Challenge Fund
Annual Report

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

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

Submission Deadline: 30th April 2023

Submit to: BCF-Reports@niras.com including your project ref in the subject line

1. IWT Challenge Fund Project Information

Project reference	IWT 111
Project title	Reducing IWT through Strengthening Livelihoods and Law Enforcement: Ruaha-Rungwa, Tanzania
Country/ies	Tanzania
Lead Partner	Southern Tanzania Elephant Program
Project partner(s)	Rungwa- Kizigo-Muhesi Game Reserves, MBOMIPA WMA
IWTCF grant value	386,000
Start/end dates of project	1st July 2022 - 31st March 2025
Reporting period (e.g. April 2022-Mar 2023) and number (e.g. Annual Report 1, 2, 3)	Annual Report 1 July 2022-March 2023
Project Leader name	Trevor Jones
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1. Project summary

The Ruaha-Rungwa ecosystem (see appendix C1 for project map) in south-central Tanzania is affected by illegal wildlife trade, especially a recent increase in bushmeat poaching and human-wildlife conflict. This project aims to reduce demand for and occurrence of IWT and reduce poverty by diversifying and developing sustainable livelihoods and strengthening household financial resilience, expanding educational outreach, reducing the costs of living with wildlife and strengthening law enforcement capacity through both tested and novel approaches in two critical zones of the ecosystem (MBOMIPA WMA and Rungwa-Kizigo-Muhesi Game Reserves and adjacent communities. The project aims to reduce IWT for a range of species affected by bushmeat poaching, to continue to guard against a possible resurgence in elephant poaching for ivory, as well as to reduce human-wildlife conflict related to elephants. In 2020-2021, 45% of arrests in MBOMIPA WMA were bushmeat-related. RKM GR data show that bushmeat poaching comprised the second highest number of arrests (Hariohay et al. 2019). Elephants declined by >50% in Ruaha-Rungwa in 2009-2015, and elephant population numbers were stable between 2015 and 2021. Following gains in reducing elephant poaching, a recent increase in poaching incidents and ivory seizures suggests the risk of a resurgence in ivory poaching remains. Studies from the project area have suggested that access to credit and supporting alternative income-generating activities could be an effective way to reduce bushmeat poaching: 96% of poachers

surveyed by Knapp et al. (2017) stated they would discontinue poaching if they received enough income to meet their needs. Human-wildlife conflict erodes household financial resilience, contributes to negative perceptions of protected areas, and reduces incentives for wildlife stewardship. We will reduce reliance on IWT for supplementing household income by facilitating access to safe credit, diversifying livelihoods, and reducing HWC that affects household income sources and household resilience. Research suggests that bushmeat poaching is opportunistic, occurring in conditions of low perceived risk (Ceppi & Nielsen, 2014). The project seeks to increase the opportunity cost for engaging in IWT (by increasing the risk of detection, arrest, and prosecution) by strengthening the law enforcement capacity for Rungwa-Kizigo-Muhesi Game Reserves and MBOMIPA WMA through trials of Instant Detect 2.0 as an early warning system, ground and aerial patrols, and strengthening of post-arrest judicial procedures. See appendix C2 for references cited in this report..

2. Project stakeholders/partners

As planned, our partner Rungwa, Kizigo, Muhesi Game Reserves (RKM GR, managed by Tanzania Wildlife Management Authority), are deploying rangers to conduct HWC response in villages surrounding the Reserves, and are reporting on the outcome of HWC response missions. RKM GR also selected 31 rangers to attend HWC response safety training. RKM GR continue to see the importance of community livelihood diversification for reducing IWT but have limited resources for implementation. RKM GR helped guide selection of sub-villages for implementation of livelihood activities and VSLAs, based on their knowledge of poaching hotspots, and participated in village meetings introducing the project, while STEP is leading the implementation of these activities.The RKM GR Community Outreach Officer participated in community outreach events as planned, as well as in distribution of hives and formation of VSLAs. RKM GR and STEP also conducted joint planning of aerial surveillance missions, provided aerial observers and deployed ranger teams to respond to illegal activities observed. Our second project partner is MBOMIPA Wildlife Management Area (WMA). We held regular project progress review and planning meetings with MBOMIPA leadership and the District Game Officer. Under our MOU with MBOMIPA WMA, we manage protection activities in the WMA, and as planned, MBOMIPA mandates the management of all Village Game Scouts (VGS) to STEP to conduct ground patrols, collect patrol data, and submit patrol reports for project monitoring. We strategically plan patrols and monitor patrol outcomes in collaboration with the WMA Protection Committee. Additionally, we conduct quarterly meetings with this committee to promote accountability, transparency, and collaboration among committee members in ensuring effective engagement and WMA management. MBOMIPA WMA remains committed to field-testing early warning technology in Year 2. They have also committed to providing VGS to conduct HWC response in villages surrounding the WMA and collect data on the outcome of HWC response missions. Furthermore, under a BIOPAMA-funded grant, we have partnered with MBOMIPA WMA and Honeyguide Foundation to strengthen the governance and economic viability of MBOMIPA WMA. To date, this has included governance training for the MBOMIPA WMA leadership and an exchange and learning visit to successful WMAs in Northern Tanzania. Future work will include developing a business plan and communications plan for the WMA, as well as hiring a WMA Manager and Accountant.We used data and reports provided by RKM GR and MBOMIPA WMA to lead the writing of this progress report. We collaborated closely with Lion Landscapes, an NGO focused on human-carnivore conflict mitigation, on large-scale outreach events and football tournaments around MBOMIPA WMA, and we consulted closely with Lion Landscapes on optimal areas for the livelihood activities under the project. We are also collaborating with Pathfinder Foundation, whose focus is on expanding and improving community healthcare services in villages around MBOMIPA WMA. On 26th-27th April 2023, we hosted a delegation from the British High Commission who had the opportunity to discuss the project activities in detail and visit MBOMIPA WMA.

3. Project progress

3.1 Progress in carrying out project Activities

Output 1. 500 community members gain access to safe credit and have more diversified livelihoods to offset illegal wildlife use (bushmeat poaching).

1.1 Conducting orientation and sensitization meetings with partners and at village and sub-village level for the establishment of VSLAs, beekeeping and poultry health interventions. STEP conducted orientation and sensitization meetings in villages adjacent to Rungwa, Kizigo and Muhesi Game Reserves, as planned. Following these meetings, we established 18 new VLSAs, reached 121 households with poultry vaccines and distributed 460 beehives to farmers around the Ruaha-Rungwa Ecosystem (A1, A2, A3, A4). Although we conducted village meetings in villages around MBOMIPA WMA later than originally planned (primarily to allow for informed and coordinated village selection with other partners and stakeholders in the landscape), we have already held meetings with village leaders and groups, and distributed hives to selected groups. The VSLAs and poultry support are underway in villages and around MBOMIPA WMA at the start of the Year 2, and we expect these activities to be fully rolled out by July 2023.

1.2 Establish and train 20 Village Savings and Loan Associations (25 members per VSLA) with 500 members in 10 villages. We formed 18 new Village Savings and Loans Associations (VSLAs) with 426 members (38% women and 69% youth) between July 2022 and March 2023 in the Ruaha-Rungwa Ecosystem (A2, A4). Our team is supporting both the newly formed groups and eight existing groups (202 members, 48% women and 33% youth), and this support includes training, coaching and monitoring throughout the year (A5). The 26 VSLAs combined reach 628 farmers (41% women and 58% youth). While in operation, these groups have raised over TZS 120,000,000 in capital (~£41,377), issued 686 loans and generated more than TZS 17,000,000 (~£5,861) in profit through interest repaid on loans and fines. Group members (those who accessed loans) have used these loans to start new small business enterprises, support existing enterprises, support (and in some cases improve) agricultural operations, pay for medications and other medical expenses, pay for school supplies and fees, and purchase food, livestock or land. In Year 2 our team of local elephant monitors will continue to visit each group once per week, working with groups on record keeping, loan issuing and repayment planning (A6). In 2022, we shifted 15 groups to CHOMOKA, a mobile application developed by Care International that helps group members to manage records, enforce on-time repayments, fine compliance, interest and issuing procedures (for example limiting loan size per individual savings) (A7_Chomoka Dashboard). All but three of the new groups (whose registration remains in process) have been registered at their respective Districts and qualify for loans from the District and other organisations interested in community support (A8). Six groups received soap making training and training in sunflower farming. We have supported each VSLA with at least 10 beehives and planned training. Some VSLAs are running group projects to increase their profits that they will distribute to group members in the next share-out meeting. For example, Mshikamano from Imalampaka purchased three (3) cows and bought peas during the low season (at harvest time) which they hoped to store and sell for profit in the high season (July 2023). Tuinuane from Mpapa village is keeping pigs and expects to sell them between July and October 2023. Another four groups are running soap making projects, with a monthly profit of TZS 120,0000 (~£41).

1.3 Establish poultry health intervention trial with 100 participants in 5 villages. We have worked with our village-based Local Elephant Monitor (LEM) team, Village Agriculture Extension Officers and an Animal Specialist (Elia Msuya) from Animal Trust (a small company offering animal care services and consultation based in Arusha) to distribute the first dose of a Newcastle vaccine (A1). The Animal Specialist trained our team of LEMs (4 in Rungwa and 3 in Doroto) and a local veterinarian on vaccine management (A9). Specifically, he trained them on vaccine transport, quality and assurance checks, chicken health assessment (pre- and post-vaccine), common disease signs and symptoms, and vaccine administration. Through this effort, we have distributed and administered 55 vials of the first Newcastle vaccine to 2,832 chickens in 121 households (all VSLA members) in Rungwa and Doroto villages. 86% of participants had not previously vaccinated their chickens before this trial and the average mortality rate reported between December 2022 and February 2023 was 28% (A1). Our team will manage all of the ongoing poultry vaccine distribution. They will work with trained area veterinarians to distribute a second vaccine to the same households in May 2023. We have designed a simple form in Kobo Collect for our team to use to monitor the total number of chickens per household, their vaccination date and the number that have died from Newcastle disease (A1 shows the data from this form). The aim is to collect and provide farmers with data

to demonstrate the benefit of vaccination and advise them to invest in it after a year (e.g., via a loan from a VSLA) of subsidised support for the vaccine. We also plan to expand this initiative with farmers around MBOMIPA WMA villages in Year 2. We will target group members from villages where we already provide beekeeping support in collaboration with Lion Landscapes and Pathfinder, and will capitalise on valuable lessons learned from our first vaccine distribution trial in Rungwa and Doroto.

1.4 Provide 200 beehives and beekeeping training to 100 beekeepers in 5 villages. In Year 1, we continued to support four existing beekeeping groups (109 members, 46% women, 37% youth), 46 individual farmers (4% women) and expanded our support to the 18 newly formed VSLAs (at least 10 beehives delivered to each, reaching a total of 426 members, 38% women and 69% youth), two village natural resources committees (24 members, 25% women), Itigi District (30 beehives given to a newly-established learning site) and five more newly-formed groups around MBOMIPA (70 members, 14% women) with our beekeeping project. This support includes mentoring the existing groups and individual beekeepers in our trial, providing beekeeping training, and distributing bee suits and beehives to new groups across the Ruaha- Rungwa Ecosystem. To date, we have distributed 460 hives (200 hives around MBOMIPA and 260 hives across Muhesi, Kizigo and Rungwa Game Reserves, including hives funded by the USFWS African Elephant Conservation Fund), procured 13 bee suits and trained 65 community members around MBOMIPA WMA on beekeeping. We have also prepared a plan for the groups to share harvesting bee suits and gear based on their location, distance and harvesting plan. We have designed and timed all of these efforts to optimise the active bee season (February - July, due to availability of food, water and less negative impacts from humidity, weather and natural bee enemies, see Appendix A3 for more details on optimising the beekeeping season). Our village-based LEM team (14 members) supports beekeepers and farmers with close follow-up and training needed. The joint effort keeps us with weekly updates on hive cleaning, repairs and colonisation dates. That gives us the opportunity to help beekeepers with harvest planning (which we are tracking as a key performance indicator). With this data and reference to the 2022 harvest, we expect there will be a good harvest between May and July 2023. We also plan to facilitate in-situ beekeeping harvest training during harvesting season (May-July 2023) aimed to improve quality of bee products. Appendix A10 is an illustration of the type of honey revenue share out system that is typical for our groups. This data is from 2022 before the project period started but we expect a similar harvest given current occupancy levels during the present peak production season.

1.5 Ongoing-capacity-building and monitoring of livelihood interventions by community-based team. We continued to work closely with our seven existing local elephant monitors (LEMs) based in Doroto and Rungwa villages, and recruited seven more LEMs from villages around RKM GR including one each in Mpapa, Nkonko, Simbangulu, Chisingisa and Kitaraka villages respectively and two in Muhanga village (A4). All LEMs are recruited from and based in the communities where we work. We have trained our new hires in VSLA management (including their formation, how to keep records, loan procedure, supervision of compliance, conflict management and how to share weekly reports using CHOMOKA mobile app and Kobo Collect). We also trained LEMs on use of GPS units, monitoring of human-elephant interactions and elephant damage, delivering one-on-one education to farmers and planning household-level film shows and discussions (a new innovation for which we have secured matched funding) (A3, A11, A12). All of this work is to ensure that our community-based team can effectively manage livelihood interventions, understand human-elephant interactions, and improve human safety around elephants. We expect this to contribute to a positive association between humans and elephants in the landscape.

Output 2. Human-wildlife conflict is reduced through improved rapid HWC response by RKM GR and MBOMIPA WMA and increased knowledge among community members.

2.1 Provide vehicle for increasing human-wildlife conflict response capacity to RKM GR, together with training on effective use of vehicles for HWC response. STEP purchased and handed over a vehicle to Muhesi Game Reserve on 14th August 2022 (with matched funding from the USFWS African Elephant Conservation Fund). We also shared training principles on how to use the vehicle during HWC response with the Muhesi Commanding Officer in February 2023, and these principles were reviewed during training with 31 rangers

(see activity 2.3). The principles included priority of vehicle use (between number of activities), linking vehicle use with elephant deterrent tool kits (air-horns, LED torches, chilli crackers and roman candles, see Activity 2.3) and safety action while deterring elephants away from farms or settlements. Via matched funding, STEP rehabilitated a vehicle for Kizigo Game Reserve to use for both HWC response and law enforcement patrols (A13).

2.2 Enable HWC response by MBOMIPA VGS and RKM GR Rangers through fuel provision. In Year 1, a total of 8,166 litres of fuel (including via matched funding) were provided to the MBOMIPA WMA and RKM GR for human-wildlife conflict response, community outreach, and law enforcement patrols. Rungwa Game Reserve rangers responded to 36 HWC incidents across 8 villages. Kizigo Game Reserve responded to 52 HWC incidents (mostly involving elephants). Muhesi Game Reserve responded to 12 HWC incidents, all involving elephants (B1-3). Muhesi GR also conducted community outreach, reaching 1,378 community members. STEP is in the process of finalising details of VGS HWC support planning, training and resource allocations through a MBOMIPA WMA HWC response and operations plan. We have consulted Honeyguide Foundation for training support including design, plan and facilitation. The training will be conducted between May and July 2023.

2.3 Train 32 RKM Rangers and 16 MBOMIPA VGS in safety around elephants and more effective elephant deterrent techniques. STEP trained 31 rangers (10 from Muhesi Game Reserve, 10 from Kizigo and 11 from Rungwa; 4 women [13%]) on effective elephant deterrent methods (A14-A16). Our training included the use of an HEC elephant deterrent toolkit (a Honeyguide Foundation design) which the community and VGS around Randilen, Mburunge and Makame WMA in northern Tanzania have used since 2017. The toolkit includes sequential use of LED torches, air-horns, chilli crackers and roman candles, with each subsequent step representing an escalation to be deployed only if the previous step did not deter the elephant(s). Toolkit supplies were handed over to ranger teams at Rungwa, Kizigo and Muhesi Game Reserves in February 2023 (A17). Our initial M&E collects data on where the tool kit was deployed, at which point the elephants were intercepted (before entering the farm area or driven away once in the farmland), the area damaged (as a percentage of the total farm) and which tools in the tool kit were deployed (A18). In Year 2, our analysis will focus on determining the efficacy of this tool kit by assessing whether communities surrounding RKM GR have seen an improvement in response since the training as well as measuring what percent of rangers feel safer and better prepared for HWC response as a result of training. In Year 2 (May 2023), we plan to conduct advanced training for 30 rangers from RKM GR (and an additional 12 rangers from Ruaha National Park on elephant ecology and safety around elephants with the Kichaka Environment Expedition Program (KEEP). Building on the use of HEC tool kit training, we aim to link it with elephant behaviour to improve the rangers' capacity to support farmers with protection of their life and property and plan to measure knowledge retention of key training concepts (A19).

2.4 Local Elephant Monitors conduct one-on-one training for 3000 community members at home and at farms on elephant behaviour and safety around elephants. Our team of 14 LEMs were equipped to deliver one-on-one farmer training that is focused on staying safe around elephants. Our team gives this training when they visit farmers at their home or farms and they engage in discussion while they collect data on elephant movement and damage within village land (A11-A12). They also show short films about animal behaviour (carnivores and elephants), ecology and behaviour of wildlife, and safety around potentially dangerous animals using tablets (A4). They share these films at home and target youth and women who miss opportunities to come to our larger community events (because of household or livestock keeping roles they play) like Tembo Cup and film nights. Between July 2022 and March 2023, our team has reached 1,626 farmers (31% women) through these two forms of customised educational engagement.

2.5 Conduct wide-scale education and outreach programs (Tembo Cup Football Tournament). As planned, we conducted four Tembo Cups in Year 1 in the villages around Muhesi Game Reserve, Rungwa Game Reserve, Kizigo Game Reserve and MBOMIPA WMA (A20). Over the four years that we have operated the Tembo Cup ("Elephant Cup"), we have developed a robust management process that begins with ensuring that all teams understand the terms and conditions associated with the tournament (A21). At these tournaments our team

reached an estimated 45,000 community members, including ~26,306 football spectators (reached through small group discussions before, during and after matches). On the same day we trained ~5,234 students in seventeen schools and ~12,218 attendees during film screenings held after the matches. We also distributed more than 5,000 fliers (A22) and copies of our human-elephant coexistence booklet, “Tembo na Watu” (“Elephants and People”). We use small group discussions to expand community understanding of human-elephant interaction (causes, impacts and its management) and to offer a forum for questions and discussion. We plan to conduct follow up on key concepts of safety around elephants in the coming months (to assess knowledge retention over time). Training in schools aims to build love and empathy for animals and to prepare pupils as future decision makers. Film screenings aim to strengthen what was discussed in schools and in small group discussions, as well as offering a safe and fun environment to observe elephants, carnivores and to learn more about their behaviour.

Output 3. Novel Instant Detect conservation technology is field-tested and its efficacy, viability and potential for scaling as an early warning system is assessed. The first phase of trialling the Instant Detect 2.0 system was planned to start in Q3 of Year 1. Despite assurances from the developer of this technology (Zoological Society of London) at the time of proposal development that the system would be available for us to field-test from Year 1 of the project, ZSL’s suppliers were unable to deliver the system in Year 1 due to a backlog of orders from the Covid-19 pandemic. This has resulted in delays to all activities planned under output 3. As the timeline for Instant Detect 2.0 delivery remains unclear, STEP has identified an alternative, similar technology (TrailGuard, a similar camera-based alert system) for us to field-test beginning in Year 2. TrailGuard has the advantage of being compatible with EarthRanger, which STEP is also rolling out with MBOMIPA WMA. We remain open to field-testing Instant Detect 2.0 once it becomes available, but we feel that, to minimise the risk to the project from further delays, it is prudent for us to field-test alternative, comparable technology. We are still waiting for confirmation on delivery timelines from TrailGuard, and we will submit a change request to the IWT Challenge Fund as soon as we have final confirmation.

3.1 Train 6 MBOMIPA VGS (2 women) in Instant Detect deployment, operation, monitoring and response. Due to delays outlined above, this was not done in Year 1, postponed to Year 2. Training will focus on operation of the alternative TrailGuard system. VGS participants for the training (2 women) have already been selected.

3.2 Deploy and monitor Instant Detect 2.0 system and set up Control Room for Phase 1 of field trial (operationalization). Due to delays outlined above, this was not done in Year 1. Phase 1 of the trial is postponed with the TrailGuard system for Year 2. Preparations for the control room have been made in Year 1, including planning for and development of the EarthRanger system for MBOMIPA WMA (which is compatible with TrailGuard), and installation of satellite internet to facilitate the transmission of alerts from remotely deployed cameras to the control room, and installation of radio communications to facilitate VGS coordination. We will determine in Year 2 if we can reduce the duration of phase 1 of the trial (originally planned to be 6 months), to reduce the impact of these delays.

3.3 Deploy and monitor Instant Detect 2.0 system for Phase 2 of field trial (efficacy, viability, VGS mobilisation). Not commenced in Q4 of Year 1 as originally planned; postponed to Year 2. We will determine in Year 2 if we can reduce the duration of phase 1 of the trial (originally planned to be 6 months), and move to phase 2 more quickly than originally planned.

3.4 Produce Instant Detect 2.0 efficacy and viability assessment report and, if trial successful, Standard Operating Procedures for MBOMIPA WMA. Planned for Year 3. Due to uncertainty around delivery timelines for Instant Detect 2.0, STEP will instead produce an efficacy and viability assessment report for a trial of the TrailGuard system. If the trial is successful, STEP will develop Standard Operating Procedures for MBOMIPA WMA to ensure that the system is implemented effectively.

Output 4. Capacity for aerial surveillance and strategic ground patrol is strengthened and the professionalism of RKM GR rangers and MBOMIPA VGS is enhanced.

While STEP’s new aircraft arrived in Tanzania on schedule in August 2022, progress towards Output 4 was affected by pilot and aircraft licensing delays at the Tanzania Civil Aviation

Authority (TCAA). After a two-month period in which we waited for a TCAA inspector to inspect the aircraft, The Certificate of Airworthiness was finally issued by the TCAA in late October 2022. Our South African expert pilot also went through the procedure of acquiring his Tanzanian licence, as Tanzania does not recognize licences from other countries for pilots operating Tanzanian-registered aircraft. Due to rule changes to General Flying Tests (outlined in the half-year report), we experienced further delays in obtaining the pilot's Tanzanian licence. The pilot finally obtained his licence in December 2022, enabling us to resume aerial surveillance in that month (2 months behind our original schedule).

4.1 Train 5 RKM GR rangers and 2 MBOMIPA VGS (2 women) to become aerial observers. We were unable to conduct this training in Year 1 as originally planned. As we experienced delays with pilot licensing and plane registration (outlined above), we prioritised working with two previously trained aerial observers (one from RKM GR, and from TAWA based in Iringa), to ensure that we could conduct as many hours of aerial surveillance as possible in the remaining months of Year 1 (Activity 4.2). The training for these new observers will be conducted during the dry season in 2023 during an extensive aerial mission (June to September 2023). Training materials have already been prepared and candidates from MBOMIPA WMA have been selected.

4.2 Conduct 60 hours of aerial surveillance per year in coordination with rapid response ranger and VGS ground teams. Despite experiencing delays related to Tanzanian aviation regulatory requirements (as outlined above), we were able to complete 56.4 hours of aerial surveillance, almost meeting our target of 60 hours in Year 1. Aerial patrols were conducted in coordination with ground response team and observers from MBOMIPA Wildlife Management Area (MBOMIPA WMA), Rungwa, Kizigo and Muhesi Game Reserves (RKM GRs) and Lunda-Mkwambi Game Controlled Area (Lunda Mkwambi GCA). The pilot and observer team recorded 6 active timber cutting sites in RKM GRs (resulting in arrest of 2 suspects), 11 illegal settlements with livestock in Lunda-Mkwambi GCA (these sightings were reported to TAWA, who manage the CGA), active bushmeat camps in MBOMIPA WMA (resulting in arrest of 2 suspects). Aerial patrols also highlighted several poacher trails leading to Ruaha National Park from the WMA. The location of these trails were shared with Ruaha National Park, and subsequently surveillance of these trails using regular camera traps was begun by MBOMIPA VGS resulting in photos of suspects that were shared with the Park intelligence team. In addition, 80 sightings of elephants (approx. 380 individuals) were observed on aerial patrols in areas with many timber cutting sites and poachers' camps. We highlighted these concerns to RKM GR managers and MBOMIPA WMA and also increased VGS patrols in this area of the WMA, resulting in the arrest of an elephant poacher and three muzzleloaders (B4-6).

4.3 Enable 23 days of strategic patrols by 4 Village Game Scout teams every month in MBOMIPA WMA. This activity was fully implemented as planned. In Year 1, the Village Game Scouts (VGS) of MBOMIPA WMA conducted a total of 599 days of foot patrols, covering a distance of 8051.47 km, and 164 days of vehicle patrols, covering a distance of 8579.61 km. (see also B10). VGS apprehended a total of 13 suspects (54% for bushmeat, 8% for ivory) in Year 1, including an elephant poacher from whom they confiscated 2 tusks and 3 muzzle loaders. VGS recovered 4 additional tusks from elephants killed due to conflict, thereby preventing these tusks from entering the illegal ivory trade..

4.4 Train 8 MBOMIPA VGS (3 women) in basic tactical anti-poaching skills with PAMS Foundation. We were unable to conduct this training in Q4 or Year 1 as originally planned, due to a trainer at PAMS Foundation not being available in that quarter. We have rescheduled the training to Year 2. We have confirmed that PAMS Foundation can accommodate 8 VGS for training in June-July 2023.

4.5 Generate ground and aerial patrol maps and trend analysis reports for protected area managers. We generated maps and ground patrol reports as planned (36 maps and 9 reports between July 2022 and March 2023) for MBOMIPA WMA managers. From aerial patrols conducted in Year 1, we generated 3 reports and maps that highlighted key wildlife sightings and illegal activities detected during the aerial patrols, which were then shared with the respective protected area management. (B4-B6, B8)

4.6 Conduct refresher training for 39 VGS and 14 RKM GR rangers in human rights, just arrest and post-arrest procedures. Partially completed in Year 1. In Q2 of Year 1, STEP facilitated the signing of contracts between 39 VGS and MBOMIPA WMA, during which all VGS were taken through, reviewed, and signed a code of conduct that included detailed expectations on respect for human rights and just arrest and post-arrest procedures. However, we plan to conduct further formal training with all VGS and 14 RKM rangers in Q1 and Q2 of Year 2 with content and a trainer that we have used for such trainings with rangers in the past (e.g., with Tanzania Forestry Agency Services), to ensure that in the course of performing their duties, rangers and VGS can communicate respectfully with individuals, make lawful arrests, and detain individuals while respecting their rights, which ultimately helps to maintain public trust and support for the essential work of rangers in protecting natural resources and wildlife.

4.7 Support MBOMIPA WMA VGS to provide witness testimony in court cases. In Year 1, the Iringa Magistrate Court opened five cases related to bushmeat in MBOMIPA WMA, and the project supported MBOMIPA VGS to testify in three court hearings in October 2022, February 2023, and March 2023 (B9). These hearings were related to the following three cases from MBOMIPA WMA: 1) a suspect charged with unlawful possession of giraffe meat valued at $15,000 and Greater Kudu meat valued at $2200, and unlawful possession of a loaded muzzleloader firearm and 80 rounds of ammunition, without a licence or permit; 2) a suspect charged with unlawful possession of two elephant tusks and elephant meat (valued at $15,219 each) and possession of a loaded muzzleloader firearm without a licence or permit; 3) a suspect charged with unlawful possession of warthog meat valued at $953, impala meat valued at $413, guinea fowl valued at $159, and eighteen doves valued at $3,706.

3.2 Progress towards project Outputs

2. 500 community members gain access to safe credit and have more diversified livelihoods to offset illegal wildlife use (bushmeat poaching)

In Year 1, we established 18 new VSLAs providing 426 community members (38% women and 69% youth) with access to safe credit (baseline was 8 VSLAs, with 202 members). VSLA members also take part in beekeeping (each VSLA has minimum 10 hives) and in other income-generating activities of their own choosing and design, as discussed in activity 1.2. Through the poultry vaccine distribution trial, the chickens of 121 people (55% women) received the first dose of Newcastle vaccine. We are on track to achieve this output, though we will have to monitor to what extent this diversification of livelihoods helps to offset illegal wildlife use. Most of the indicators for this output will be assessed in Year 2 and Year 3, and Year 1 baselines are being finalised and will be shared off-cycle.

3. Human-wildlife conflict is reduced through improved rapid HWC response by RKM GR and MBOMIPA WMA and increased knowledge among community members.

Around RKM GR, Muhesi GR has received used Landcruiser pickup (via matched funding), Kizigo GR has rehabilitated a vehicle with repair support (via matched funding), all three GRs have received sets of HEC tool kits (LED torches, air-horns, chilli crackers and roman candles), and 31 rangers (13% women) have been trained on use of the HEC toolkit and are supporting farmers with responding to HWC incidents based on reports they receive. 30 of 31 trained RKM rangers will also receive training in elephant behaviour, safety around elephants, and situational awareness in May 2023. In Year 2, we have plans to customise an existing STEP vehicle for MBOMIPA VGS to conduct HWC response within villages bordering the MBOMIPA WMA. Training for MBOMIPA VGS in use of the toolkit is planned for early in Year 2. In Year 1, we reached 45,000 community members through large-scale outreach events as well as 1,626 people (31% women) through one-on-one training and household-level film screenings. We are on track to achieve this output. Most of the indicators for this output will be assessed in Year 2 and Year 3, and Year 1 baselines are being finalised and will be shared off-cycle.

4. Novel Instant Detect conservation technology is field-tested and its efficacy, viability and potential for scaling as an early warning system is assessed.

The baseline condition was that the Instant Detect 2.0 conservation technology was not used or field-tested in MBOMIPA WMA. The project's original aim was to field-test this system and assess

its efficacy, viability, and potential for scaling as an early warning system. Despite assurances at the time of proposal development that the system would be available, ZSL, the developers of the system, faced delays from their suppliers, and were unable to deliver the system in Year 1, and uncertainty around delivery timelines remains. While we remain open to testing Instant Detect 2.0 when it becomes available, we have identified an alternative, similar technology (TrailGuard) that we plan to field-test beginning in Year 2, with an initial operationalization phase (Phase 1, 4-6 months), followed by Phase 2 in which we plan to assess efficacy, viability, and assess its value for VGS mobilisation. While these delays experienced in Year 1 mean that we have less time for Phase 2 (originally planned to be 18 months), in the remaining time, Phase 2 can still last for a minimum of 12 months. Therefore, we feel we can still achieve this output by project end, albeit for a different but comparable early-warning technology.

5. **Capacity for aerial surveillance and strategic ground patrols is strengthened and the professionalism of RKM GR rangers and MBOMIPA VGS is enhanced.**

VGS foot patrol effort (measured as effective person-parol days) in MBOMIPA WMA has increased by 23% in Year 1 of the project (1,498.6 effective person-patrol days) relative to the pre-project baseline (Jul 2021 - Mar 2022, 1217.7 effective person-patrol days) (B10). We have not yet seen the increase in spatial extent of patrol coverage of MBOMIPA WMA that we had hoped (34% of MBOMIPA WMA was covered in Year 1 relative to 33% of MBOMIPA WMA covered in 2021, though the baseline is for 12 months while the measure for Year 1 is 9 months). This has been noted as an area for improvement, and will be addressed by increasing mobile camping patrols in Years 2 and 3. Despite delays resulting with plane and pilot licensing, we were close to meeting our target of 60 hours of aerial surveillance Year 1 (56.4 hours conducted). We were able to expand coverage of aerial patrols in MBOMIPA WMA to 94% of the WMA (baseline, 2020: 82%); but not yet to increase coverage for RKM GR in Year 1 (31% of the Reserves covered relative to target of 40%, and baseline of 49% coverage in 2020, B4-B6). Thanks to the significant groundwork done in Year 1, we are confident about meeting our Year 2 targets for aerial surveillance hours and coverage. Capacity for responding to observations made on aerial patrols has been maintained in RKM GR and strengthened in MBOMIPA WMA relative to previous years, especially thanks to radio communications, as 25% of aerial patrols resulted in same-day VGS mobilizations (baseline, 2020: 0%), and 60% of aerial patrols resulted in same-day ranger mobilizations in RKM GR (baseline, 2020: 63%). Information from aerial patrols resulted in the arrest of 4 poachers and provided valuable information for subsequent VGS and ranger patrols. While some trainings originally planned for Year 1 have been delayed to Year 2, we were able to utilise existing capacity in Year 1 (e.g., previously trained aerial observers) to minimise the impact of these delays, and the project will benefit from an increase in skills among RKM rangers and VGS in Year 2. In addition, the professionalism of VGS is evident from the fact that 100% of suspects apprehended in the WMA attested that they were treated fairly and that their rights were respected during the arrest and post-arrest procedures (B11). VGS also provided witness testimony in all bushmeat- and ivory-related court hearings that were held in Year 1 (B9). Despite some delays, we feel we are still on track to achieve this output by project end.

3.2 Progress towards the project Outcome

The project outcome is that livelihood diversification, reduction of human-wildlife conflict and strengthening of law enforcement capacity result in a reduction in bushmeat poaching, increase household resilience and begin to improve community perceptions of PAs. We comment on each of the outcome indicators below.

0.1 Reduction in detection rate of illegal activities (disaggregated by type, e.g. bushmeat, and protected area) on ground patrols (Baseline: to be established by 2021-2022 data, target 15% reduction in Year 2, 30% in Year 3). We are using a diversity of indicators to measure trends in illegal activities, as the trend in the detection rate of illegal activities on ground patrols alone may not provide a complete picture of trends. Evidence for all indicators below is in Part 1 of B7. To monitor trends in elephant poaching and ivory trade, we are measuring the following indicators:

- The number of elephant carcassed encountered and percentage due to poaching and conflict in and around MBOMIPA WMA. Baseline: In 2021, 7 elephant carcasses were

encountered by VGS in MBOMIPA WMA and adjacent village land, of which 86% were attributed to ivory poaching and 0% to conflict (In 2020, 2 carcasses, 100% due to conflict). Year 1: In 2022, 12 elephant carcasses were encountered by VGS, of which 75% were attributed to ivory poaching and 17% to conflict. As Ruaha-Rungwa is a MIKE site, we are also using data on the Proportion of Illegally Killed Elephants from the MIKE database to monitor ecosystem-level trends.

- The number of ivory seizures, number of tusks and ivory pieces seized in Iringa and Mbeya regions, all of which have shown an increase in 2022 relative to 2019-2021 (see B7 for detailed trends).

To monitor trends in bushmeat poaching, we are also measuring the following indicators:

- Bushmeat poacher encounter rates on VGS patrols in MBOMIPA WMA: 0.0035 bushmeat poachers per effective person-patrol day in 2021, 0.0039 bushmeat poachers per effective person-patrol day in 2022 (11% increase).
- Bushmeat poaching camps encounter rates in MBOMIPA WMA: 0.0339 camps per effective person-patrol day in 2021, 0.0246 camp per effective person-patrol day in 2022 (27% decrease).
- Percentage of suspects apprehended in MBOMIPA WMA that are bushmeat-related. Baseline: In 2021, 22% of suspects apprehended in the WMA (n=9) were bushmeat-related (67% in 2020, n=15 arrests). Year 1: In 2022, 44% of suspects apprehended in the WMA (n=9) were bushmeat-related.
- Encounter rates of carcasses of 5 key species targeted for bushmeat. Baseline: 0.0065 carcasses per effective person-patrol days in 2021 (In 2020, encounter rate was 0.0093). Year 1: 0.0055 carcasses per effective person-patrol days in 2022.

In addition, a database on bushmeat seizures in Iringa and Mbeya regions is under development; this will provide complementary evidence on trends in the number and size of seizures, and key wildlife species involved. Combined, we are seeing evidence of an increase in elephant poaching in MBOMIPA WMA in 2021 and 2022, though not yet in RKM GR, while bushmeat poaching in MBOMIPA WMA appears to have been higher in 2022 than in 2021. Our target is a 15% reduction in Year 2 relative to 2021-2022, and a 30% reduction in Year 3; as such, we did not yet expect a reduction in Year 1 relative to pre-project baselines. Tackling the increase in elephant poaching requires effective, coordinated efforts from a range of law enforcement authorities, and to this end we have held meetings to initiate a coordinated response and facilitate greater information sharing. We will also continue to monitor trends closely, and adaptively adjust patrol techniques, effort, and coverage. As we begin to field-test early-warning technology in Year 2, we hope this will also help to increase the risk of detection and provide some deterrent effect.

0.2 Reduction in the detection rate of illegal activities (disaggregated by type, e.g. bushmeat, and protected area) on aerial patrols (Baseline: to be established by 2021-2022 data, target 15% reduction in Year 2, 30% in Year 3). For evidence, see Part 2 in B7. RKM GR: poacher camp encounter rates were 0.784 camps per flight hour in 2021, and 0.207 in Year 1 Q4; timber cutting site encounter rates were 0.825 sites per flight hour in 2021, and 0.155 in Year 1 Q4; elephant carcass encounter rates were 0 carcasses per flight hour in 2021, and 0 in Year 1 Q4. MBOMIPA WMA and Lunda-Nkwambi GCA: poacher camp encounter rates were 0 camps per flight hour in 2022, and 0.115 in Year 1 Q4; timber cutting site encounter rates were 0 sites per flight hour in 2022, and 0.115 in Year 1 Q4; elephant carcass encounter rates were 0.111 carcasses per flight hour in 2022, and 0.805 in Year 1 Q4. Aerial patrol data thus indicate a decline in illegal activity encounter rates in RKM GR and a slight increase in illegal activity encounter rates in MBOMIPA (particularly for elephant carcasses) in 2023 relative to previous years, however these results are based on only the first quarter of 2023, and continued monitoring into 2023 is necessary to determine whether these trends continue.

03. Percentage of engaged beneficiaries who report being able to address the majority of acute household needs through VSLA loans and/or other livelihood activity (Baseline to be established in Year 1). Our work in Year 1 has focused on establishing new VSLAs and equipping VLSAs with additional livelihood activities, including beehives, beekeeping training, poultry vaccines and poultry vaccine administration training. We are currently collecting

baseline data to establish to what degree communities are able to address acute household needs. We will send a baseline assessment report once this collection and analysis are complete to establish a Year 1 baseline. However, we know from previous work in the RKM landscape that 54% of loans are used to support either new or existing small businesses, 15% of loans used for farming activities, 11% of loans used for house improvement, 7% of loans used for education, 5% of loans used for food, 3% of loans used for medication and 2% of loans invested back to VSLAs in the form of share purchases and saving. Investment in small businesses and agricultural activities generate additional revenue for households, allowing families flexibility to meet their needs.

0.4 Percentage of engaged beneficiaries who retain at least 50% of their crops for sale or consumption at high price periods due to income from poultry farming, beekeeping and access to credit from VSLAs (Baseline to be established in Year 1, 50% in Y3). Baseline data are being collected now.

0.5 Engaged households show increased resilience as measured by custom resilience index (ARSSI, Index of Social Capital, RIMA) from Baseline to Year 3. Baseline data is being collected now. We will use a combination of RIMA, the Basic Necessities Survey (Detoeuf, D., Wieland, M. and Wilkie, D. 2018. Guide 2.0 to the modified Basic Necessities Survey: Why and how to conduct digital-based BNS in conservation landscapes. WCS, New York, USA) and a customised landscape dependency index to develop a resilience picture of the landscape.

0.6 Reduction in human deaths and injuries and elephant mortalities in the landscape due to human-elephant conflict (Baseline 2021): 4 human deaths (Simbangulu (1), Ilangali (1), Doroto (1), Manyoni (1) villages), 4 human injuries (Simbangulu (1), Doroto (2), Ilangali (1), villages), 2 elephant mortalities due to conflict (Simbangulu (2)). In 2022, there were 6 human deaths (Simbangulu 2, Rulanga 3, Kazikazi 1); 3 human injuries (Simbagulu 1, Damwelu 1, Ilangali 1) and 5 elephant mortalities (Mpapa 1, Simbangulu 2, and Ilangali 2). Most of these incidents occurred in either our newer project villages (e.g., Mpapa and Simbangulu villages) or areas close to our new project villages (Ilangali, Rulanga, Kazikazi and Damwelu villages). So far in 2023, 1 human death has occurred in Doroto, and 2 elephants (calves) have died in village wells. As outlined in Output 2 above, In Year 1 we have reached 45,000 people via our large-scale annual Tembo Cup football tournament at which we focus on simple ways to stay safe around elephants. We also focus on safety around elephants in our school training and our 1:1 training, conducted by LEMs. However, at the Tembo Cup, 40% of respondents still think it is always a good idea to run away from elephants, even though elephant speeds can reach up to 40 kilometres per hour (much faster than a human), indicating that more information and explanation is required.

0.7 Percentage of surveyed community members around RKM GR who value improvement in HWC response and state there has been an improvement in RKM GR HWC response between pre-project and Year 2. As outlined in Output 2 above, in Year 1 we have improved vehicle access in two of the three GRs in the RKM Landscape, equipped 31 rangers with HEC Tool Kits and Training and plan to conduct advanced training for rangers in May 2023. We hope this will have a positive impact on the ability of RKM to respond to HWC incidents. Baseline data about HWC response specifically is being collected now but we know from the Tembo Cup in 2022 that communities have a limited understanding of the benefits provided by RKM GR. Only 50% of respondents knew that RKM GR shared revenue with communities and 37% of respondents who had never been to a Tembo Cup tournament thought that RKM GR brought them more harm than good.

3.3 Monitoring of assumptions

Assumption 0.1: Limited access to safe and reliable credit is a driver of bushmeat poaching.
Comment: Being assessed in baseline survey; best available evidence from previous studies of drivers of bushmeat (Knapp et al., 2017) suggest this likely holds true.

Assumption 0.2 Beneficiaries will reduce reliance on bushmeat and move away from IWT.
Comment: We will attempt to assess this in the baseline and endline surveys through asking indirectly about bushmeat consumption before and after household-level interventions.

Assumption 0.3 Increasing detection of bushmeat poaching and arrests of poachers will effectively deter poaching. Comment: MBOMIPA VGS have observed that due to increased risk of detection in MBOMIPA WMA, there may be a shift to increased use of Ruaha National Park instead. We have discussed these concerns with the Park and Park rangers and VGS are doing more joint patrols as a result. However, this project does not rely solely on increasing the risk of detection and arrest alone, and also aims to address some of the underlying issues that contribute to poaching, including poverty and lack of alternative livelihoods (Knapp et al., 2017). Therefore, while increasing detection and arrests is one component of the project, we are also working to enhance community engagement, education, and to develop alternative livelihoods, for a more comprehensive approach to address the root causes of bushmeat poaching.

Assumption 0.4: Improvement in HWC response will contribute to more positive community perceptions of RKM GR. Comment: To date, anecdotal community feedback is that the use of HEC toolkit by trained rangers has been helpful, and they perceive the roman candle element of the toolkit to be most effective (after a roman candle is deployed, farmers say elephants stay away for a few days).

Assumption 1.1: With targeted and sensitive outreach and tailored training, people engaged in IWT, women and youth will be interested to join VSLAs and engage in beekeeping and poultry trials, take on leadership positions within VSLAs and actively adopt and maintain these livelihood activities. Comment: So far, of 426 new VSLAs members, 38% are women and 69% are youth. In the newly established VSLAs, 35% of leadership positions are held by women. Also, out of 121 households engaged with poultry vaccines, in 55% of households, poultry is a female livelihood activity.

Assumption 1.2: Poultry vaccine supply chains are sufficiently robust to support affordable vaccine purchase. Comment: Our first distribution relied on medicine purchased from a central supplier (affiliated with the government) in Arusha. While far from our trial location, it is relatively easy to coordinate safe delivery of the medicine for future distributions. We continue to explore more local options but have to keep in mind standards of quality and cold chain storage.

Assumption 1.3 Extreme weather events (e.g., drought) do not affect the viability of beekeeping Comment: So far occupancy levels are high in Q1 2023 after a *slightly* lower than average rainy season.

Assumption 1.4: Agricultural inputs constitute a significant expense for families. Comment: It remains true that agricultural inputs constitute a significant expense for families, though our VSLAs records show that members are taking more loans for uses other than agriculture (e.g., small business), in part due to the unpredictability of a return on inputs into agriculture (i.e., concerns about unpredictable rainfall patterns).

Assumption 2.1: RKM GR and MBOMIPA WMA continue to allocate resources to HWC Response and to prioritise rapid response. Comment: MBOMIPA WMA is committed to dedicating VGS for HWC response, but rely on external funding. RKM GR is open to prioritising additional resources if they see the impact of this work under the current level of support. We will collect data to help RKM GR measure both the effectiveness of this response and to what extent it helps to improve their relationship with communities (which we expect to be an important benefit/impact).

Assumption 2.2: Provision of targeted training and elephant deterrent toolkits will help rangers feel they are better prepared to conduct HWC response. Comment: With the training, rangers feel they are better prepared with skills. However, rangers have identified challenges including distances to village locations, the distribution of farms and households in the landscapes, accessibility issues, and the high number of incidences during the peak crop raiding season. We are working to help GRs to develop a ranger response framework that could improve their efficiency and effectiveness, and to address some of these challenges.

Assumption 3.1 The Instant Detect system is available by the manufacturer's stated release date. This second release of the Instant Detect System has resolved technical issues experienced during the first release of the system. Comment: This assumption did not hold

true, as the Instant detect system could not be delivered in year 1 of the project. We are therefore planning to switch to alternative, comparable technology (TrailGuard).

Assumption 3.2: The Instant Detect System can be protected against theft and environmental damage (eg flooding, fire) through careful deployment. Comment: The proposed TrailGuard alternative uses small, lightweight cameras that are easy to conceal, making them difficult to detect and remove. In addition, they are equipped with advanced security features, including password protection and tamper-proof enclosures, which help prevent unauthorised access and use. This assumption will be reviewed during field-testing.

Assumption 3.3: Following intensive training, VGS will be able to use the acquired skills and knowledge to deploy and monitor the system with minimum supervision. Comment: Assuming that the VGS receive intensive training on the TrailGuard system, it remains reasonable to expect that they will be able to use the system effectively and with a minimum amount of supervision. TrailGuard has a user-friendly interface that can be accessed and controlled via a smartphone or other mobile device.

Assumption 3.4: The satellite internet connection for transmitting Instant Detect alerts to the Control Room is fast and reliable. Comment: We have already installed and tested the satellite-linked internet at one of the VGS posts in MBOMIPA WMA, and the internet has been fast and reliable. We will review this assumption again during field-testing of TrailGuard.

Assumption 4.1: We assume that the new aircraft will operate issue-free with only minor maintenance requirements. Comment: Our pilot team is monitoring the performance of the aircraft closely to ensure that any issues are addressed promptly and that the aircraft remains operational. Regular maintenance and monitoring help to prevent small issues from becoming larger problems and can help to ensure that the equipment operates as intended and issue-free with only minor maintenance requirements. This assumption holds true to date.

Assumption 4.2: STEP will be able to maintain its established and trusted relationships with RKM GR and MBOMIPA leadership. Comment: This assumption holds true. STEP has a Memorandum of Understanding with MBOMIPA WMA, and our MOU with Tanzania Wildlife Authority, which manages RKM GR, is in renewal (TAWA have committed to extending this MOU with STEP). These agreements form the basis of our work, ensuring that our efforts are aligned with the current needs and challenges of the two protected areas. STEP, RKM GR, and MBOMIPA WMA leadership are aligned on project priorities, continue to communicate regularly about project progress, and retain flexibility as and where needed.

3.4 Impact: achievement of positive impact on illegal wildlife trade and poverty reduction

The proposed impact of this project is that reduction in IWT and HWC will increase security of Ruaha-Rungwa, enable recovery of wildlife populations, improve community perceptions of and benefits from protected areas and result in economically resilient communities. The activities in this project are intended to approach IWT (and HWC) from a holistic perspective of both drivers and enforcement. By simultaneously building up alternative livelihoods for communities and increasing knowledge of safety around elephants while also increasing the risk associated with bushmeat poaching through increasing enforcement potential, capacity and follow through, the project aims to build a foundation that will support communities to rely less on IWT. Capacity building for faster, more effective HWC response by protected area staff will hopefully reduce the cost of living with wildlife and will improve community perceptions of protected areas, perhaps impacting cooperation leading to increased IWT detection. Livelihood diversification and reduction of HWC will strengthen household economic resilience, expanding communities' options for responding to economic challenges. As outlined above in Project Progress for Output 1 and below in Section 6, 628 farmers have been engaged in VSLA projects in the landscape (426 during the project period, 202 in existing groups), 121 households have received poultry vaccines (86% of whom have never vaccinated their chickens previously despite a mortality rate of 28%) and >460 beehives have been distributed to existing and new groups to enable more sustainable beekeeping. We have also constructed eight improved food stores (with matched funding), reached more than 45,000 community members with training on safety around elephants, trained rangers in the RKM ecosystem on more effective elephant

deterrence and increased their capacity for HWC response through vehicle provision and distributing HEC Toolkit equipment. The project also aims to increase security for the WMA in the long-term by increasing law enforcement capacity, deploying early warning systems, expanding ground and aerial patrols, and strengthening post-arrest judicial procedures to increase the risk of detection, arrest, and prosecution, such that bushmeat poaching will not be seen as a risk worth taking. In Year 1, we have started to expand this capacity, and we hope to see a reduction in illegal activity in Years 2 and 3 (we did not yet expect a reduction in Year 1 relative to pre-project baselines). We are seeing evidence of an increase in elephant poaching in MBOMIPA WMA in 2021 and 2022, and bushmeat poaching in MBOMIPA WMA appears to have been higher in 2022 than in 2021; as such, security for the WMA has not yet improved. Our observations of these trends have been shared with our partners and other law enforcement and conservation stakeholders, and this may help to prioritise and generate additional resources at a national level. In RKM, aerial patrols have increased the information that protected area staff and managers can use for detection and response, leading to the arrest of two suspects in active timber cutting sites and new information about the proximity of elephants to timber cutting and poachers' camps, resulting in the arrest of an elephant poacher and confiscation of weapons in Year 1. Another long-term impact anticipated from the project is recovery of wildlife populations, especially for those species targeted by bushmeat and ivory poaching. While it is too early to assess the project's impact on population trends, section 5 provides an overview of pre-project and Year 1 trends in the populations of focal species. Of the six focal species, two have experienced population declines in recent years, two are stable, and two are stable or increasing. Through a two-year BIOPAMA-funded grant we have partnered with Honeyguide Foundation to enhance the economic viability of MBOMIPA WMA, and improve the WMA's governance, management, and communications, which we hope will enable communities to derive greater benefits from conservation and lead to more positive perceptions of protected areas and wildlife.

4. Thematic focus

The project aims to contribute to the theme "Developing sustainable livelihoods to benefit people directly affected by IWT" through livelihood diversification and reduction of human-wildlife conflict with the aim of strengthening household economic resilience and expanding communities' options for responding to economic challenges. In Year 1 of the project, 426 new people in the project area gained access to safe and reliable credit via VSLAs, 566 new people have become engaged in beekeeping, and 121 new households have been engaged in a poultry vaccine distribution program. We expect that people with these options for livelihood diversification will be less reliant on IWT/bushmeat (we are monitoring this assumption over the course of the project), and report greater resilience, including to elephant impacts; though outcomes of these activities will be measured in Year 2 and Year 3. The project has also increased capacity among RKM GR to respond to human-elephant conflict incidents through training of 31 rangers, provisioning of fuel, toolkits, and a vehicle dedicated to HEC response. The project also aims to contribute to the theme "Strengthening law enforcement" through trials of early warning technology to enhance detection of individuals engaged in IWT, expanding capacity for and coverage of ground and aerial patrols, enhancing skills and professionalism of a VGS force in MBOMIPA WMA, and ensuring that robust legal cases for all ivory and bushmeat poaching incidents from MBOMIPA WMA are filed at the Iringa District Court. Due to supplier delays, we did not make progress on field-testing the early warning technology in Year 1, but we believe that we can still field-test this technology and assess its value before project end, and integrate it with the introduction of EarthRanger in MBOMIPA WMA to enhance its effectiveness as an early warning tool and to facilitate rapid VGS response to alerts. Information provided by TrailGuard cameras will also provide insight into poaching networks. VGS patrolling effort in MBOMIPA WMA was expanded in Year 1 relative to the pre-project baseline, and despite delays with aircraft and pilot licensing, we were close to meeting our Year 1 targets for aerial patrol hours and coverage. Aerial patrols helped to detect and intervene in illegal activities such as timber-cutting sites, and bushmeat camps. While incipient signs of increasing elephant poaching in MBOMIPA WMA are worrying, VGS capacity to manage this threat has greatly improved relative to the poaching crisis of 2010-2015; VGS were able to arrest and recover 2 tusks and 3 muzzleloaders from one ivory poacher in Year 1, and a court case for this incident has already been filed thanks to enhanced coordination between

MBOMIPA VGS and the TAWA Public Prosecutor (a a result of this project). Five court cases were filed at the Iringa District Court, and court hearings of all ongoing cases were attended by MBOMIPA VGS. The project has also strengthened collaboration and coordination between the key law enforcement stakeholders in the project area (MBOMIPA WMA, Ruaha National Park, Tanzania Wildlife Management Authority and Kikosi Dhidi ya Ujangili (KDU).

5. Impact on species in focus

All evidence for this section is in appendix B7. Elephant encounter rates on VGS patrols in MBOMIPA WMA have generally increased since 2018. In the wider Ruaha-Rungwa ecosystem, elephant populations have been stable at around 15,000 elephants since 2015. The results of the most recent Tanzania Wildlife Research Institute (TAWIRI) aerial census from 2021 indicate there has not yet been an increase in the elephant population (slow recoveries have been observed for other heavily poached elephant populations in Africa; TAWIRI, 2022). In 2015-2021, the proportion of illegally killed elephants for the whole Ruaha-Rungwa ecosystem was generally below 50% (the level at which illegal killing is considered unsustainable), suggesting that poaching of elephants was generally low during this time. In MBOMIPA WMA, however, the evidence suggests higher levels of elephant poaching in 2021-2022 relative to 2018-2020. Together with an increase in ivory seizures in our area in 2022-2023, we believe the evidence is indicative of a worrying uptick in elephant poaching. Encounter rates of Greater Kudu on VGS patrols in MBOMIPA WMA have generally declined since 2018, although encounter rates were higher in 2022 than in 2021. TAWIRI aerial census data provide further evidence of a decline for this species in the wider Ruaha-Rungwa ecosystem between 2018 and 2021. Greater Kudu are targeted for bushmeat, and their declining trend remains a cause of concern. Although there has been annual variation, giraffe encounter rates on VGS patrols in MBOMIPA WMA have been generally stable since 2018. Across the wider Ruaha-Rungwa ecosystem, TAWIRI aerial census data indicate a decline in the giraffe population between 2018 and 2021. Encounter rates of buffalo and eland on VGS patrols in MBOMIPA WMA have increased since 2018, and TAWIRI aerial census data indicate these species are either stable or increasing in the wider Ruaha-Rungwa ecosystem since 2015. Roan and sable antelope are rare and generally wary in MBOMIPA WMA. Roan sightings on VGS patrols in MBOMIPA WMA were too few to warrant analysis. TAWIRI aerial census data indicate that roan populations were stable and sable antelope populations increased between 2018 and 2021 in the Ruaha-Rungwa ecosystem. The next TAWIRI aerial census will likely be in 2024, and provide insight into trends between 2021 and 2024. Additional data on the project impacts on these focal species will be generated via a camera trapping collaboration in MBOMIPA WMA between Lion Landscapes and STEP. A first survey was conducted in the Lunda zone of MBOMIPA WMA in 2022; survey findings are still being analysed.

6. Project support to poverty reduction

This project focuses on the communities in the Ruaha-Rungwa ecosystem, specifically those around RKM GR and those that have contributed land to the MBOMIPA WMA. While variable, these communities are primarily characterised by a mix of seasonal rainfed agriculture (with primary crops including maize, rice and a mix of sunflower, millet and limited commercial chickpea production), livestock (cows, sheep and goats), lack of infrastructure (power, water, healthcare, road networks) and poor dietary diversity. Human-wildlife conflict, specifically human-elephant conflict, has increased in the ecosystem, driven by rapidly increasing human populations and associated expansion of agriculture, settlements and activity along protected area boundaries and within corridors and dispersal areas. The Ruaha-Rungwa landscape has experienced significant in-migration from other parts of Tanzania in the last 20 years. Establishment of settlement by new arrivals is often done without consultation of local knowledge banks (or land use plans - where they exist), resulting in expansion of agriculture and settlement in areas heavily utilised by wildlife. This puts people at risk of elephant impacts and, without sufficient economic resilience, these impacts can devastate a household's financial situation. It is in this context that we see a recent increase in bushmeat poaching as driven by a need to supplement household income. Bushmeat in the Ruaha-Rungwa ecosystem is sold within villages and transported for sale in regional towns and major cities. Bushmeat poaching appears in part to be a livelihood diversification strategy employed by moderately poor households to address capability deprivation and gain greater economic

agency. This project intends to increase livelihood diversity for 500 households directly through improving access to credit through VSLAs, diversifying (and improving existing) livelihood strategies through beekeeping and improving survival of poultry. Increasing access to credit through VSLAs not only enables investment in future income generating projects, it also reduces the likelihood of liquidation of assets (including harvests and livestock) that could negatively affect households. To date, our VSLAs have engaged 628 farmers, issued 686 loans (used to address different aspects of poverty alleviation) and generated ~£5,861 in profit accumulated from loan interest and fines. Also, we have enrolled 121 households on our poultry vaccine distribution trial, distributed >460 hives to existing and new groups, and built eight elephant proof food stores (with matched funding to limit crop loss by elephants). As outlined in the description of Activity 1.3, 28% of chickens at participating households died between December 2022-February 2023 and 86% of participants had never previously vaccinated their chickens, representing a significant opportunity for increased survival. We will measure how VSLA and livelihood activities influence sales of crops, hopefully allowing farmers to hold on to assets until optimal price periods. We will measure poultry survival rates post-vaccination. We will measure honey harvests and honey sales - all of which we hope will increase resilience. In order to assess the impact this project will have on households in this ecosystem, we chose to focus on resilience rather than income only, as assets play a significant role in how households meet their basic needs. This project also indirectly addresses issues of poverty through reducing the cost of living with wildlife by increasing the capacity of protected area staff to respond to HEC. We have trained 31 rangers on using effective elephant deterrents while helping farmers to push elephants off farms. This effort is linked with handover of used Land Cruiser pickup to Muhesi Game Reserve, repair of Kizigo GR's Landcruiser, provision of and training on HEC Tool Kits as well as continued fuel support to RKM GRs. By increasing the efficacy and efficiency of HWC response by protected areas, we hope food security will increase (measured in our resilience monitoring), tolerance for elephants will improve and the perception of the value of protected areas will increase.

7. Gender equality and social inclusion

Gender dynamics in the project area are characterised by highly defined spheres of distinct responsibility, especially among agro-pastoral communities. Women are often not involved in 'official' decision-making forums (traditional authorities, sub-village and village government) but exert influence within the household sphere. Given this context, in our project orientation meetings at village and community level, we have taken proactive measures to ensure that all individuals, regardless of gender or social background, have opportunities to participate and benefit from the project, and to actively promote gender equality and social inclusion. A key way in which we seek to promote women and youth is through VSLAs which allow members to independently access capital that can be utilised for household-level priorities. Female participation in VSLAs has been enhanced by ensuring that meetings are held at times and locations suitable for women, as decided in a participatory process during group formation. Of 426 members among 18 new VSLAs formed in Year 1, 38% of members are women and 69% are youth, and 35% of leadership positions in VSLAs are held by women. Also, out of 121 households engaged in poultry vaccine distribution, 55% of the beneficiaries are women. As our experience under IWT052 demonstrated that women are less likely to attend large scale outreach events due to competing household priorities, we have designed a home-based training program (one-on-one and film screening using tablets) to reach more women and youth (1,626 people reached, 31% women). Our team of community-based LEMs comprises 29% women and 93% youth. Also, among the 31 RKM rangers we have trained on the use of elephant deterrent toolkits and elephant behaviour, 13% are women. While female employment as VGS remains limited (17% of MBOMIPA VGS are women, (B12), increasing the proportion of women VGS is a priority as and when opportunities for recruitment occur (e.g., in 2021, 40% of new VGS recruits were women). Women are represented in VGS leadership: among the three VGS commanders, every month, one is a woman. We ensure safe working conditions for women VGS (e.g., separate accommodation), and flexibility in work schedules to accommodate childcare responsibilities. There are women among all the candidates selected for training planned in Year 2.

Please quantify the proportion of women on the Project Board[1].	40%
Please quantify the proportion of project partners that are led by women, or which have a senior leadership team consisting of at least 50% women[2].	TAWA RKM GR project managers: 0% women. TAWA Central Zone (Manyoni): 33% women. MBOMIPA Authorised Association: 14% women, senior VGS leadership: 33% women.

8. Monitoring and evaluation

For Output 1, Year 1 has focused mostly on 'operational indicators,' monitoring that activities are taking place (establishment and performance of VSLAs, distribution and correct application of poultry vaccines and distribution of beehives). We cannot assess the degree to which VSLAs are impacting selling behaviour of crops (or the degree to which poultry survival rates are increasing) without knowing that VSLAs are operational (or that poultry vaccines were distributed), for example. Years 2 and 3 will focus on the 'impact indicators' outlined in our logframe. The same general overview holds true for Output 2 as well. Year 1 has focused on training rangers, equipping Teams with vehicles and tool kits and continuing our wide-scale outreach and awareness-raising events. Years 2 and 3 will focus on evaluating the impact of these patrols by assessing community perceptions of their efficacy, opinions of rangers regarding their preparedness and knowledge retention of key concepts by community members over time. These indicators and means of verification remain appropriate. Outcome indicator 0.4 will be assessed together with Output 1. Outcome Indicators 0.3 and 0.5 are more complex and will be assessed by endline results assessing resilience (Baseline data is still being analysed and will be shared off-cyle). To our planned resilience assessment via RIMA (Resilience Index Measurement and Analysis, developed by the Food and Agriculture Organization which includes the Food Insecurity Experience Scale [FIES]), we are adding the Basic Necessities Survey, a more participatory approach to assessing poverty. By working with a community-generated list of basic needs, we can build additional questions that can assess how these needs are met, deepening our verification of Outcome Indicator 0.3 and building towards our understanding of resilience (Outcome Indicator 0.5). Our planned approach for 0.6 is still appropriate but we remain unable to fully control this outcome given the multitude of reasons that can cause elephant and human injury and death. For Outcome Indicator 0.7, in addition to the planned Protected Area Benefit Audit for RKM GR, we plan to ask more questions via our Local Elephant Monitors (leveraging their close relationships with community members) at both small and large scale events about perceptions of the Protected Area and suggestions about how to improve relationships. The Protected Area Benefit Audit will be a major source of information sharing among stakeholders. Otherwise, our sharing of data occurs via (at least) quarterly monitoring visits by our HWC Livelihoods Lead.

For Outputs 3 and 4 and Outcome 0.2, our judgement at this stage is that the indicators and means of verification in the original M&E plan and logframe remain appropriate. To track progress towards these output indicators, we also internally track activity-level indicators (e.g., hours of aerial surveillance, VGS patrol effort). Patrol coverage (using GPS tracklogs) is mapped and measures of effort (distance, effective-person patrol days) are tracked in a patrol database. Additional indicators that we have learned would be valuable to track, in addition to total monthly patrol coverage of the WMA, are a spatial indicator of patrol intensity (e.g., density of patrol coverage across 2.5 km^2 grid cells) and spatial distribution of illegal activities corrected for patrol effort), to help us better understand patrol effectiveness and allocate patrol effort. We can generate baselines for these Observations on key wildlife species and illegal activities are recorded in a patrol form in the Survey123 app in MBOMIPA WMA and on a paper datasheet in the case of aerial patrols, and trends and output and outcome indicators are tracked via an

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

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

ESRI PAMS dashboard (B13) and Excel databases with linked dashboards. VGS compliance with post-arrest procedures is monitored through post-arrest forms which include a declaration that the suspect felt his/her rights were observed/not observed (B11). All court cases from MBOMIPA WMA and hearings attended by VGS are tracked in a cases database (B9). While outcome 0.1 remains appropriate, we have decided to monitor additional indicators to help us build a more comprehensive picture of trends in ivory poaching (elephant carcasses and cause of mortality, ivory seizures) and bushmeat poaching (# and % of suspects arrested for bushmeat poaching, trends in carcass encounters for key species targeted for bushmeat, trends in bushmeat seizures), see appendix B7. In addition, to monitor the impact of the project on key wildlife species (this was not part of the original M&E plan) we will directly monitor encounter rates of these species on VGS patrols in MBOMIPA WMA, and use supplementary data from camera trapping surveys and TAWIRI aerial censuses. The results of ground patrols in MBOMIPA WMA (for which VGS collect data that are then summarised and mapped by STEP) are shared with the MBOMIPA Protection Committee on a monthly basis, and broader discussions around trends and priorities are held during quarterly meetings of the WMA Board.The results of aerial patrols (which are summarised and mapped by STEP) are shared with relevant PA managers in a report immediately after a mission (daily sightings are also communicated to VGS/ranger teams on the ground). We plan to do a multi-year analysis of aerial patrol outcomes under this project that will be shared with PA managers for insight into longer-term trends. To assess to what extent the activities and outputs of this project are contributing to the outcome, we will also continue to hold discussions with our project partners (RKM GR managers and MBOMIPA Authorised Association members, all of whom are from the villages around the WMA) and village leaders about trends and drivers of these trends, gauge VGS perceptions, and monitor external factors (e.g., droughts, failed harvests, changes in policy or capacity) that may contribute to observed trends in IWT.

9. Lessons learnt

Year 1 evidenced the importance of radio communication for effective VGS response to observations from aerial patrols, and we will ensure that radio communication protocols are also integrated into the field-test of early warning technology in Years 2 and 3. As a result of working with MBOMIPA WMA to promote more women VGS to leadership positions, we and our partners have learned that women VGS are effective post commanders who have earned the respect and trust of their fellow VGS. The implementation of strategic patrol management techniques (e.g. evidence/intelligence-led patrol planning) has helped to increase coverage of previously under-patrolled areas and enhanced detection of illegal activities in these areas. As a result of not meeting our Year 1 target for spatial coverage of ground patrols for MBOMIPA WMA, we have learned that we need to increase the proportion of mobile, multi-day camping patrols in Years 2 and 3 in order to expand coverage. While we were unable to start field-testing early warning technology in Year 1, we anticipate that a key aspect of success in these trials will be how effectively we can integrate placement and use of this technology with VGS patrol plans, and how effectively we can deploy the system based on information from prior patrols; we will ensure that lessons learned during this process are documented. Several lessons have been learned with regards to M&E for output 4 and outcome 0.2 as outlined in section 8.. Our HEC and livelihood focused work is largely a continuation of our existing programming, with the exception of poultry vaccine provision. We have learned that early preparation of vaccine procurement is essential given inefficient supply chains. We have also learned of the importance of planning vaccine days carefully (and for early mornings) so that households keep their chickens inside (i.e. not letting them out for the day) until they are vaccinated.

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

Not applicable.

11. Risk Management

One new risk arose in Year 1 that was not previously accounted for or reported in the risk register submitted with the half-year report, namely availability of a trainer for VGS and ranger training, requiring training to be rescheduled from Year 1 Q4 to Year 2 Q1. An updated risk register is submitted with this report. The major adaptation in project design is that due to

continued uncertainty about the delivery timeline of Instant Detect 2.0, STEP will likely switch to field-testing alternative, similar early-warning technology, TrailGuard; once TrailGuard delivery timelines are confirmed, STEP will submit a change request.

12. Other comments on progress not covered elsewhere

A key aspect of the project's exit strategy is to build the capacity of community members, village and District government leaders, and RKM GR and MBOMIPA WMA leadership and to ensure their buy-in in the project's long-term aims and success. During the implementation of HWC and livelihood activities in Year 1, we worked with RKM GR staff, District authorities and village leaders during implementation and monitoring of activities including formation of VSLAs, outreach events, distribution of hives and poultry vaccination. We have started to improve RKM GR capacity for HWC response through training and vehicle access. In all community meetings, we shared the contact details of relevant Government and RKM GR staff to enhance their connections with communities. We recruited village-based local elephant monitors who are members of the same communities to ensure both proper context but also that capacity remains in communities beyond the project lifetime. We work with and train local technicians, for example in hive procurement and the construction of elephant-proof food stores, and adapt designs to locally available materials. Similarly for the aspects of the project that aim to strengthen law enforcement capacity, all project activities are done through our partnerships with MBOMIPA WMA and RKM GR/TAWA. A key challenge for MBOMIPA WMA and the project's exit strategy is that the WMA has no tourism revenue; as such, it relies on external funding for its HWC response and law enforcement operations. Through a BIOPAMA-funded project, we are working to strengthen the future economic viability of MBOMIPA WMA by improving governance, securing tourism investment and exploring other income sources so that MBOMIPA eventually becomes self-sufficient. To date, STEP and Honeyguide Foundation have facilitated governance training for all MBOMIPA Authorised Association members (42 members, 14% women). As the WMA works towards securing tourism investment and diversifying income streams, we will evaluate potential for cost-sharing of VGS patrol support and assess the need and most cost-effective approach for continuing aerial surveillance in RKM GR and MBOMIPA WMA beyond project end, and fundraise as necessary.

13. IWT Challenge Fund identity

The IWT Challenge Fund, UKAID and DEFRA logos are on the STEP website, and will be included in STEP's 2022 Annual Report (which is in preparation). Financial support from the has been acknowledged in reports to (B4-6, B8) and meetings with project partners, village leaders, and project beneficiaries, and has been communicated as forming part of a larger program. STEP's Protected Area Management Systems dashboard for MBOMIPA WMA includes the IWT Challenge Fund logo (B13). STEP's social media accounts include a Facebook page (16,619 followers), Twitter page (1,642 followers), and Instagram page (1,642), and 3 social media posts were posted on Facebook and 3 on Instagram, all linked to the Biodiversity Challenge Funds account. Following a visit from the British High Commission in Tanzania and a representative from the IWT Challenge Fund in April 2023, both STEP and the British High Commission posted about the visit on Twitter (links to posts: https://twitter.com/STzElephants/status/1656247833425588224?s=20, and https://twitter.com/UKinTanzania/status/1656239768634634240).

14. Safeguarding

Has your Safeguarding Policy been updated in the past 12 months?	Yes
Have any concerns been investigated in the past 12 months	No
Does your project have a Safeguarding focal point?	Yes [redacted]
Has the focal point attended any formal training in the last 12 months?	Yes, training on Safeguarding Essentials and Keeping Children & Young People Safe in June 2022.

What proportion (and number) of project staff have received formal training on Safeguarding?	Past: 20% [2] Planned: 100% [8]
Has there been any lessons learnt or challenges on Safeguarding in the past 12 months? Previous training in the observance of human rights and just arrest and post-arrest procedures for MBOMIPA WMA VGS, the requirement that they adhere to a Code of Conduct (breach of this code is cause for termination), and monitoring of VGS compliance through regular monitoring visits by STEP and post-arrest forms have helped to ensure a professional VGS force.	
Does the project have any developments or activities planned around Safeguarding in the coming 12 months? If so please specify. Formal training of all remaining project staff to be led by STEP's Human Resources, Compliance and Administration Manager; refresher training for human rights and just arrests and post-arrest procedures for 26 MBOMIPA WMA VGS and 14 RKM GR rangers in Year 2.	

15. Project expenditure

i. Table 1: Project expenditure during the reporting period (April 2022-March 2023)

Project spend (indicative) since last Annual Report	2022/23 Grant (£)	2022/23 Total actual IWT Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)	[redacted]			
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items (see below)				
Others (see below)				
TOTAL	**130,00**	**130,00**		

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

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

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

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

Project summary	SMART Indicators	Progress and Achievements April 2022 - March 2023	Actions required/planned for next period
Impact Reduction in IWT and HWC will increase security of Ruaha-Rungwa, enable recovery of wildlife populations, improve community perceptions of and benefits from protected areas, and result in economically resilient communities.		31 rangers have been trained and provided with increased vehicle access. Communities have been trained on safety around elephants. 426 individuals have become involved in livelihood activities.	
Outcome Livelihood diversification, reduction of human-wildlife conflict and strengthening of law enforcement capacity result in a reduction in bushmeat poaching, increase household resilience, and begin to improve community perceptions of PAs	0.1 Reduction in the detection rate of illegal activities (disaggregated by type, e.g. bushmeat, and protected area) on ground patrols (Baseline: to be established from 2021-2022 data, target: 15% reduction in Y2 and 30% reduction by Y3). 0.2 Reduction in the detection rate of illegal activities (disaggregated by type, e.g. bushmeat and protected area) on aerial patrols (Baseline: to be established from 2021 data, target: 15% reduction in Y2 and 30% reduction by Y3).	0.1 We are using multiple indicators to assess progress towards this outcome: Bushmeat poacher encounter rates on VGS patrols in MBOMIPA WMA: 0.0035 bushmeat poachers per effective person-patrol day in 2021, 0.0039 bushmeat poachers per effective person-patrol day in 2022 (11% increase). Bushmeat poaching camps encounter rates in MBOMIPA WMA: 0.0339 camps per effective person-patrol day in 2021, 0.0246 camp per effective person-patrol day in 2022 (27% decrease). Fish poacher encounter rates on VGS patrols in MBOMIPA WMA: 0.0035 bushmeat poachers per effective person-patrol day in 2021, 0.0039 bushmeat poachers per effective person-patrol day in 2022 (11% increase). Elephant poaching: Baseline: In 2021, 7 elephant carcasses were encountered by VGS in MBOMIPA WMA and adjacent village land, of	Analyse Year 2 ground patrol and aerial patrol data for indicators 0.1 and 0.2, continue to update associated databases Complete data collection for baselines for indicators 0.3-0.5, 0.7, prepare baseline report.

Project summary	SMART Indicators	Progress and Achievements April 2022 - March 2023	Actions required/planned for next period
		which 86% were attributed to ivory poaching and 0% to conflict (In 2020, 2 carcasses, 100% due to conflict). Year 1: In 2022, 12 elephant carcasses were encountered by VGS in MBOMIPA WMA and adjacent village land, of which 75% were attributed to ivory poaching and 17% to conflict. Bushmeat poaching 1: Baseline: In 2021, 22% of suspects apprehended in the WMA (n=9) were bushmeat-related (67% in 2020, n=15 arrests). Year 1: In 2022, 44% of suspects apprehended in the WMA (n=9) were bushmeat-related. Bushmeat poaching 2: Baseline: Encounter rates of carcasses of 5 key species targeted for bushmeat were 0.0065 carcasses per effective person-patrol days in 2021 (In 2020, encounter rate was 0.0093). Year 1: Encounter rates of carcasses of 5 key species targeted for bushmeat were 0.0055 carcasses per effective person-patrol days in 2022. 0.2.RKM GR: poacher camp encounter rates were 0.784 camps per flight hour in 2021, and 0.207 in Year 1 Q4; timber cutting site encounter rates were 0.825 sites per flight hour in 2021, and 0.155 in Year 1 Q4; elephant carcass encounter rates were 0 carcasses per flight hour in 2021, and 0 in Year 1 Q4. MBOMIPA WMA and Lunda-Nkwambi GCA: poacher camp encounter rates were 0 camps per flight hour in 2022, and 0.115 in Year 1 Q4; timber cutting site encounter rates were 0 sites per	

Project summary	SMART Indicators	Progress and Achievements April 2022 - March 2023	Actions required/planned for next period
		flight hour in 2022, and 0.115 in Year 1 Q4; elephant carcass encounter rates were 0.111 carcasses per flight hour in 2022, and 0.805 in Year 1 Q4. :	
	0.3 Percentage of engaged beneficiaries who report being able to address the majority of acute household needs through VSLA loans and/or other livelihood activity (Baseline to be established in Y1; target: 80% in Y3). 0.4 Percentage of engaged beneficiaries who retain at least 50% of their crops for sale or consumption at high price periods due to income from poultry farming, beekeeping and increased access to credit from VSLAs (Baseline to be established in Year 1; target: 50% in Y3). 0.5 Engaged households show increased resilience as measured by custom resilience index (ARSSI, Index of Social Capital, RIMA) from Baseline to Year 3 (Baseline to be established in Year 1). 0.6 Reduction in human deaths and injuries and elephant mortalities in the landscape due to human-elephant conflict (Baseline: 5 human deaths, 1 human injury, 2 elephant mortalities in 2021; Target: <5 human deaths/injuries and <2 elephant mortalities in Y3). 0.7 Percentage of surveyed community members around RKM GR who value improvement in HWC response and	0.3-0.5 We are collecting the baseline date. Currently, our 26 groups have raised ~£41,377 in capital, issued 686 loans and generated ~£5,861 in profit through loan interest and fines. They are also engaged in beekeeping and poultry vaccine distribution. Based on previous experience in the landscape, we know there is precedent for income from honey harvest and use of funds from loans towards addressing acute household needs. 0.6 In 2022, there were 6 human deaths (Simbangulu 2, Rulanga 3, Kazikazi 1); 3 human injuries (Simbagulu 1, Damwelu 1, Ilangali 1) and 5 elephant mortalities (Mpapa 1, Simbangulu 2, and Ilangali 2). Most of these incidents occurred in either our newer project villages (e.g., Mpapa and Simbangulu villages) or areas close to our new project villages (Ilangali, Rulanga, Kazikazi and Damwelu villages). So far in 2023, 1 human death has occurred in Doroto, and 2 elephants (calves) have died in village wells. 0.7 Baseline data is still being collected. Only 50% of respondents	

Project summary	SMART Indicators	Progress and Achievements April 2022 - March 2023	Actions required/planned for next period
	state there has been an improvement in RKM GR HWC response between the pre-project period and Y2 (Baseline: to be established in Y1; target: 70% in Y2)	knew that RKM GR shared revenue with communities and 37% of respondents who had never been to a Tembo Cup tournament thought that RKM GR brought them more harm than good.	
Output 1. 500 community members gain access to safe credit and have more diversified livelihoods to offset illegal wildlife use (bushmeat poaching).	1.1 Percentage of VSLA members who are actively engaged (as measured by attendance and share participation score) and have accessed loans (Baseline to be established in Y1; target: 80% of 500 members in Y3, 50% women, 35% youth) 1.2 Percentage of VSLA members who resort to selling more than 30% of harvest at harvest time by the end of Year 3. (Baseline to be established in Y1; target: <50% in Y2 and <20% by Y3). 1.3 Percentage increase in poultry survival rate among 100 vaccine program participants (50% women) (Baseline to be established in Y1; target: average 25% increase in poultry survival rate in Y2, disaggregated by gender). 1.4 Percentage of engaged beekeepers who increase their honey harvest by at least 20% and see a minimum 10% increase in honey sales (100 beekeepers; baseline to be established in Y1; target: 90% in Y3, disaggregated by gender)	1.1 426 individuals have been engaged in new VSLAs (see Section 3, activity 1.2), baseline analysis pending. 1.2 Baseline data still being collected and analysed 1.3 The baseline survival rate for participants of our first vaccine distribution between December 2022-February 2023 was 81.4%. 1.4 Baseline data is still being aggregated.	

Project summary	SMART Indicators	Progress and Achievements April 2022 - March 2023	Actions required/planned for next period
Activity 1.1 Conduct orientation and sensitization meetings with partners and at village- and sub-village level for the establishment of VSLAs, beekeeping & poultry health interventions		Completed	Follow-up meetings for updates on progress
Activity 1.2 Establish and train 20 Village Savings and Loans Associations (25 members per VSLA) with 500 members in 10 villages		18 VSLAs formed, 15 registered at District level	Conduct mentorship/coaching/monitoring for 18 VSLAs, form 2 more VSLAs
Activity 1.3 Establish poultry health intervention trial with 100 participants in 5 villages		First vaccine distribution conducted in March 2023 with 121 participants (55% women)	Provide follow-up vaccines after every 90 days
Activity 1.4 Provide 200 beehives and beekeeping training to 100 beekeepers in 5 villages		Hive distribution completed, training in progress	Complete coaching and in-situ training
Activity 1.5 Ongoing capacity-building and monitoring of livelihood interventions by community-based team		14 community-based local elephant monitors recruited and trained	Continue to provide mentorship and coaching to LEMS through Years 2 and 3, LEMs conduct monitoring of livelihood interventions in their respective villages
Output 2. Human-wildlife conflict is reduced through improved rapid HWC response by RKM GR and MBOMIPA WMA and increased knowledge among community members.	2.1 Percentage of reported HWC incidents where rangers arrived at the site of the incident within 3 hours of reporting (Baseline to be established in Y1; target: 50% in Y2; 80% in Y3). 2.2 Percentage of rangers who report that they feel safer and better prepared for HWC response (Baseline to be established pre-training; target: 80% of 32 RKM GR rangers trained in Y1 and 80% of 16 MBOMIPA VGS trained in Y2). 2.3 Percentage of rangers who pass a test measuring key aspects of elephant deterrence (Baseline to be established Pre-Training; target: 75% of 32 rangers trained in Y1 and 75% of 16 VGS trained in Y2).	2.1 Year 1 Baseline data is still being aggregated. 2.2 Baseline planned for advanced walking training in May 2023. 2.3 Planned for advanced walking training in May 2023. 2.4 To be measured in Year 3 (compared against the 2021 baseline).	

Project summary	SMART Indicators	Progress and Achievements April 2022 - March 2023	Actions required/planned for next period
	2.4 Percentage of community members who are able to articulate key aspects of safety around elephants and carnivores (Baseline (2021): 48%; target 75% in Y3).		
Activity 2.1 Provide vehicle for increasing human-wildlife conflict response capacity to RKM GR, together with training on effective use of vehicle for HWC response		Completed	Follow-up on vehicle use, provide coaching as needed
Activity 2.2 Enable HWC response by MBOMIPA VGS and RKM GR rangers through fuel provision		Fuel provision is ongoing, 31 RKM rangers trained (13% women) on use of HEC toolkit	Continue with fuel provision, build HWC response framework for MBOMIPA WMA
Activity 2.3 Train 32 RKM GR rangers and 16 MBOMIPA VGS in safety around elephants and more effective elephant deterrent techniques		Preparations made for training of 30 RKM rangers from 3rd May to 24th May, 2023	Complete training for 30 RKM rangers, train16 MBOMIPA VGS in HEC toolkit, supervise training and monitor application of acquired skills
Activity 2.4 Local Elephant Monitors conduct one-on-one training for 3000 community members at home and at farms on elephant behaviour and safety around elephants		1,626 community members (31% women) reached by LEMs in Year 1	Continue training
Activity 2.5 Conduct wide-scale education and outreach programs (Tembo Cup Football Tournament)		In Year 1, 4 tournaments were completed, reaching >45,000 people	Conduct Year 2 tournaments from July to October 2023
Output 3. Novel Instant Detect conservation technology is field-tested and its efficacy, viability and potential for scaling as an early warning system is assessed.	3.1 Percentage of deployment time that the ID system is operational and problem-free (Baseline: 0; Y1:50%; Y2: 75%; Y3: 90%). 3.2 Number of technical issues encountered with the Instant Detect system(Y1: <10, Y2: <5; Y3: <3) 3.3 Percentage of Instant Detect alerts that are verified as accurate detections of illegal activity (i.e. not false triggers) (Y1: 75%, Y2&Y3: 90%) 3.4 6 MBOMIPA WMA VGS (2 women) have 100% of the required skills to	3.1 Unable to start Instant Detect trial in Year 1, this indicator will be reported on in Year 2. 3.2 Unable to start Instant Detect trial in Year 1, this indicator will be reported on in Year 2. 3.3 Unable to start Instant Detect trial in Year 1, this indicator will be reported on in Year 2. 3.4 Unable to start Instant Detect training in Year 1, this indicator will be reported on in Year 2.	

Project summary	SMART Indicators	Progress and Achievements April 2022 - March 2023	Actions required/planned for next period
	operate the Instant Detect system (Baseline: 0; Y1: 70%; Y2&Y3: 100%). 3.5 Percentage of Instant Detect deployment days that the ID Control Room is operational (Baseline: 0; Y1: 70%; Y2&Y3: 100%) 3.6 Percentage of Instant Detect alerts that result in a VGS mobilisation (Baseline: 0; Y1: 70%; Y2&Y3: 100%) 3.7 Percentage of VGS mobilizations in response to Instant Detect alerts that result in encounters (Baseline :0; Y1: 20%; Y2&Y3: 40%).	3.5 Unable to start Instant Detect trial in Year 1, this indicator will be reported on in Year 2. 3.6 Unable to start Instant Detect trial in Year 1, this indicator will be reported on in Year 2. 3.7 Unable to start Instant Detect trial in Year 1, this indicator will be reported on in Year 2. **Key actions**: confirm TrailGuard delivery timeline, submit change request to IWT challenge fund, training VGS and begin Phase 1 of the field trial.	
Activity 3.1 Train 6 MBOMIPA VGS (2 women) in Instant Detect deployment, operation, monitoring and response		Not completed due to delays with ID 2.0 delivery.	Train 6 VGS to operate the alternative TrailGuard system.
Activity 3.2 Deploy and monitor Instant Detect 2.0 system and set up Control Room for Phase 1 of field trial (operationalization)		Control room preparations were made (satellite internet installation, started EarthRanger system rollout), but Phase 1 did not start due to delays with ID 2.0 delivery.	Start Phase 1 in Year 2, likely with the alternative TrailGuard system.
Activity 3.3 Deploy and monitor Instant Detect 2.0 system for Phase 2 of field trial (efficacy, viability, VGS mobilisation)		Not started.	Start Phase 2 in Year 2 Q4, likely with the alternative TrailGuard system.
Activity 3.4 Produce Instant Detect 2.0 efficacy and viability assessment report and, if trial successful, Standard Operating Procedures for MBOMIPA WMA		This is a Year 3 activity.	This is a Year 3 activity.
Output 4. Capacity for aerial surveillance and strategic ground patrols is strengthened and the professionalism of RKM GR rangers and MBOMIPA VGS is enhanced.	4.1 Percentage of MBOMIPA WMA and RKM GR covered by aerial patrol missions (Baseline to be established from 2020 data; target: 90% of MBOMIPA WMA; 40% of RKM GR in all years).	4.1 Baseline (2020): 82% of MBOMIPA WMA and 49% of RKM GR covered by aerial patrol missions. Year 1: 94% OF MBOMIPA WMA and 31% of RKM GR covered by aerial patrol missions. 4.2 Baseline (MBOMIPA WMA, 2020): 0% of aerial surveillance patrols	Expand and collect data on spatial coverage of aerial patrols and VGS ground patrols, increase VGS same-day response rate following aerial patrols Facilitate VGS ranger trainings (aerial observers, advanced skills training with

Project summary	SMART Indicators	Progress and Achievements April 2022 - March 2023	Actions required/planned for next period
	4.2 Percentage of aerial surveillance patrols that result in a same-day ranger/VGS ground mobilisation (Baseline: to be calculated from 2020 data; Y1: 50%; Y2&Y3: 70%). 4.3 Percentage of MBOMIPA WMA covered by monthly VGS ground patrols (Baseline: to be computed from 2021 data; Y1: 60%; Y2 Y3: 75%, disaggregated by season). 4.4 Number of VGS who, through training, attain the working standards of the International Ranger Federation. (Baseline (2021): 8 VGS; target: 16 VGS by Y2 (3 women)). 4.5 Number of RKM rangers and MBOMIPA VGS who, through training, attain the necessary skills to serve as aerial observers. (Baseline (2022): 1 RKM Ranger, 0 women; Target: 5 RKM GR rangers and 2 MBOMIPA VGS by Y1 (2 women)). 4.6 Percentage of suspects arrested by VGS that attest in the presence of an independent witness that they were treated fairly during post-arrest procedures (target: 100% in all years) 4.7 Percentage of ivory and bushmeat poaching court case hearings that are attended by MBOMIPA VGS (Baseline (2021): 100%; target: 100% in all years).	resulted in same-day VGS ground mobilisation in MBOMIPA WMA. Year 1: 25% of aerial surveillance patrols resulted in same-day VGS ground mobilisation in MBOMIPA WMA. Baseline (RKM GR, 2020): 63% of aerial surveillance patrols resulted in same-day ranger ground mobilisation in RKM GR. Year 1: 60% of aerial surveillance patrols resulted in same-day ranger ground mobilisation in RKM GR. 4.3 Baseline: 33% of MBOMIPA WMA covered by monthly VGS ground patrols. Year 1: 34% of MBOMIPA WMA covered by monthly VGS ground patrols. 4.4 No additional training done in Year 1, so value remains same as baseline (8 VGS, 0% women). 4.5 No additional training done in Year 1, so value remains the same as baseline (1 RKM ranger, 0 women). 4.6 In Year 1, 100% of suspects arrested by VGS attested (via post-arrest forms) in the presence of an independent witness that they were treated fairly during post-arrest procedures (n=13 arrests). 4.7 In Year 1, 100% of ivory and bushmeat poaching court case hearings were attended by MBOMIPA VGS (n=3 hearings).	PAMs Foundation), conduct pre– and post- training assessment
Activity 4.1 Train 5 RKM GR rangers and 2 MBOMIPA VGS (2 women) to become aerial observers		Not completed, training rescheduled to Year 1.	Conduct training in Q1 & Q2 of Year 2.

Project summary	SMART Indicators	Progress and Achievements April 2022 - March 2023	Actions required/planned for next period
Activity 4.2 Conduct 60 hours of aerial surveillance per year in coordination with rapid response ranger and VGS ground teams		56.4 hours of aerial surveillance conducted in Year 1.	Extensive 3-month aerial mission planned for Year 2.
Activity 4.3 Enable 23 days of strategic patrols by 4 Village Game Scout teams every month in MBOMIPA WMA		Fully implemented.	Continue VGS patrols.
Activity 4.4 Train 8 MBOMIPA VGS (3 women) in basic tactical anti-poaching skills with PAMS Foundation		Not completed, training rescheduled due availability of trainers from PAMS Foundation.	To be completed in June-July 2023 (Year 2).
Activity 4.5 Generate ground and aerial patrol maps and trend analysis reports for protected area managers		Fully implemented: 9 ground patrol reports with maps, and 3 aerial patrol reports generated.	Continue with reporting and mapping of aerial and ground patrols.
Activity 4.6 Conduct refresher training for 39 VGS and 14 RKM GR rangers in human rights, just arrest, and post-arrest procedures		Code of conduct (including human rights, just arrest procedures) reviewed with 39 VGS	Training to be completed in Q1 and Q2 of Year 3.
Activity 4.7 Support MBOMIPA WMA VGS to provide witness testimony in court cases		VGS were supported to provide witness testimony in 3 court hearings in Year 1.	Continue to support VGS to attend court cases.

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

Project summary	SMART Indicators	Means of verification	Important Assumptions
Impact: Reduction in IWT and HWC will increase security of Ruaha-Rungwa, enable recovery of wildlife populations, improve community perceptions of and benefits from protected areas, and result in economically resilient communities. .			
Outcome: Livelihood diversification, reduction of human-wildlife conflict and strengthening of law enforcement capacity result in a reduction in bushmeat poaching, increase household resilience, and begin to improve community perceptions of PAs.	0.1 Reduction in the detection rate of illegal activities (disaggregated by type, e.g. bushmeat, and protected area) on ground patrols (Baseline: to be established from 2021-2022 data, target: 15% reduction in Y2 and 30% reduction by Y3). 0.2 Reduction in the detection rate of illegal activities (disaggregated by type, e.g. bushmeat and protected area) on aerial patrols (Baseline: to be established from 2021 data, target: 15% reduction in Y2 and 30% reduction by Y3). 0.3 Percentage of engaged beneficiaries who report being able to address the majority of acute household needs through VSLA loans and/or other livelihood activity (Baseline to be established in Y1; target: 80% in Y3). 0.4 Percentage of engaged beneficiaries who retain at least 50% of their crops for sale or consumption at high price periods due to income from poultry farming, beekeeping and increased access to credit from VSLAs (Baseline to be established in Year 1; target: 50% in Y3). 0.5 Engaged households show increased resilience as measured by custom resilience index (ARSSI, Index of Social Capital, RIMA) from Baseline	0.1 MBOMIPA WMA VGS patrol forms (Survey123) and GPS tracklogs; RKM GR patrol records 0.2 Aerial patrol database generated from aerial patrol datasheets, flight tracklogs and aircraft Journey Logbook 0.3 Baseline and endline surveys 0.4 Crop Sale Survey, ongoing at weekly VSLA Meetings from May-September annually 0.5 Resilience Assessment results, baseline and endline surveys 0.6 Protected Area and Village Government records 0.7 Protected Area Benefit Audit for RKM GR	0.1 Limited access to safe and reliable credit is a driver of bushmeat poaching. 0.2 Beneficiaries will reduce reliance on bushmeat and move away from IWT. 03. Increasing detection of bushmeat poaching and arrests of poachers will effectively deter poaching. 0.4 Improvement in HWC response will contribute to more positive community perceptions of RKM GR.

Project summary	SMART Indicators	Means of verification	Important Assumptions
	to Year 3 (Baseline to be established in Year 1). 0.6 Reduction in human deaths and injuries and elephant mortalities in the landscape due to human-elephant conflict (Baseline: 5 human deaths, 1 human injury, 2 elephant mortalities in 2021; Target: <5 human deaths/injuries and <2 elephant mortalities in Y3). 0.7 Percentage of surveyed community members around RKM GR who value improvement in HWC response and state there has been an improvement in RKM GR HWC response between the pre-project period and Y2 (Baseline: to be established in Y1; target: 70% in Y2)		
Output 1 500 community members gain access to safe credit and have more diversified livelihoods to offset illegal wildlife use (bushmeat poaching).	1.1 Percentage of VSLA members who are actively engaged (as measured by attendance and share participation score) and have accessed loans (Baseline to be established in Y1; target: 80% of 500 members in Y3, 50% women, 35% youth) 1.2 Percentage of VSLA members who resort to selling more than 30% of harvest at harvest time by the end of Year 3. (Baseline to be established in Y1; target: <50% in Y2 and <20% by Y3). 1.3 Percentage increase in poultry survival rate among 100 vaccine program participants (50% women) (Baseline to be established in Y1; target: average 25% increase in poultry survival rate in Y2, disaggregated by gender). 1.4 Percentage of engaged beekeepers who increase their honey harvest by at	1.1 VSLA weekly meeting and CHOMOKA app records 1.2 Crop Sale Survey, ongoing at weekly VSLA Meetings from May-September annually 1.3 Poultry pre- and post-vaccine assessment data 1.4 Beekeeping monitoring data and reports (occupancy, harvest and sales)	1.1 With targeted and sensitive outreach and tailored training, people engaged in IWT, women and youth will be interested to join VSLAs and engage in beekeeping and poultry trials, take on leadership positions in VSLAs and actively adopt and maintain these livelihood activities. 1.2 Poultry vaccine supply chains are sufficiently robust to support affordable vaccine purchase. 1.3 Extreme weather events (e.g., drought) do not affect the viability of beekeeping.

Project summary	SMART Indicators	Means of verification	Important Assumptions
	least 20% and see a minimum 10% increase in honey sales (100 beekeepers; baseline to be established in Y1; target 90% in Y3, disaggregated by gender)		
Output 2 Human-wildlife conflict is reduced through improved rapid HWC response by RKM GR and MBOMIPA WMA and increased knowledge among community members.	2.1 Percentage of reported HWC incidents where rangers arrived at the site of the incident within 3 hours of reporting (Baseline to be established in Y1; target: 50% in Y2; 80% in Y3). 2.2 Percentage of rangers who report that they feel safer and better prepared for HWC response (Baseline to be established pre-training; target: 80% of 32 RKM GR rangers trained in Y1 and 80% of 16 MBOMIPA VGS trained in Y2). 2.3 Percentage of rangers who pass a test measuring key aspects of elephant deterrence (Baseline to be established Pre-Training; target: 75% of 32 rangers trained in Y1 and 75% of 16 VGS trained in Y2). 2.4 Percentage of community members who are able to articulate key aspects of safety around elephants and carnivores (Baseline (2021): 48%; target 75% in Y3).	2.1 Ranger HWC response records; Key Informant interviews with Village Leaders 2.2 Ranger Training Feedback, pre-training and post-training assessment 2.3 Test Results (test designed by STEP with input from Protected Area staff and trainer) 2.4 Knowledge retention assessments conducted at Outreach Events and by LEMs	2.1 RKM GR and MBOMIPA WMA continue to allocate resources to HWC Response and to prioritise rapid response. 2.2 Provision of targeted training and elephant deterrent toolkits will help rangers feel they are better prepared to conduct HWC response.
Output 3 Novel Instant Detect conservation technology is field-tested and its efficacy, viability and potential for scaling as an early warning system is assessed.	3.1 Percentage of deployment time that the ID system is operational and problem-free (Baseline: 0; Y1:50%; Y2: 75%; Y3: 90%). 3.2 Number of technical issues encountered with the Instant Detect system(Y1: <10, Y2: <5; Y3: <3)	3.1 Instant Detect system report and Daily Instant Detect Operations Logbook (filled out by VGS in Control Room). 3.2 Instant Detect system report and Daily Instant Detect Operations Logbook (filled out by VGS in Control Room).	3.1 The Instant Detect system is available by the manufacturer's stated release date. This second release of the Instant Detect System has resolved technical issues experienced during the first

Project summary	SMART Indicators	Means of verification	Important Assumptions
	3.3 Percentage of Instant Detect alerts that are verified as accurate detections of illegal activity (i.e. not false triggers) (Y1: 75%, Y2&Y3: 90%) 3.4 6 MBOMIPA WMA VGS (2 women) have 100% of the required skills to operate the Instant Detect system (Baseline: 0; Y1: 70%; Y2&Y3: 100%). 3.5 Percentage of Instant Detect deployment days that the ID Control Room is operational (Baseline: 0; Y1: 70%; Y2&Y3: 100%) 3.6 Percentage of Instant Detect alerts that result in a VGS mobilisation (Baseline: 0; Y1: 70%; Y2&Y3: 100%) 3.7 Percentage of VGS mobilizations in response to Instant Detect alerts that result in encounters (Baseline :0; Y1: 20%; Y2&Y3: 40%).	3.3 Physical verification of a randomly selected subset of Instant Detect alerts (e.g. checking for tracks at the deployment site), recorded by VGS in a mobile data collection form (Survey123) 3.4 Pre- and post -training evaluation in Year 1; Skills Evaluation Test in Y2 and Y3: verification of Instant Detect Daily Operations Checklist in Control Room 3.5 Daily Instant Detect Operations Logbook (filled out by VGS in the Control Room). 3.6 VGS patrol forms (mobile data collection using Surveys 123) records, Daily Instant Detect Operations Logbook 3.7 VGS patrol forms (mobile data collection using Surveys 123) records, Daily Instant Detect Operations Logbook	release of the system. 3.2 The Instant Detect system can be protected against theft and environmental damage (e.g. flooding, fire) through careful deployment. 3.3 Following intensive training, VGS will be able to use the acquired skills and knowledge to deploy and monitor the system with minimum supervision. 3.4 The satellite internet connection for transmitting Instant Detect alerts to the Control Room is fast and reliable.
Output 4 Capacity for aerial surveillance and strategic ground patrols is strengthened and the professionalism of RKM GR rangers and MBOMIPA VGS is enhanced.	4.1 Percentage of MBOMIPA WMA and RKM GR covered by aerial patrol missions (Baseline to be established from 2020 data; target: 90% of MBOMIPA WMA; 40% of RKM GR in all years). 4.2 Percentage of aerial surveillance patrols that result in a same-day ranger/VGS ground mobilisation (Baseline: to be calculated from 2020 data; Y1: 50%; Y2&Y3: 70%). 4.3 Percentage of MBOMIPA WMA covered by monthly VGS ground patrols (Baseline: to be computed from 2021 data; Y1: 60%; Y2 Y3: 75%, disaggregated by season).	4.1 Mapping and spatial analysis of aerial patrol tracklogs 4.2 Aerial patrol datasheets 4.3 Mapping and spatial analysis of VGS patrol tracklogs 4.4 Pre- and post-training assessments; spot checks of pre-patrol plans and checklist. 4.5 Pre- and post-training assessment 4.6 Post-arrest forms 4.7 Court attendance monitoring form, court cases database	4.1 We assume that the new aircraft will operate issue-free with only minor maintenance requirements. 4.2 STEP will be able to maintain its established and trusted relationships with RKM GR and MBOMIPA leadership.

Project summary	SMART Indicators	Means of verification	Important Assumptions
	4.4 Number of VGS who, through training, attain the working standards of the International Ranger Federation. (Baseline (2021): 8 VGS; target: 16 VGS by Y2 (3 women)). 4.5 Number of RKM rangers and MBOMIPA VGS who, through training, attain the necessary skills to serve as aerial observers. (Baseline (2022): 1 RKM Ranger, 0 women; Target: 5 RKM GR rangers and 2 MBOMIPA VGS by Y1 (2 women)). 4.6 Percentage of suspects arrested by VGS that attest in the presence of an independent witness that they were treated fairly during post-arrest procedures (target: 100% in all years) 4.7 Percentage of ivory and bushmeat poaching court case hearings that are attended by MBOMIPA VGS (Baseline (2021): 100%; target: 100% in all years).		
Activities 1.1 Conduct orientation and sensitization meetings with partners and at village- and sub-village level for the establishment of VSLAs, beekeeping & poultry health interventions 1.2 Establish and train 20 Village Savings and Loans Associations (25 members per VSLA) with 500 members in 10 villages 1.3 Establish poultry health intervention trial with 100 participants in 5 villages 1.4 Provide 200 beehives and beekeeping training to 100 beekeepers in 5 villages 1.5 Ongoing capacity-building and monitoring of livelihood interventions by community-based team 2.1 Provide vehicle for increasing human-wildlife conflict response capacity to RKM GR, together with training on effective use of vehicle for HWC response 2.2 Enable HWC response by MBOMIPA VGS and RKM GR rangers through fuel provision 2.3 Train 32 RKM GR rangers and 16 MBOMIPA VGS in safety around elephants and more effective elephant deterrent techniques 2.4 Local Elephant Monitors conduct one-on-one training for 3000 community members at home and at farms on elephant behaviour and safety around elephants 2.5 Conduct wide-scale education and outreach programs (Tembo Cup Football Tournament) 3.1 Train 6 MBOMIPA VGS (2 women) in Instant Detect deployment, operation, monitoring and response 3.2 Deploy and monitor Instant Detect 2.0 system and set up Control Room for Phase 1 of field trial (operationalization) 3.3 Deploy and monitor Instant Detect 2.0 system for Phase 2 of field trial (efficacy, viability, VGS mobilisation)			

Project summary	SMART Indicators	Means of verification	Important Assumptions
3.4 Produce Instant Detect 2.0 efficacy and viability assessment report and, if trial successful, Standard Operating Procedures for MBOMIPA WMA 4.1 Train 5 RKM GR rangers and 2 MBOMIPA VGS (2 women) to become aerial observers 4.2 Conduct 60 hours of aerial surveillance per year in coordination with rapid response ranger and VGS ground teams 4.3 Enable 23 days of strategic patrols by 4 Village Game Scout teams every month in MBOMIPA WMA 4.4 Train 8 MBOMIPA VGS (3 women) in basic tactical anti-poaching skills with PAMS Foundation 4.5 Generate ground and aerial patrol maps and trend analysis reports for protected area managers 4.6 Conduct refresher training for 39 VGS and 14 RKM GR rangers in human rights, just arrest, and post-arrest procedures 4.7 Support MBOMIPA WMA VGS to provide witness testimony in court cases			

8. Annex 3 Standard Indicators

i. Table 1 Project Standard Indicators

IWTCF Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with IWTCF Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
IWTCF-A01	Number of people who received training in sustainable livelihood skills	1. 500 community members gain access to safe credit and have more diversified livelihoods to offset illegal wildlife use (bushmeat poaching) through training	Number	Gender (Male and Female), Type of Training (VSLA, beekeeping, poultry vaccine administration	426				500
IWTCF-A05	Number of credit and savings groups established	Not an indicator currently discretely tracked in the logframe	Number	VSLAs per location	18				TBD
IWTCF-A06	Total number of loans provided to Micro Small and Medium Enterprises (MSMEs)	Not an indicator currently discretely tracked in the logframe	Number	Number of loans per type (agriculture, business establishment, emergency response)	686				TBD
IWTCF-A07	Total Value of Loans Provided	Not an indicator currently discretely tracked in the logframe	Value in £	Amount lent per type (agriculture, business establishment, emergency response)	~£5,861				TBD
IWTCF-A08	Number of sustainable livelihoods enterprises established	Not an indicator currently discretely tracked in the logframe	Number	VSLAs per location	18				TBD
IWTCF-A09	Number of existing enterprises receiving capacity building support	Not an indicator currently discretely tracked in the logframe	# existing VSLAs	VSLAs per location	8				8
WTCF-B01	Number of people trained in law enforcement skills.	4.4 Number of VGS who, through training, attain the working standards of the International Ranger Federation. (Baseline (2021): 8 VGS; target: 16 VGS by Y2 (3 women)).	Number	Gender (Male & Female) Stakeholder group: village game scouts. Type of Law Enforcement training: IRF by PAMS Foundation.	0			0	16
WTCF-B01	Number of people trained in law enforcement skills.	4.5 Number of RKM rangers and MBOMIPA VGS who, through	Number	Gender (Male & Female)	0			0	7

IWTCF Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with IWTCF Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
		training, attain the necessary skills to serve as aerial observers. (Baseline (2022): 1 RKM Ranger, 0 women; Target: 5 RKM GR rangers and 2 MBOMIPA VGS by Y1 (2 women)).		Stakeholder group: rangers and village game scouts. Type of Law Enforcement training: aerial patrol observer training.					
WTCF-B05	Number of best practice guides and knowledge products[5] (i.e. product identification etc.)6 published and endorsed[7]	Number of assessments and best practice guides produced for novel early warning technology	Number	Languages: English, Kiswahili Type of tool: assessment report and best practice guide	0			0	2
IWTCF-B09	Duration or frequency of patrols by law enforcement rangers supported through the project.	Number of patrol days supported by the project in MBOMIPA WMA.	Duration (days)	Type of patrol: Foot patrol (699 days) and vehicle patrols (164 days)	863			863	3,036
IWTCF-B10	Number of arrests (linked to wildlife crime) facilitated by the project	Number of arrests linked to wildlife crime	Number	Level of offence charged: bushmeat (6), illegal possession of firearms (2), ivory (1)	7			7	No specific target
IWCF-B12	Number of wildlife crime cases submitted for prosecution[9]	Number of wildlife crime cases submitted for prosecution	Number	Type of charges: unlawful possession of bushmeat (3), firearms (1), and ivory (1)	3			3	No specific target
IWCF-B13	Number of individuals charged for wildlife crime	Number of individuals charged for wildlife crime	Number	Type of charges: unlawful possession of bushmeat (3), firearms (1), and ivory (1)	3			3	No specific target

IWTCF Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with IWTCF Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
WTCF-B14	Number of individuals successfully prosecuted for wildlife crimes	Number of individuals successfully prosecuted for wildlife crimes	Number	Type of charges: unlawful possession of bushmeat, firearms, ivory	0			0	No specific target
IWTCF-B23	Number of databases established that are used for law enforcement.	Number of databases established that are used for law enforcement in MBOMIPA WMA.	Number	Type of Database: ESRI PAMS database	1			1	1
IWTCF-D03	Number of local/national organisations[15] with improved capability and capacity as a result of the project.	Number of local and national organisations with improved capacity	Number of organisations	Organisation Types: MBOMIPA Wildlife Management Area (local), Tanzania Wildlife Management Authority (national)	2			2	2
IWTCF-D19	Social media presence[21]	Number of social media followers	Number of followers	By platform: Facebook 16,619 Instagram 1,642 Twitter 1,642	19,903			19,903	No specific target

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ii. 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)

10. Checklist for submission

	Check
Different reporting templates have different questions, and it is important you use the correct one. Have you checked you have used the **correct template** (checking fund, type of report (i.e. Annual or Final), and year) and **deleted the blue guidance text** before submission?	Yes
Is the report less than 10MB? If so, please email to BCF-Reports@niras.com putting the project number in the subject line.	NA
Is your report more than 10MB? If so, please discuss with BCF-Reports@niras.com about the best way to deliver the report, putting the project number in the subject line.	Yes
Have you included means of verification? You should not submit every project document, but the main outputs and a selection of the others would strengthen the report.	Yes
Do you have hard copies of material you need to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number. However, we would expect that most material will now be electronic.	No
If you are submitting photos for publicity purposes, do these meet the outlined requirements (see section 17)?	NA
Have you involved your partners in preparation of the report and named the main contributors	Yes
Have you completed the Project Expenditure table fully?	Yes
Do not include claim forms or other communications with this report.	