Darwin Initiative: Final Report

Darwin Project Information

Project reference	24-002
Project title	Cattle, water and wildlife: enhancing socio-ecological resilience in Laikipia
Country(ies)	Kenya
Lead organisation	Fauna & Flora International
Partner institution(s)	Ol Pejeta Conservancy, Laikipia Forum
Darwin grant value	£399,383
Start/end dates of project	01/04/2017-30/03/2021
Project leader's name	Rob Small
Project website/blog/social media	https://www.fauna-flora.org/projects/cattle-water-wildlife-enhancing-socio-ecological-resilience-laikipia
Report author(s) and date	Rob Small, Ann Komen and Moses Muthoki - 30th June 2021

1 Project Summary

In Laikipia County, many conservation organisations transitioned from colonial-era cattle ranches to mixed-use cattle/game systems, encouraging increasing wildlife populations outside formal protected areas. Among these is Ol Pejeta Conservancy (OPC), holding a Key 1 population of black rhinoceros, and species in general decline including African lion. However, on OPC, these populations are nearing ecological carrying capacity, creating an urgent need for range expansion and connectivity to wider dispersal areas.

OPC's sustainability depends on safeguarding the wellbeing and livelihoods of neighbouring smallholder farmers and pastoralists. The wider OPC landscape, a meeting point of settled agriculture and semi-settled pastoralism with unclear user rights for grazing and water, is increasingly impacted by overgrazing, soil erosion, periods of drought and climate change which negatively affect the wellbeing of the small-scale farmers and pastoralists. As resources become depleted or unavailable, conflicts occur between pastoralists, farmers and private cattle ranchers, as well as between people and wildlife.

The Agricultural Development Corporation (ADC) Mutara ranch borders OPC and was formerly managed for livestock production. In 2012, ADC agreed to set aside 8000 ha adjacent to OPC for conservation, livestock and wildlife management – the Mutara Conservation Area (MCA). The area was identified as a corridor for wildlife migration and an area for conservation providing a linkage across Laikipia and landscapes further north. However extensive indiscriminate illegal grazing of livestock from neighbouring pastoralist communities during the dry season led to extensive degradation of MCA.

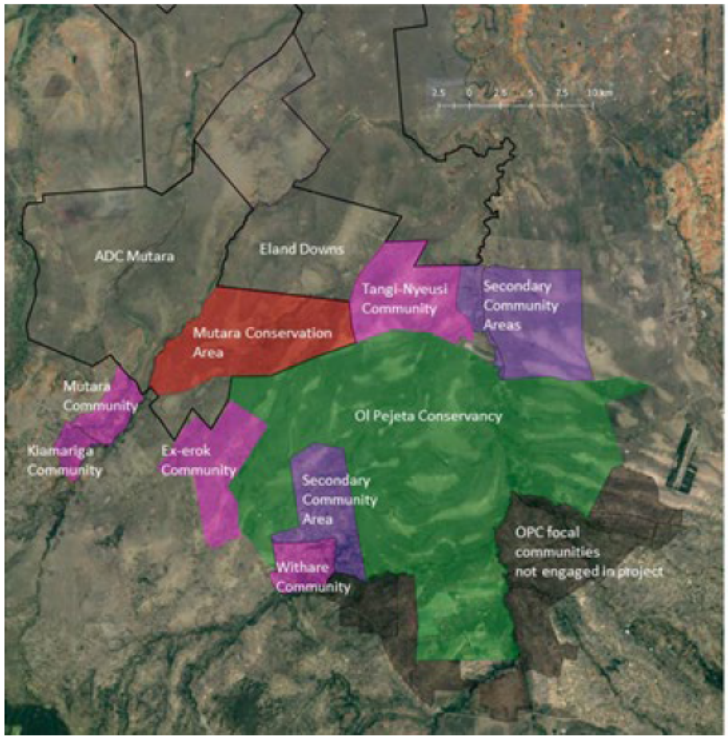
Balancing equitable access to the resources of MCA, whilst expanding habitat for important wildlife populations, is a critical opportunity to address the challenges above. To achieve this, it requires transparent, inclusive and accountable processes to avoid practices and policies that will act against the poorest livestock owners, threatening any conservation and livelihood gains across the landscape.

The project supported the management of MCA through interventions that contributed to: MCA rangeland restoration; improved water access and management within MCA and adjacent sub catchments[1]; improved wellbeing of communities adjacent to MCA; and enabled effective protection

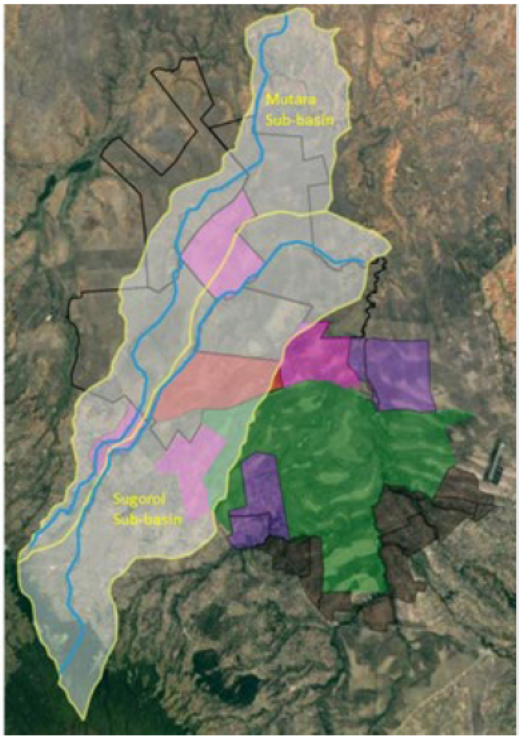
[1] Mutara and Sugoroi sub catchments

of wildlife on MCA. The project benefited from the long-term engagement of Fauna & Flora International (FFI) with its local partners, and the key priorities identified through the Darwin-funded Social Assessment of Protected Areas (SAPA) project (2014-2016), to engage with five key communities' dependant on and impacting on MCA natural resources. The project partners identified a comprehensive programme of work with local stakeholders across multiple landholdings, to build peace and sustainability by balancing grazing and water resources for people and wildlife use.

The project geographical scope was MCA, Mutara and Sugoroi sub-basins and five key communities' dependant on MCA and Mutara and Sugoroi sub-basin natural resources: Tangi-Nyeusi who are purely pastoralists; Mutara, Kiamariga, Ex-erok and Withare communities who are agro-pastoralists and farmers. Please see Maps 1 and 2 (below).



Map 1: Project area map including MCA and adjacent community areas



Map 2: Project area map showing Mutara and Sugoroi sub-basins, rivers and WRUAs

2 Project Partnerships

The project was structured with FFI as the lead organisation, providing oversight and technical support and administrative backstopping. OPC was the lead implementing partner for agricultural, livestock and conservation management components of the project with the Laikipia Forum (LF) leading on policy and communication aspects, particularly in regard to water management. FFI had a pre-existing and long-standing partnership with OPC but the Darwin project was the largest single project that the two organisations had worked on together. The project was the first time that FFI and LF had formally partnered although staff of all organisations had collaborated on shared interests concerning wildlife, water management and community conservation for several years previously. These prior engagements were critical in the co-development of the Darwin project and helped to ensure a clear understanding of the roles of the different organisations in during the course of delivering the project.

The partnerships between FFI, LF and OPC were continually strengthened through the project period through staffing structure, frequency and form of communication, learning and development processes.

The project's embedding of the FFI project coordinator in the OPC offices was instrumental in facilitating effective joint planning, implementation and monitoring of project activities between the partners. This ensured inclusivity in project activities, synergy of resources in addressing prioritized issues, lessons sharing to facilitate learning; and annual reflection meetings to support adoptive management and improve implementation in the subsequent years. This enabled operational

efficiency between the partners on work-planning, scheduled financial reporting and activity progress reviews.

Regular bi-monthly calls were held throughout the project implementation to review and prioritize activities. The meetings were between the project's Team Leader, FFI's project co-ordinator and OPC's Head of Community Development. Additional supervisory support was through bi-annual field visits by the Team Leader and FFI's Senior Programme Manager for East Africa in Y1-Y3. The visit did not happen in year 4 due to covid restrictions

The project continually developed strategic partnerships with local communities, the owners and leaseholder of the MCA and other local stakeholders which facilitated joint planning, co-implementation, and lessons information sharing in the following areas:

- Addressing water management challenges in Mutara and Sugoroi sub-catchments (Activities 1.4, 2.5, 2.7 and Annexes 7.2.1 & 7.2.11);
- Delivery of agricultural training (Annexes 7.3.1 and 7.4.1).
- First bird surveys for MCA (Activity 1.8; Annex 7.1.7).
- Review of MCA management plan (Activity 1.10 Annex 7.1.8).
- Training on Spatial Monitoring and Reporting Tool (SMART) (Annex 7.1.6).

Staff from the British High Commission were briefed on the project in Y1 and were kept aware of its implementation by the project leader and FFI Kenya staff.

Beyond the Darwin Project itself OPC and FFI work together on a range of projects. The nature of this broader partnership is dynamic and the importance of revisiting the nature and goals of the partnership has been recognised by both organisations. A review process of the overall partnership was instigated by members of the DI project team and supported by the PhD student co-supervised by the Team Leader (see section 6: Monitoring and Evaluation and Section 9.3 Value for Money).

3 Project Achievements

3.1 Outputs

Output 1: 8000ha of restored rangeland under active sustainable management that meets the grazing needs of community livestock and wildlife

Overall, we have achieved sustainable management of the MCA that meets the needs of wildlife, but with an unstable governance and climatic conditions it has been challenging to be able to do this throughout the whole term of the project in a way that consistently meets the grazing needs of community owned livestock.

The 8000ha Mutara Conservation Area (MCA) was the focus of this output and in the months prior to the start of the project the MCA was under significant grazing pressure from unmanaged small-stock (goats and sheep) and cattle owned by both semi-settled local and further ranging pastoralist groups from counties to the north of Laikipia. From an aerial survey conducted in November 2017 it was estimated that 24,000 head of goat, sheep and cattle were on the MCA (Annex 7.1.1). From stocking densities calculated as part of the grazing management plan for the project it is estimated that a sustainable cattle herd size for the MCA would be 2000 for the MCA (Annex 7.3.8).

By the start of Y2 all illegal grazing on the MCA had ceased and this was achieved without conflict. Under a separate OPC project, from April to September 2019 a 21 km boundary fence for the MCA, between the neighbouring Tangi Nyeusi community and Eland Downs (managed by the Kenyan Wildlife Service) was constructed.

In the first year of the project a management plan for the MCA was developed (Indicator 1.1, Annex 7.1.13). This was actively used as a management tool by OPC and was reviewed and updated on an annual basis to integrate new information from the project's socio-economic survey findings and annual bio-monitoring and ecological reports (Indicator 1.2, Annex 7.5.5 and Annex 7.1.6). Throughout the project, both rangeland quality and wildlife diversity increased on the MCA (Annex 7.1.6).

In Y2 and Y3 the project achieved a continual improvement in satisfaction with grazing access. In 2020, the majority of respondents (64%) were satisfied with access to grazing. This was a 25% increase compared to 2018 baselines and predominately a result of satisfactory rains received in 2019. However, in Y4 satisfaction for grazing access declined with 83.5% of respondents (79% male and 88% female) stating they were not satisfied with grazing access. The Y4 result was 35% lower than the project baselines. Although there has been a sharp decline in grazing satisfaction, the

projects activities in Output 3 (see activities 3.17, 3.14 and Annex 7.3.1) have had a significant impact on the survivability of cattle herds during period of drought with pastoralists reporting to have lost up to 35% of their herds in 2017 compared with no livestock losses throughout the project, including the drought experienced in Y4.

Alongside designing and implementing an improved management regime, to meet the grazing needs of community owned livestock this output was contingent on the full achievement of output 3. In the original design of the project this would have enabled managed access to the MCA for the grazing of community owned cattle, thereby helping to meet the grazing needs of communities that neighbour the MCA. Negotiations for this element of the project were long-running and extensive throughout from Y1-Y3 (see Activity 3.5). Ultimately and due to multiple factors outside of the project's control the community cattle grazing component was agreed by project partners not be feasible (see output 3). A change request (Annex 7.5.10) was made and approved the review of Output 3 in September 2020 to include activities on sustainable livelihood scheme to support pastoralist income diversification and wellbeing (Activities 3.5-3.9), which as reported under Output 3, has had positive impacts on the wellbeing of pastoralists and the changes achieved by the new activities in the request have either met or exceeded expectations. However, these revised activities were not be a like for like replacement of the project's initial plans for a change in the availability of additional grazing areas.

Grazing access was not granted under a formalised community cattle scheme, however during Y4 there was a sharp decline in rainfall which significantly affected grazing availability across Laikipia County. This resulted in a tipping point in December 2020 and which time it was decided by ADC Mutara (the landowners of MCA) that the MCA should be opened for crisis grazing. By January 2021 more than 10,000 cattle and more than 15,000 sheep and goats from both immediate communities and from other areas in Laikipia were grazing on the MCA. A total of 6000 cattle from communities targeted by the project benefited from this crisis grazing (102 households in Tangi Nyeusi and 40 households in Mutara). However, even this number however catered for only 40% of the total population of 12,900 cattle in both Tangi Nyeusi and Mutara. The animals were expected to exit when the rain falls in March 2021, however with on-going dry conditions, the majority of livestock have been retained on MCA to date (June 2021).

When the current grazing crisis abates, OPC intends to work with pastoralists communities and the MCA's owners and current leaseholder to continue to find solutions for equitable and sustainable patterns of livestock grazing. The recovery period for the MCA rangeland that occurred during the Y1-Y3 of the project has meant that it has been able to absorb the shock of meeting a significant, short-term grazing need of pastoralist livestock keepers. From ecological data gathered through the course of the project there is confidence that the MCA has the capacity for a rapid recovery (Annex 7.1.6).

The wildlife gains on MCA between Y1-Y3 by the project were not compromised despite the increased number of livestock numbers during crisis grazing in 2021. The lion prides that had extended their ranges to MCA from 2019 still remained. This was attributed to increased water availability within MCA that satisfied the needs of both livestock and wildlife with lion ranges centred on areas where water points are found.

Output 2: Improved water availability for domestic use, livestock and wildlife in MCA and 75% of households in 6 focal community areas that is managed by representative local institutions.

Although impacted by below average rains in Y4, water governance and availability has improved for people, livestock and wildlife in focal community areas and the MCA as a result of project implementation. To achieve this output the project team initially focused on working with two Water Resource User Associations (WRUAs) which are the local water management institutions for the sub-catchments within the project area. These were the Sugoroi WRUA and the Mutara WRUA. This engagement drew on competencies of both OPCs Community Development Programme staff and the Water Management staff from the Laikipia Forum. The project also worked closely with the Water Resource Authority[2] (WRA) which facilitated integration of project activities in local strategic plans and sustain results achieved through the project in the long term.

Baseline information gathered in Y1 of the project showed that levels of awareness and inclusivity of WRUAs by community members was low with only 38.5% of respondents (45% men and 32% women) having heard about their local WRUA and of these, only 19% (22% men and 16% women) were WRUA members. Mutara WRUA had 136 members who were registered both as individuals (13

[2] The national-level government institution mandated for water management

women and 123 men) and 1045 members registered through water projects[3]. Sugoroi WRUA had 49 registered members (9 women and 40 men) (see Annex 7.2.2). In Y1 the interests of the WRUAs and water projects were not aligned as WRUAs were instituted to ensure equitable sharing and conservation of their respective sub-catchments while the water projects solely focused on maximising abstraction of riverine water for intensive irrigation. At the start of the project this had created a scenario of unsustainable water use and intense water conflicts with 71% of those interviewed reporting water access conflicts in project baselines (see Annex 7.5.5). Throughout the project improvements were made against these baselines and by the end of the project, 87% of community members (84% men and 92% women) interviewed within Mutara and Sugoroi sub-catchments had heard about their WRUA which is an increase of 48.5% compared to 2018 baselines. 90% of those who have heard about their local WRUA (92% men and 88% women) understood its committee structure and roles. The WRUAs and community water projects had aligned their interests and continue to actively work together to pursue short-term and long-term term measures to improve water availability and ensure equitable sharing (Annex 7.2.16). This has significantly reduced water access conflicts (by 26.5% against baselines) despite prevailing dry conditions in the final year of the project implementation. This change was attributed to regular stakeholder meetings organized by the project and subsequently improved functionality of the WRUAs (Annex 7.2.1).

WRUA membership doubled during the project period, with 77% of focal community members (75% of men and 78% of women) reporting WRUA membership in 2021 (Annexes 7.2.2 and 7.5.5). The organisational capacity of both WRUAs has seen continual improvement through capacity support from the project with the following key outputs: three priority actions required to improve water security: 1. construction of a common intake and 2. establishment of a collaborative river monitoring and enforcement system. From 2019 the WRUAs were initiating meetings to address water access conflicts. These complimented meetings organized by the project to implement initiatives for the restoration of riverine habitat initiatives and employing water rationing plans during periods of water scarcity that reduced water access conflicts (Annex 7.2.1).

The baseline capacity needs assessment rated the two WRUAs as still developing; A score of a 2, on a scale of 1- 5 where 1 is formative stages while 5 is exemplary. Through the project support in partnership with other stakeholders; the capacity for the two WRUAs recorded improved scores of 3 (moderately developed) in the end of project capacity needs assessment, this was primarily due to the limitation of funds to the WRUAs from the WRA and other state entities (Annex 7.2.1).

Focusing on an issue of common interest for WRUAs, water projects and the WRA, the development of a common intake water project within the sub-catchments has resulted in common purpose, a joint roadmap of 8 milestone steps[4] developed towards achievement of the common intake. The project supported the completion of the first four steps (Annex 7.2.4-7.2.8) and was complimented by co-financing mobilized by the project partners. The Community Water project members have committed to contribute in kind (provide labour) to reticulate old pipes towards the common intake. Application for authorization has been made and awaiting review and approval by WRA. A common intake committee has been established to provide oversight for the completion of the two pending steps: Fundraising and resource mobilization for constructing and permit application for water use (see Annex 7.2.1).

During the first three years of the project there were consistent levels of rainfall and during this period, due to the project's engagement and support to local organisations, institutions, farmers and livestock keepers there was a 14% increase among those reporting adequate water for domestic use, a 9% increase among those reporting adequate water for livestock, and a 25.5% increase among those reporting adequate water for agriculture in 2020 compared to Y1 baselines.

However, these interventions were not enough to overcome increased water stress in Y4 when less than half of rainfall was received as compared to the same periods in the previous three years. This resulted in a large decline in those reporting adequate water availability in 2021. There was a 25% increase of those reporting water inadequacy for domestic use, a 28.5% increase of those reporting inadequacy for livestock use and a 28.5% increase of those reporting inadequacy for agriculture use compared to the 2018 baselines.

[3] Hakingae irrigation project – 217 members, Mutara irrigation project – 150 members, Munanda irrigation project – 70 members, Kiangoru irrigation project – 150 members, Raya/Kiamariga project – 204 members and Gatitu / Muthaiga – 254 members

[4] Feas bility study, Hydrological survey, Full engineering survey and design, Environmental Impact Assessment, Application of authorization, Fundraising and resource mobilization to construct, Reticulation of the old pipes toward the common intake, and permit application for water use

Although the adequacy of water supply has been challenging a reduction of conflicts over water access has been maintained with an overall 27.5% decrease in water access conflicts recorded in 2021 compared to 2018 baselines. This shows the positive impact that the project has had through working with local and county-level water management institutions.

Output 3: Community cattle and sustainable livelihood scheme, supporting pastoralist income diversification and wellbeing.

At the start of the project, levels of engagement and collaboration between the project partners and local pastoralist communities was low. OPC's Community Development Programme focused on health and education initiatives with these communities with an elected community representative who was the focal point between each community and OPC. There were no livestock-based extension services or formal mechanisms to support the grazing of livestock (including market-based mechanisms). The baselines indicated that only 4% in Tangi Nyeusi and 11% in Mutara respondents were receiving livestock extension support (Annex 7.5.5).

Prior to a change request that was approved in Y4 this output focused on the development and implementation of a community cattle marketing scheme. Due to circumstances outside of the project control this was not feasible but prior to the revision of the output, the earlier output activities have resulted in significant lessons in terms of the feasibility, enabling conditions and risks of such an approach. A total of 32 dialogue meetings were conducted within the 3 communities to discuss and design the community livestock scheme including the design of the MCA grazing plan and eligibility criteria for the community livestock scheme. The total number of people engaged represented 506 households (374 men and 132 women) (Annex 7.3.2). The comprehensive dialogue and meetings with communities (see Annex 7.3.1) held through the project period and MCA bio-monitoring findings (Activity 3.13a, see Annex 7.1.6) has gathered and documented lessons (Annex 7.1.14 and 7.3.11) that will inform the review and implementation of livestock schemes within MCA and the wider Laikipia landscape to continue working towards a sustainable balance between community grazing needs and wildlife conservation.

As stated under Output 1 at the start of the project the MCA was under significant grazing pressure. The majority of pastoralists within project focal communities had lost livestock to drought with household herd loses as high as 35%. Livestock extension services were limited within communities and poor livestock production and disease management was common. Y1 baselines showed that only 14% (11% men and 17% women) of the respondents had received livestock extension support. The project interventions of the project have to a great extent improved the baseline conditions. Project livestock extension support was targeted to Tangi Nyeusi, Ex Erok, Mutara and Withare pastoralist and agro-pastoralist communities. At the end of the project, 57.5% (54% men and 61% women) reported to have received extension support. This was 41% increase of respondents in Year 4 compared to the baselines (Annex 7.5.5). According to the livestock extension officer records, a total of 429 households (250 men and 169 women) benefited from the project livestock extension support which had exceeded the project target (Indicator 3.3) of 400 households (Annex 7.3.1). The provision of livestock extension support through the project has resulted in decrease in disease and nutrition related deaths among livestock and subsequent increased production. A targeted survey in 2021 for those receiving livestock extension survey: 22% of farmers reported reduced livestock mortality; 27% reported better disease management which enjoins to reduce livestock mortality; 20% recorded improved milk production and 27% reported increased income (Annex 7.3.1). The project trained 48 elders and supported to them to supplement their livestock to maintain during periods of scarcity. By March 2021 the average price paid for pastoralist livestock supported by the project on cattle feed supplementation was at least KShs 40,000[5], this was a 14% increase from the 2020 market prices. (See Annex 7.3.1 and 7.3.1).

As previously mentioned, the project submitted a change request in September 2020 (see Annex 7.5.10) when it was evident that the community livestock scheme was not feasible within the project timelines. The implementation of sustainable livelihood scheme was approved and implemented.

By March 2021 330 pastoralist households (227 women; 103 morans and 63 elders) (Indicator 3.5) had participated in the project's diversified livelihoods scheme and their household wellbeing had improved through adoption of the scheme[6]. This exceeded the project target of 250 households.

[5] Revision of cattle value from KShs 50,000 to KShs 40,000 in the submitted change request as access to improved breeding from OPC cattle herd not achievable

[6] Market gardens, poultry farming, livestock supplementation, and use of energy saving Jikos.

By March 2021 5 women groups consisting of 96 pastoralist households had been trained on kitchen market garden production and each put up 2 kitchen gardens and were saving KS [redacted] per month for not purchasing vegetables and group income of KS [redacted] per month through vegetable sales. Over a 6-month -this was a 53 % group income in a period of 6 months. (Annex 7.3.1 Livestock engagement and extension report).

By March 2021 6 women groups representing 129 pastoralist households and 3 youth groups representing 63 pastoralist households had been trained in poultry production and seeded with 11 chicken per group. The groups were earning an average monthly group income of [redacted] from egg sales which was a 100% and 25% increase in income for women and youth groups respectively by the end of 6 months. The groups have also doubled their chicken numbers allowing them to be able to double their income after another six months (October 2021). Each group is projected to make additional income from poultry meat sales of approximately KS [redacted]. The groups were also supported to construct chicken structures that can hold up to 100 birds thus over time the groups have potential to grow their income up to [redacted] per month through egg sales and [redacted] every 6 months from meat sales. The groups were guided to construct a structure that can hold up to 100 birds to allow the numbers to grow overtime through brooding of chicks which can be doubled every 7 months (takes 7 months for a chick to grow to maturity). The nearby town of Nanyuki is undergoing rapid growth and currently serves as the primary markets for poultry and egg sales. OPC will continue to support the sustained growth of this initiative beyond the project term.

By March 2021,13 women and 5 youth groups were linked to micro finance institutions with cumulative membership of 330 (225 women; 105 youths). 8 of these groups successfully applied for loans, 7 groups were supported to renew their annual government licence, and 3 groups were supported to register with the office of social services to facilitate them access funds in the future. The loans of the 7 groups who applied have been approved and will be cumulatively receiving [redacted] These funds are being used by the groups to extend their work on poultry production and kitchen market gardens (Annex 7.3.1) showing the sustainability of the livelihood projects beyond the term of the project.

41 people (23 women and 18 men) learned how to use of energy saving jikos to reduce the volume of fuelwood needed by households. A total of 7 jikos were given to 7 women representing 7 groups. An initial assessment of those using energy saving jikos demonstrated potential to address pastoralist household's energy needs and 40 % reduction in fuelwood consumption (Annex 7.3.1).

Output 4: Women and men in 2 target communities adopt a community-based fodder production system that supports the diversification of small-scale farmer livelihoods in at least 200 households.

Successful implementation of this output has shown that extension support on climate smart fodder production integrated with the principles of conservation agriculture and on farm water harvesting has improved household resilience to drought. Even in the face of drier conditions through 2021, the two communities where levels of fodder farming adoption (through project interventions) were high recorded higher wellbeing by the end of the project compared to the other communities where adaptation was low. The main cause of improved wellbeing in the two communities was attributed to project activities - availability of market for fodder and improved milk production enabled by availability of fodder.

Y1 baselines showed that only 14.5% (14% men and 15% women) were receiving agricultural extension support. The majority of the farmers were farming maize and beans with varieties not suited to the semi-arid conditions. As such, project baselines showed only 29% of households were farming drought tolerant crops. The project started immediately following a period of drought whereby farmers in focal communities had lost the majority of their crops and could hardly meet the households needs. At this time fodder production was relatively uncommon with only 19% of households growing fodder crops (Annex 7.5.5).

In Y2 the project started supporting households in four communities on agricultural extension support which was designed to address the community needs identified during dialogue meetings with the community in 2019. These comprised fodder production, conservation agriculture, on-farm water harvesting and market-oriented farming (Annex 7.4.3). The impact of the extension support included improved household wellbeing through improved agricultural production and creation of market linkages.

Within the project focal area, between Y1 and Y4 there was a 24.5% increase in the number of households who had received agricultural extension support (Indicator 4.1). A total of 565 households (represented by 305 men and 260 women) from 4[7] communities were supported with agricultural extension on fodder production, conservation agriculture and on-farm water harvesting. By the end of the project, targeted extension support surveys confirmed: 400 households had adopted conservation agriculture with 76% of those households (n=308) reporting an increase crop yields (with increased production ranging from 3 to 10 bags of maize and beans per acre). 73% of these households (n=292) reported an increased income above 30%. This exceeded the project target of a 15% increase in agricultural income after adopting conservation agriculture. 300 households in four targeted communities established fodder crops resulting in improved income through milk production. The milk increases recorded range between 4-7 litres daily, which translates to an increase in sales of KES [redacted] 36 lined water pans excavated in 36 households improving household water security (Annex 7.4.1).

The majority of those who adopted fodder production used it solely for subsistence (68%) with only 32% of households selling part of their harvest. Thus only 96 out of the 300 households which had taken up fodder farming sold some of their hay, with 54 of these farmers reporting to have sold hay to pastoralists in the project focal communities (Tangi Nyeusi, Mutara or Ex Erok communities). More than 200 farmers in Ex Erok and Tangi Nyeusi communities were linked to Nyala Dairies Limited to market their fodder but only 59 sold to them because the profit margin was low. Nyala provided machinery to harvest fodder and gave farmers [redacted] after the deduction of harvesting and baling costs (see Annex 7.4.1).

In Ex-Erok and Withare communities which had high adoption of fodder farming; the number of those reporting improved wellbeing change (indicator 4.3) increased by 41% in Y3 compared to baselines. Though there was a slight drop in Y4 caused by prolonged dry period and Covid-19 effects, Withare community recorded a 17 % increase in those reporting higher wellbeing by end of the project while Ex Erok, maintained a fairly stable level of wellbeing in Y4 with only a 3% decrease of those reporting higher wellbeing. Withare community which was engaged by the project on fodder production from 2019 with 100% adoption of fodder farming by those trained. For those who received training from the project, 136 households (represented by 68 men and 68 women) increased or maintained their level of wellbeing by 2021 despite the prevailing dry conditions in 2021.

The majority of the fodder farmers reported production ranging between 250 and 500 bales. The mean production per acre was 524 bales per year which has 2 harvest seasons. Average price per bale is KS [redacted] and cost of production and bailing is [redacted] The average net profit per acre/annum (indicator 4.4) by the end of the project was 524 bales@ KES [redacted] totalling to KES [redacted]

Through the project implementation it was revealed that the fodder production was high among the agro-pastoral communities. The farmers within these communities keep livestock for milk production and used most of the fodder produced for their own livestock, hence those who were linked to markets and sold fodder were few. It was also noted that the farmers lost 30% of their fodder due to pre-harvest and post-harvest losses. The market demand for fodder was also low in times of surplus when rains were received. The project documented lessons on fodder production and outlines investment on harvesting technology and storage structures as a capacity need to ensure farmers get maximum benefits from fodder production (Annex 7.4.5).

Output 5: Vulnerable and endangered species are under effective protection on MCA

MCA was established in 2012 after it was set aside by the Agricultural Development Corporation and leased out to be established as a wildlife conservation area, an area for tourism enterprise and to establish a livestock scheme. OPC was tasked to manage the wildlife management aspect as the area had been earmarked as a potential expansion range for the endangered black rhinos. Prior to the project, OPC rangers were already patrolling MCA - collecting data on daily wildlife sightings and conducting routine law enforcement. This at times resulted in tensions between community and OPC. The patrolling methodology was reviewed during the project to include: increased community dialogue and engagement to encourage community participation in MCA management. The project introduced the use of grievance mechanism to monitor and timely address emerging community grievances (Annex 7.5.13).

[7] Kiamariga, Mutara, Ex Erok, Withare

The project initiated systematic ecological biomonitoring from 2018 onwards which has also been adopted to guide bio-monitoring within OPC. In Y1-Y4, data on the following were collected and analysed: quarterly assessments on pasture availability and composition; connectivity of OPC and MCA through camera trapping and spoors; daily rainfall and daily livestock densities. The analysed report has been documented and shared and supported the population management of grazing and browsing herbivores (Indicator 5.4) and predator species (see annexes 7.1.6 and 7.1.14).

A total of 21 rangers (17 men and 4 women) had been deployed prior to the start of the project by OPC with additional support from an anti-stock theft unit and the National Police Reservists (NPR). All rangers and NPR have been locally recruited from communities adjacent to Mutara Conservation area. The rangers patrol for 5 hours each day, and this was on-going throughout the project (Annex 5.1). Data on wildlife sightings, livestock sightings, and rainfall were collated and sent through on a daily basis (see Annex 7.1.6). The data collected was analysed and informed ongoing management within MCA.

Two adjoining wildlife corridors (fence gaps) on either side of OPC and MCA were established prior to the project to allow free wildlife movement on between the two-conservation area except for Rhinos. Over the project period, there has been increased usage of the corridors. MCA bird surveys were done for the first time by the project. The surveys recorded 210 species, among them 16 Afrotropical migrants and 22 Palearctic migrants. Rare sightings included the Orange-winged Pytilia, which was the first record in Laikipia and the fourth report on the Kenya Bird Map in 2019. Nine threatened species of conservation concern recorded indicate that MCA is a critical ecosystem for the survival of these species (Annex 7.1.7). Gerenuk's gazelles and the Beisa Oryx were recorded for the first time in Mutara in 2020 indicating movement from the north to MCA. The total number of herbivores that moved from MCA to OPC were 10,918 and those that moved out from OPC to MCA were 11,776. Movement by carnivores were 2298 into OPC from MCA and 2472 from OPC to MCA. In both cases, there was a net movement of wildlife to MCA from OPC. By the end of Y3 (whilst radio collars were active) lions were sighted 39 times in MCA and their home ranges as established in OPC has now extended to MCA (see Annex 7.1.3).

No records were kept on poaching figures on MCA prior to the project and during project implementation no poaching incidents were reported on MCA (Annex 7.1.3).

The ecological monitoring findings on migratory species continually informed management strategies in MCA established MCA as an important dispersal area and connectivity of OPC wildlife to the wider landscape. The findings informed the development of the MCA grazing plan (Annex 7.3.8) and development and annual review of MCA management plan (see Annexes 7.3.8 and 7.1.13). In addition, the project developed and shared a lessons document on recommendations to inform long term sustainable management of the MCA (Annex 7.1.14).

3.2 Outcome

The project's intended outcome was to secure an 8000ha dispersal area (the MCA) for rhino, elephant and predators with grazing and water resources managed for local community and pastoralist wellbeing; and resource conflict reduced across the wider OPC landscape. We feel the project has successfully achieved this outcome. The project's bio-monitoring findings confirm that the MCA is a healthy ecosystem with growing or stable wildlife populations (Outputs 1 and 5). Overall natural resource access conflicts have decreased through improved management of sub-catchments (Output 2) and engagement with pastoralist communities on MCA management and provision of extension support to support better livestock management (Output 3). The wellbeing of communities, particularly where fodder was successfully adopted, has improved or been stable even through prolonged dry periods in Y4 of the project (Output 4).

At the start of the project there was no active bio-monitoring of wildlife on the MCA and the area was highly degraded due to overgrazing. The project developed a bio-monitoring manual (Annex 7.1.4) which guided ecological biomonitoring activities on MCA from January 2018 onwards and prey base numbers have been shown to increase throughout the project period. At the start of the project no lions had been sighted at the MCA and during the course of project they were sighted 39 times. The home range of 2 lion prides[3] established in OPC has now extended to include the MCA and in addition a young lion male and a female leopard were relocated to the MCA in 2019.

The population of wild dogs drastically reduced in Laikipia in late 2016 due to canine distemper, before this time there were records of presence at OPC landscape. The few surviving numbers have been recorded to be utilizing the range between Mpala and Ol Karama further north of MCA. By the end of the project the populations had not yet recovered. Within the project period there was no record of

wild dogs recorded on MCA, though there were very infrequent sightings reported on OPC during the project period.

Data for 2012 to date from Space for Giants shows the movement of 11 collared elephants from OPC to the north through Mutara (Annex 7.1.18). This indicates the critical role of MCA in connecting OPC to the wider landscape. During the course of the project, the OPC Ecology and Wildlife Officer worked with OPC Ecological Monitoring Unit and Space for Giants to link datasets with OPC Earth Ranger software. This now allows for real time information on elephant movement to inform ongoing management of MCA.

The prey base numbers have increased over time including Beisa Oryx and Patas monkeys which are both in general decline (Annex 7.1.6). Annual aerial census' throughout the project have showed an intermittent wildlife movement to and from MCA depending on prevailing conditions. The highest recorded number of wildlife was in 2019 where 3708 animals were counted. This result was consistent with the increased security from the perimeter fence, halted livestock grazing and increased rainfall in the same year.

At the start of the project there was limited knowledge on the MCAs rangeland productivity. Quarterly pasture assessments undertaken on MCA through the project have established seasonal variation of pasture resource utilisation and MCA productivity during the dry and wet seasons. Between 2018 and 2021, significant recovery in biomass was recorded. In March 2018 assessments recorded 886kg biomass/ha, the highest recorded biomass was in June 2020 with 6473kg biomass/ha. From 2018 to 2021 there has been an in increase in the dominance of 'decreaser'[8] species at MCA, indicating improved rangeland condition.

Developing the MCA as an expansion site for the OPC black rhino population was included in the KWS Black Rhino Action Plan 2017-2021(Annex 7.1.16). This document was finalised in Y1 of the project and by 2020 conditional approval for the black rhino expansion had been given by KWS (Annex 7.1.17). Habitat and site assessments by KWS have been on-going throughout the project term with the MCA remaining a suitable site for rhino expansion. In Y4 of the project, KWS put together a multidisciplinary team to monitor progress in meeting steps required to have black rhinos on MCA which included security, socio-economic aspects and community engagement (the report is currently being compiled by KWS). The process for achieving final KWS authorisation for movement of black rhino onto MCA is on-going with OPC continuing to commit resources to this process which at the close of the project are being funded through a grant from the US government (Annex 7.18).

Between Y1 and Y3 there was a consistent improvement to levels of household wellbeing and by Y3 49% more households reported a high level of wellbeing than in the 2018. Those reporting improved wellbeing change in between Y1 and Y3 was high in Ex-Erok (85%), Mutara (76%) and Withare (95%) communities and were attributed by respondents to project activities - increased extension services (livestock and agriculture) and better livestock feed access through fodder adoption. However, in Y4 there was an overall reduction in households reporting higher wellbeing by 13%. This decline in household wellbeing was most pronounced in Kiamariga community and driven by crop losses in periods of drought. In 2021 which was a dry year, only 12% of agricultural households recorded a high level of wellbeing. This contrasts with agro-pastoralist households (39% reporting high wellbeing in Y4) and pastoralist households (57% reporting high well-being in Y4).

Households in Withare, which were engaged by the project from 2019 on fodder production, recorded a 17% increase of those reporting high wellbeing index by 2021 while Ex Erok wellbeing index remained relatively stable with a small (3%) decrease in those reporting high wellbeing. This has demonstrated the ability of fodder production to buffer communities against drought and improve wellbeing (Annex 7.5.5).

Natural resource conflicts consistently reduced throughout the project. In the final Y4 survey there was a 26% decrease of those reporting HWC compared to the Y1 baselines. Between Y1 and Y4 the following forms of natural resource conflict also decreased – farmer-pastoralist conflict (by 21.5%), pasture access conflicts (by 26.5%) and water access conflicts (by 27.5%) (see Annex 7.5.5).

The key livelihood activities in the locality are crop farming, mixed farming (agro-pastoralism) and pastoralism which are all entirely dependent on natural resources. The rangeland and fresh water are key resources with 99% reporting to depend on them for their livelihood's development. Rangeland and fresh water as important resources for livelihood development and wildlife conservation is evident. There is a high dependency of common natural resources by different livelihood groups and

[8] A dominant grass in good, well-managed veld that will decrease under any form of mismanagement, such as severe disturbance, untimely burn, overgrazing or under-utilisation.

wildlife with overlapping uses is the main source of conflicts in the locality. Although an overall decrease in natural resource conflicts was achieved by the project, this was below target. To impactfully address the issue of conflicts, landscape approaches and infrastructural investment will be needed especially in: balancing community grazing needs and conservation; construction of a common intake and water harvesting structures to ensure equitable water sharing and household water security which will reduce pressures and improve river water flows and increase water for livestock and wildlife.

3.3 Monitoring of assumptions

All outcome and output level assumptions were monitored during the course of the project:

Outcome Assumptions

1. *Continued support from local government*: The assumption still holds true. The project has established and maintained good working relationships with the local government institutions who have supported implementation of project activities (Activities 2.4,2,5, 3.17, 4.10)
2. *Continued support and cooperation from neighbouring communities*: Communities have been generally receptive to the project as evidenced by a high level of participation in project activities and uptake of knowledge and skills acquired (Activities 3.17 & 4.12). However, a section of the neighbouring pastoralist community has not been supportive of increased management of MCA to facilitate a legalized and controlled community livestock scheme. Members of the community have in the past relied on MCA for dry season grazing, water access and fuelwood. It is felt by some community members that the planned community livestock scheme on MCA will benefit a few and majority will lose any access. There is an on-going court case by a section of the community against the land owner (ADC) and the lessees of ADC Mutara (including Monarch Ltd who have leased the MCA). As a result of this emerging challenges the project continually monitored the impact of MCA's increased management on neighbouring communities and shared lessons that informed development of mitigation measures and to inform future interventions (Annex 7.3.11). While the assumption still holds true, the legal suit filed by some communities against ADC portends to a potential shift in communities remaining receptive particularly if the case was ruled against the communities. At the closure of the project activities in March 2021 the case had not been concluded.
3. *Political situation around 2017 elections did not unduly affect project implementation*: This assumption held true and the next election is in 2022 after the completion of project activities.
4. *MOU between Monarch Group Ltd and OPC for management of MCA remains in place*: Whilst OPC role in management of MCA remains in place as described elsewhere OPC has limited influence over decisions on enabling controlled access for community owned cattle. (Output 1 and section 6)
5. *Human in-migration into MCA that puts pressure on natural resources beyond the scope of this project and number of beneficiaries, does not happen:* The assumption still holds true. Although settled migration into the MCA didn't occur during the project period the use of the MCA for emergency livestock grazing in at the end of Y4Q3 significantly increased grazing pressure. As reported elsewhere there are agreements for the increased grazing levels to be time limited and no detrimental impacts on key wildlife populations has been recorded to date.
6. *Increasing predator numbers do not impact viability of herbivore populations*: The assumption still holds true. Pasture recovery in the area has led to an increase in wildlife numbers most notable predators following the increasing numbers of prey as indicated by wildlife sightings (Annex 7.1.6). No impact has been observed in the viability of herbivore population with the increase of predators. The regular ecological assessments monitored predator impact on species of concern including ostriches and Oryx.
7. *Sustained drought conditions do not occur during the course of project implementation*: The assumption still holds true. The good rains received in 2018 and 2019 led to significant recovery of the MCA as the pasture and water resources outside were adequate to meet most of community needs. The planned community livestock scheme was not implemented as scheduled in Y3 (see Annex 7.3.1). The project communicated to MCA partners the potential risk if trade-offs were not adequately addressed natural access conflicts could arise in case of

a prolonged dry season. Pastoralist communities neighbouring the conservancy rely solely on rain fed pasture and as soon as it dries up, they either relocate to other areas or demand consideration for crisis grazing within MCA, which is unsustainable over an extended period of time. In 2020 the rains were not reliable leading to pasture scarcity in within community areas. In December 2020 the MCA partners agreed to give crisis grazing access to communities with an agreement to exit as soon as rains are received and the pastures outside recover. As reported in section 3.2 although drought conditions have been experienced in Y4, natural resource conflicts have consistently declined throughout the duration of the project.

Output 1 Assumptions

Refer to Outcome Assumptions

Output 2 Assumptions

1. *Upstream water-use levels remain constant or if changes occur, there is consultation with downstream users*: The assumption still holds true. The improved functionality of WRUAs has facilitated dialogue among upstream and downstream water users on management and use of common water resources.

Output 3 Assumptions

1. *Pastoralist households in focal community groups are willing to participate in cattle scheme after FPIC process*: The assumption still holds true. The community expressed willingness to participate in the cattle scheme during consultation meetings between pastoral communities and project partners (Annex 6.8 b). However, they expressed concerns that a few people will benefit from the scheme and those who will not be part of the scheme will lose critical access to water resources within MCA. The project has developed a community livestock eligibility criterion to guide equitable allocation of livestock scheme slots and community engagement has led to the design of an entry point for community to access MCA resources during crisis periods. This element of the project will be continued by OPC beyond the project lifespan and its lessons learned documents will be used to inform future planning and implementation of the scheme.
2. *Domestic markets for beef in Kenya remain vibrant and expanding*: The assumption still holds true. According to the Meat End-Market Trends in Kenya study commissioned by the Kenya Markets Trust (2018), Kenya has an annual meat deficit of 300,000 metric tonnes per annum, requiring expansion in this expanding sector.
3. *Livestock owners engaged by the project have influence or control on movements and make decisions on sales*: This assumption still holds true but has not been monitored as the community livestock scheme is yet to be implemented.

Output 4 Assumptions

1. *Smallholder farming households in focal community groups are willing to participate in hay scheme after FPIC process*: This assumption still holds true. After inception meetings and dialogue meetings 300 households had adopted fodder farming (output 4 and activity 4.12).
2. *Zero-grazing dairy industry continues to grow in Kenya*: The assumption still holds true. Majority (68%) of those who adopted hay do dairy farming and used it for subsistence use. Those who sold (32%) sold it within Laikipia county. Market demand remains higher than current levels of production.

Output 5 Assumptions

1. *Ongoing support from national government and the KWS, including facilitating ongoing protection and management operations for wildlife, including endangered species: The* assumption still holds true. The national government facilitated ongoing protection and management of wildlife with OPC rangers on MCA receiving additional support from Kenya anti-stock theft unit and the Kenya Police Reserve (KPR) (output 5 and activity 5.6); 14 coordination meetings were held in Y1 –Y4 including participation from KWS and ADC. Following loss of tourism revenue occasioned on OPC by Covid-19 pandemic, the government initiated a subsidy to supplement ranger salaries. OPC has benefited from the subsidy with 50% salary contribution for 82 rangers including those at the MCA.
2. Ongoing support from local government and security forces: The assumption still holds true. Regular stakeholder meetings were held with between ADC, local police administration, local

chiefs Office and OPC to discuss security, management and grazing access on MCA (Annex 7.1.6).

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

The impact of the project stated in the application form was: Natural resources across the Laikipia Plateau are conserved and used sustainably, maintaining environmental integrity for its people and wildlife, and providing a model for other areas.

Regular monitoring on populations of key species of predators and large herbivores documented knowledge on population trends which was continually integrated in the management of the MCA. Significant recovery of the MCA rangeland was evident from Y3. The restoration of this key ecological area has started serving the purpose of increasing mobility and dispersal of threatened species. The home ranges for 3 lion prides as established in OPC has now extended to MCA. The prey base numbers have also increased overtime including rare species like a herd of Beisa Oryx, Patas monkeys and Gerenuk gazelles now residing in the MCA (Annex 7.1.6 MCA annual ecological and biomonitoring report.).

Mutara Conservation Area bird surveys were carried out for the first time in October 2019, with repeats in February 2020 and February 2021. In all three surveys, 210 species were recorded. Among them 16 Afrotropical migrants and 22 Palearctic migrants. Rare sightings include the Orange-winged Pytilia, which was the first record in Laikipia and the fourth report on the Kenya Bird Map in 2019. Nine threatened species of conservation concern recorded indicate that Mutara is a critical ecosystem for the survival of these species. (Annex 7.1.7).

The project has successfully engaged WRUAs, focal pastoral communities, farmers and service providers in the water management sector to ensure efficient use and equitable access of water resources which has contributed to reduced natural resource conflicts in the landscape and subsequently improved wellbeing. The construction of a common intake was identified as a long-term solution on to ensure equitable water sharing and improved water availability (Annex 7.2.16) An overall 27.5% decrease in water access conflicts was recorded in 2021 based to the 2018 baselines which indicated more equitable water sharing. (Annex 7.5.5 Socio-economic surveys report).

The project has trained and created awareness to farmers and pastoralists communities adjacent to MCA on sustainable agriculture and biodiversity conservation. Provision of agriculture extension services promoted agricultural practices that addressed the challenge of water scarcity in the project area which falls under a semi-arid region. The socio-economic project findings have indicated improved yields and incomes especially among those receiving extension support. According to a targeted survey for community members who had adopted conservation agriculture, 76% reported an increase in crop yields (3 to 10 bags of maize and beans per acre) and a total of 73% reported an income increase of above 30 % which exceeds the project target of 15 % increase in agricultural income after adopting conservation agriculture (Annex 7.4.1).

The project established linkages with organizations within the landscape which will ensure that the gains made by the project will be sustained. The data collected from 11 elephants collared by space for giants has been linked to OPC earth ranger. This will provide time information to monitor elephant utilization of MCA in relation to the wider landscape and inform long term wildlife connectivity management (Annex 7.2.1). Mutara WRUA has formed a fundraising and resource mobilization committee drawn from representatives of WRA, County government of Laikipia, WRUA representatives, MKEWP and OPC. The committee mandate goes beyond the end of March to ensure that the WRUA secures the required funds to implement the project. The committee members will continue to operate under the stewardship of WRA, the lead agency for water regulation to pursue long term water management in the landscape (Annex 7.2.1).

4 Contribution to Darwin Initiative Programme Objectives

4.1 Contribution to Global Goals for Sustainable Development (SDGs)

The project contributed to the Global Goals for Sustainable Development as outlined below:

SDG 5 (Gender equality): A good understanding of gender relations has been developed by disaggregation of all data collection and analysis in the reporting period (Annex 7.5.5). Separate meetings for women were held while using the participatory approaches to capture the unique preferences of different genders. The woman's groups already established in these localities have been identified and engagements initiated in developing approaches to guarantee women

participation in project interventions including fodder production, participation in water resource management, support to initiate alternative livelihood activities and linking them to micro finance institutions (Annex7.3.1, indicators 0.4,3.3,3.7-3.9 and 4.1).

SDG6 (Clean water and sanitation): The project supported dialogues between WRUAs, water projects, service providers, local leaders, farmers and pastoralists throughout its implementation period. This enabled consensus-building, joint planning and working to address prioritized short term and long-term measures for improving water management and the promotion of more equitable access to water resources. Tree planting during and extending beyond the project term is restoring degraded areas identified on Mutara and Sugoroi water sub catchments. A joint committee[9] has been formed to drive the completion of identified long term strategies to facilitate sustainable water use and equitable water sharing (Annex 7.2.1, Indicators 2.4).

SDG15 (Life on land): The capacity of local communities to pursue sustainable livelihood opportunities has been built through trainings on sustainable agriculture, good livestock husbandry and biodiversity conservation exposure visits (Annexes 7.3.1 and 7.4.1, indicators 3.3 and 4.1).

4.2 Project support to the Conventions or Treaties (e.g., CBD, Nagoya Protocol, ITPGRFA, CITES, Ramsar, CMS, UNFCCC)

The project supported the core CBD objective of conservation and sustainable use of biodiversity by safeguarding key populations of endangered species (including considerable advances to the enabling conditions for the expansion of a Key 1 population of black rhinoceros onto the MCA). Throughout the project period key degraded areas were restored and this will be continued by OPC beyond the project term alongside implementation of the bio-monitoring system for MCA (see Annex 7.1.6). The restoration of this key ecological area has increased mobility and dispersal of threatened species, and improved land management for people and wildlife.

WRUAs on two sub-catchments up-stream of MCA supported by the project have taken lead in implementation restoration initiatives of degraded areas on riparian habitat through tree nursery development and reforestation of riparian areas. The project has trained and created awareness to farmers and pastoralists communities adjacent to MCA on sustainable agriculture, and awareness creation on biodiversity conservation. Thus, the project contributes to CBD strategic Goal C through rangeland restoration and species protection across the wider OPC landscape.

It has contributed to Aichi Target 11 by promoting the effective and equitable management of a system of land-based conservation measures and through improving the conservation status of threatened species, helping to prevent extinction it has contributed to Aichi Target 12.

It has also supported CBD Strategic Goal D by safeguarding the OPC landscape - a critical ecosystem that provides essential services for local livelihoods and through doing this work in consideration of the needs of women, local communities and the poor and vulnerable it has contributed to Aichi Target 14.

4.3 Project support to poverty alleviation

The project targeted community areas that reported the most negative impacts of conservation activities on their wellbeing during the 2014 SAPA pilot project (Darwin's ref 20-010). Most households in these communities are predominantly pastoralist and smallholders' farmers, and have limited market access. The key livelihood activities in the locality are crop farming, mixed farming (agro-pastoralism) and pastoralism which are all entirely dependent on natural resources. Project outputs have included improved water availability, access to grazing, fodder production and water management - these have improved income, food and water security for 1659 rural household in 5 focal community areas. According to a targeted survey (conducted in Y3-Y4) of those who adopted conservation agriculture - 76% reported an increase in crop yields and an income increase ranging between 2% and 300% compared against the baselines.

In five focal communities which include farmers to the south of MCA, more than 200 households have reported improved livelihood opportunities through sustainable farming practices, water management, fodder production and linkages to micro finance to expand and diversify livelihoods.

Engagement of communities in fodder production and water management has also addressed multiple dimensions of poverty beyond material wellbeing. These include increased social cohesion and personal security as a result of decreased conflict over resource access and increased self-

[9] WRA, County government of Laikipia, WRUA representatives, MKEWP and OPC

esteem and confidence in the future through an active and recognised role in natural resource management. In the project's final Y4 household survey, against Y1 baselines, there was a 26% decrease of those reporting Human Wildlife Conflict, a 21.5% decrease in those reporting farmer pastoralist conflicts, a 26.5 % decrease in pasture access conflicts and a 27.5% decrease in water access conflicts recorded in 2021 compared to the 2018 baselines (Annex 7.5.5).

The sustainable livelihood scheme implemented after the approval of change request for Output 3 has enabled additional income generation for pastoralist women and youth groups in Y4. An example of success within this output has been with the poultry projects in which groups are currently generating an average monthly income [redacted] from egg sales which is a 100 % income increase for women groups and 25 % increase for youth groups within a 6-month period. With groups recently doubling their chicken numbers, through their own investments, group income is projected to double from egg sales by the end of 2021. Augmenting this, each group will make an additional monthly income from poultry meat sales of approximately [redacted] Technical support to the poultry project will be continued beyond the project's lifespan by OPC. It has been expanded to Ex Erok and Withare and with the recent purchase of an incubator the project has been able to produce 1000 chicks within 2 months. There is now the capacity for community-based groups to produce 8000 bird chicks per annum with a total projected annual net income of [redacted] for 150 households.

4.4 Gender equality

All data collected and used by the project in implementation (through household surveys and focus groups) has been disaggregated by gender to ensure the voice of women are captured in project decision making (see Annex 7.5.5). The results of the project in section 3 have been reported using gender disaggregated data. In all project interventions the project team used use approaches and methodologies that encourage women's participation and engagement and these were detailed in the socio-economic guidance produced by the project in Y1 (Annex 7.5.1). In instances where women's full participation has been difficult in mixed groups, separate meetings for women have been organized.

The project has actively promoted activities to ensured women benefited from its interventions. When the project submitted the change request for Output 3 in Y4 on sustainable livelihoods it integrated activities that had been identified by women in focal communities that addressed their needs. These were poultry farming, kitchen to market gardens, enabling links to micro finance institutions and access to alternative energy sources (Activities 3.14a). The livestock and agriculture extension support by the project ensured that women were represented which resulted in significant women adopting the technologies trained (Activities 3.17, 4.6).

4.5 Programme indicators

Did the project lead to greater representation of local poor people in management structures of biodiversity?

594 community members (317 men and 277 women) from five participating communities visited OPC during the course of the project. The focus on the visits was to create awareness and have enable a dialogue on: wildlife conservation, natural resource management and the role that communities can play in conservation. The community capacity developed on sustainable livelihood approaches in turn contributed to conservation of shared ecosystems which included water and rangelands. Impacts for local poor people included a reduction in natural resource conflicts, adoption of sustainable agriculture and better management of rivers.

The project focused on mitigating water use conflicts and improving water access downstream through community and stakeholder meetings to encourage participatory equitable water sharing. The project facilitated a stakeholders' dialogue to develop long-term solutions to water challenges in Mutara and Sugoroi. As a result, Mutara and Sugoroi WRUAs and their communities identified three priority actions required to improve water security: 1. construction of Mutara common intake, 2. enhancement of WRUA capacity and 3. establishment of a collaborative river monitoring and enforcement system. (Output 2, activities 2.5-2.7)

Project engagement in pastoralist communities increased OPC staff understanding of inter-community diversity and led to newly elected OPC community representatives in Tangi Nyeusi.

Were any management plans for biodiversity developed and were these formally accepted?

Were they participatory in nature or were they 'top-down'? How well represented are the local poor including women, in any proposed management structures?

In Y1 a management plan for the MCA was developed. This followed draft guidance on the development of management plans produced by KWS and the Kenya Wildlife Conservancies association, including community participation. The project team would have preferred a fully participatory process but this was limited due to the position of the MCA's owner (ADC) and leaseholder (Monarch Group).

In Y3 and Y4 the project facilitated stakeholder dialogue meetings and technical studies needed to approve the construction of a common intake in Mutara River. This process had 6 awareness meetings and 2 exchange visits for community members to other WRUAs. This helped build a consensus among community members for a common intake as a long-term solution to illegal water abstraction, violation of environmental laws and water use conflicts.

How did the project positively influence household (HH) income and how many HHs saw an increase? How much did their HH income increase (e.g. x% above baseline, x% above national average)? How was this measured?

According to a targeted survey for beneficiaries receiving extension support: The majority of the fodder farmers who have adopted fodder production reported production ranging between 250 and 500 bales. The mean production per acre was 524 bales per year which has 2 harvest seasons. Average price per bale is KS[redacted] and cost of production and bailing is [redacted] The average profit per acre/annum is 524 bales@[redacted] totalling to KS [redacted] The total households who have adopted conservation agriculture are 400. According to a targeted survey for community members who had adopted conservation agriculture, 76 % translating to 308 households reported an increase in crop yields of 3 to 10 bags of maize and beans per acre and income increase, ranging between 2 percent and 300 percent. A total of 73 % translating to 292 households reported an income increase of above 30 % which exceeds the project target of 15 % increase in agricultural income after adopting conservation agriculture (Output 4).

The current poultry project being expanded within other communities inspired by the project to further large-scale production within Ex-Erok and Withare where an incubator has been purchased and has been in operation from March 2021 with extension support provided by the Darwin project livestock officer. So far, the project has been able to produce 1000 chicks within 2 months which has been distributed to 34 households. The incubator has the capacity to produce 12000 chicks annually (Annex 7.3.1).

4.6 Transfer of knowledge

Ten online publications to create awareness on the water resource use and management activities were written during the course of the project. Two case studies were developed for best practices and solutions for water insecurity within the MCA and adjacent communities. The partners used the case studies to share information for lobbying and scaling the best practices in the Ewaso Nyiro Basin, and among WRUAs nationally. The project supported technical studies for WRA authorization and NEMA licensing. The information gathered is already informing WRUA fundraising efforts for the common intake implementation.

4.7 Capacity building

Two OPC project staff (men) were retained at the project by OPC to continue engaging 21 focal communities on livestock and extension support by replicating best practices from this project. The FFI staff member (female) who coordinated the project has been promoted to a new national-level role (Technical specialist, Livelihoods and Governance, Kenya). One OPC staff (female) who led the ecological monitoring component of the project has started a new role on a transnational conservation project which builds on the cross-cutting skills acquired during the project. All OPC financial and project management staff involved in the project have increased their capacity and understanding of statutory funded requirements.

5 Sustainability and Legacy

The project's implementation partners, OPC and LF, have long-term commitments in supporting conservation activities in Laikipia. The project established establish strategic collaborations in the implementation of the project: CETRAD (a Laikipia-based research institution), the Laikipian (a Laikipia based community advocacy group), and the Kenya Wildlife Service (during review of MCA

management plan), National Museums of Kenya (development of MCA birds check list), County Government of Laikipia (to jointly delivered agriculture and livestock extension services), the Water Resource Authority (mandated to ensure sustainable management of water resources in Kenya), Women Enterprise Fund (loan access for women groups). Ensuring participation of Government institutions and other locally established organisations has enabled the integration of best practices identified by the project in local plans and policies.

Farmers involved in the project are already purchasing their own inputs and seeds whilst following practices they have been trained on by project extension staff. Continued high yields attained by trained farmers and pastoralists has increased the impact on household's wellbeing and projected to continue beyond the lifespan of the project itself.

OPC has adopted the livestock extension, agriculture extension and biomonitoring manuals produced by the project and will continue to support sustainable livelihood development in 21 focal communities which will sustain the positive results achieved by the project. The two-extension officer's roles have been reviewed to continue engaging communities on areas they supported and will be scaling best practices across all OPC communities.

The 3 communities, Kiamariga, Mutara and Sugoroi[10], engaged by the project have been co-opted as OPC focal communities and will continue to benefit from the OPC wider Community Development Programme.

The poultry and market gardens enterprises initiated by the project are generating good additional incomes for the supported groups who have reinvested to achieve a greater self-sustaining scale. The groups have also been linked to Government microfinance institutions who train groups on business management and provide access to credit which will enable expansion and replication of group income generating activities.

The water components of the project continue to be coordinated by WRA, MKEWP and associated partnership which is anticipated to ensure ongoing support and sustainability of the WRUAs.

Findings and lessons from project activities has been shared through county-level networks in Y4 to further enhance its sustainability and legacy.

Overall, we consider the project's planned exit strategy still valid as originally proposed.

6 Lessons Learned

Community livestock scheme: Although from design phase through to implementation it had been anticipated that due to the number of entities involved and different institutional positions that reaching an agreement over the cattle scheme within the project period would be challenging but not until the start of Y4 was it agreed that differences of opinion were insurmountable. At the end of Y3 the project used an 'After Action Review' process as part of annual reflection meetings, Output 3 went through this process in more detail which guided the submission of change request in September 2020 (Annex 7.5.10). The change request revised Output 3 to include implementation of a sustainable livelihood scheme to support pastoralist income diversification and wellbeing (Activities 3.5-3.9). This has had positive impacts on the wellbeing of pastoralists and the changes achieved by the new activities have either met or exceeded expectations. However, these revised activities were not be a like for like replacement of the project's initial plans for a change in the availability of additional grazing areas. During project development stages we were overly reliant on verbal agreements as opposed to clarifications as to which organisation could make land use and management decisions on MCA, putting a market-based cattle scheme as a starting point was too complicated in the project context and we didn't take enough account of decision makers whose sole interest was financial (as opposed to the plans for achieving a triple bottom line outcome). The implementation of the project has revealed the scale of the difficulty in achieving sustainable numbers of community livestock on individual land units in Laikipia County. To address the community grazing needs will require a landscape level approach integrated with feed bulking and adoption of supplementation which will require novel funding and community credit models.

Partnerships: The partnerships with local and government organisations particularly in regard to water management and extension support, led to effective project implementation and achievement of project targets. The good uptake of project activities by communities and replication of best practices by both target communities and local partners will ensure the project impact is sustained beyond the project life. The communities have also been linked to relevant service providers on

[10] Engaged in y1 but were not engaged in the project activities as they were not willing to take part after FPIC

support areas that were beyond the project scope. The regular stakeholder meetings to share project plans and lessons have been instrumental in facilitating synergy of resources and inclusion in addressing prioritized challenges in the focal area. The project reached in numbers and scope exceeded targets by the project which can be attributed to close cooperation and well-planned coordination within and among government institutions, private sectors, civil society, and local communities.

Community ownership and sustainability: The use of participatory approaches has proved to be useful in facilitating exchange of knowledge between the project and focal communities. The information gathered has gone a long way in advising project implementation to suit unique and specific needs observed in each of the communities based on cultural as well as socio-economic aspects. This has cultivated ownership of project activities among the targeted communities. A good indication of this was community initiative to match-fund project support especially in implementing on farm harvesting structures and farm inputs. It was also noted that many community members have covered capital costs and only received technical advice from the project. The project continually identified and modified relevant participatory approaches to maximize impact and sustain project interventions. The high adoption of agriculture extension practices was enabled by customizing the training and support to communities to address prioritized needs which was continually reviewed based on emerging needs. The consistent and sustained extension support was also key in adoption of conservation agriculture which takes a while for impact to be seen.

Monitoring, Evaluation and learning: A good monitoring and evaluation plan, and prior development of the right monitoring and evaluation tools is key in achieving targets. The participatory development of evaluation tools and regular monitoring plan has ensured that the project approach was continually reviewed and took into consideration any emerging needs and lessons. The monthly partner planning meetings and annual reflection meetings ensured cross–learning and integration of lessons in activity planning and implementation. Sharing of lessons has also encouraged participation and joint efforts in addressing common challenges. In Y4 the project documented lessons learned in project implementation to inform future development work or interventions in the area. Findings from the project has already informed review of OPC community engagement programmes to address community prioritized needs.

Resource user rights vs project impact: It continued to be evident that by the end of the project implementation, the project impact was more pronounced in community areas where there were clear land tenure rights. The greatest challenge was engagement of pastoralist communities and creating meaningful impact because of unclear natural resource access rights. To address some of these issues requires policy and institutional level interventions which is beyond project scope. In Y4, the project documented lessons on working with pastoralist communities and shared with relevant stakeholders to inform future planning and policy development at county level. Through the change request submitted by the project in the beginning of Y4, a sustainable livelihood scheme (Annex 7.5.10) was implemented in Y4 to improve benefits when the community livestock scheme was not implemented as initially planned. Although ultimately pastoralist owned cattle was given access to the MCA as a provision for emergency grazing this greatly reduced any value added or equity focused elements that would have come with formalised cattle to market scheme.

Grievance mechanism: OPC has been keen to adopt and implement institutional best practices learnt elsewhere. The project's Grievance Mechanism was initially developed by FFI and OPC to ensure that concerns, issues or claims by members of affected communities are able to freely access to a complaint process in regard to project activities. Use of the mechanism within the project's focal communities was an important learning process and in Y3 the OPC Board agreed to adopt the Grievance Mechanism across the organization as a whole and adaptation of the mechanism for use and implementation by OPC at organisational level began in Y4 of the project and will continue to be rolled out in all the 21 OPC communities.

Sustainability of MCA: The focus on securing MCA is a long-term sustainability plan that demands attention from national and local stakeholders. The continued engagement of KWS shows interest in the long-term connectivity of conservation areas amidst a rapid growth in development and land use changes. Diminishing natural resources especially water and pasture will continue increasing the pressure on designated conservation areas and MCA will remain at the centre of it thus active management from all stakeholders is immutable. In a time where there is a national debate on migratory corridors, the existence of the MCA elicits a national debate and demands attention

between the two ministries (Agriculture and Wildlife) to maximise on rangeland utilisation and wildlife conservation.

6.1 Monitoring and evaluation

As previously stated, an approved change to the logframe was made in September 2020, this altered Outcome 3, Activities 1.3, 3.13 and 3.14 and Indicators 3.5 and 3.6.

The socio-economic monitoring guidance (Annex 7.5.1) published in Y1 outlined key considerations and steps that facilitated comprehensive engagement of community stakeholders, with a particular focus on the inclusion of women, stockless and uneducated pastoralists and youth/morans. It also addressed issues of engagement among smallholder communities which guided development and delivery of livestock and agriculture extension support that addressed identified farmer needs (Annex 7.4.3). The manuals developed and published by the project have been adopted by OPC in rolling out extension support services to the 21 OPC communities and biomonitoring assessments on MCA (7.1.4). Laikipia Forum and MKWEP have also committed to push forward the agenda of the construction of the common intake in Mutara sub catchment to ensure equitable water sharing (Annex 7.2.1).

The project co-ordinator based at OPC co-ordinated monitoring and evaluation process for the project. The project planned and implemented regular monitoring using identified tools which has facilitated measuring and demonstration of project interventions. The activity report (Annex 7.5.11) and monthly report template (Annex 7.5.12) ensured that all key project outputs and action points were captured to facilitate ongoing evaluation and approach review to ensure effective implementation and achievement of set results. The approaches used for M&E were robust and informed adoptive management and replication of best practices. The project's measurable indicators, means of verification and means of baseline provision as per the set activities, outputs and associated indicators have demonstrated links to the project outcome. (See Annexes and 7.1.6 and 7.5.5).

In September 2020 a PhD student from the University of Cambridge, co-supervised by the project leader, began their field research at OPC with a focus on the nature of participation in conservation practice. This work is using the Darwin project as a case study and will provide a novel form of collaborative evaluation its way of working and impacts. Results will be shared with project partners and participants through fieldwork planned for mid-2022.

6.2 Actions taken in response to annual report reviews

All issues raised in the reviews in Y1 to Y3 have been addressed in the previous annual reports

The review output level assumptions have been done as advised by the last annual report review (see section 3.3).

7 Darwin identity

The project team made it a standard practice to give an overview of Darwin Initiative as the funder of the project through support from the UK Government in all the meetings, trainings and surveys conducted facilitated by the project.

The DI logo has been used in all the documents published and reports developed by the project. Darwin initiative has been mentioned as the donor in all the web updates on the project (see Activity 2.13).

It is recognized as a distinct project. For our partner OPC, primary responsibility for delivery lies with the staff of their Community Development programme. The Darwin Initiative is broadly understood by the project partners and the stakeholders that have been engaged by the project within Laikipia County.

8 Impact of COVID-19 on project delivery

A large proportion of planned project activities was not affected by Covid-19. The engagement meetings with communities were restructured to meet the guidelines provided by the Government; meeting with small organized groups and farm visits for project beneficiaries who were receiving extension support and water management interventions. The majority of OPC staff working on the project worked from home in Nanyuki, Laikipia County's capital ca. 30-minute drive from OPC. The town has reliable power and internet connections enabled effective conditions for home working.

The tourism and conservancy sector were significantly impacted by the complete downturn in international tourism. OPC, with other revenue flows and reasonable capital reserves, was able to function and was more resilient than many other private or community conservancies in Kenya. Despite a fall in international tourism; OPC was able to attract the national tourist market when the national restrictions were lifted. OPC also conducted fundraising appeals and maintained its international tourism profile through innovations such as daily 'sofa safaris' on Instagram. The livestock operation on OPC remained unaffected with beef delivery to the capital, Nairobi twice every week. The revenue stream remained relatively stable and facilitated continued delivery of activities co-financed by OPC.

The Covid-19 pandemic however had a significant impact on the project's ability to recover delays on Output 3. Due to court closures, the resolution of the court case on MCA was not concluded in Y4 and hindered the implementation of community cattle scheme on MCA. It also slowed down discussions with key partners as staff from ADC were not available for contact. The loss of tourist markets had a significant impact on OPCs ability to finance any form of cattle purchase through Y4 of the project. The project continually assessed the Covid19 situation and adapted as necessary and contacted the donor on contingency planning. The project submitted a change request (which was approved) that allowed for a revision to Output 3 which took these issues into account (Annex 7.5.10).

9 Finance and administration

9.1 Project expenditure

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

Staff employed (Name and position)	[redacted]
Rob Small – Team Leader	
Ann Komen – Project Co-ordinator	
Rob Brett – Technical Advisor	
Jess Farish – Finance & Administration (UK)	
Michelle Moeller – Technical Advisor	
Patrick Lelei – Finance & Administration	
Helen Anthem – Gender Advisor	
Andy Cameron, GIS Specialist	
Paul Waweru - Livestock Officer (OPC)	
Bernard Mwangi - Water & Agriculture Officer (OPC)	

Stanley Kirimi - Ewaso Partnership Co-ordinator (LF)	[redacted]
Mercy Waithira - Ecology & Wildlife Officer (OPC)	
James Mwangi - Water Resources Management Specialist (LF)	
Margaret Wambua - Communication Specialist (LF)	
TOTAL	

Capital items – description	
TOTAL	

Other items – description	
Consumables & stationery	
Bank charges (Kenya)	
Telephone & Internet	
Printing – training and comms	
Report printing	
Communications – Web (LF)	
Communications – Print (LF)	
TOTAL	

9.2 Additional funds or in-kind contributions secured

Source of funding for project lifetime	
Ol Pejeta Conservancy	
Laikipia Wildlife Forum	
Australia Zoo	
Fauna & Flora International	
TOTAL	

Source of funding for additional work after project lifetime	
OPC statutory fundraising	
TOTAL	

9.3 Value for Money

The project was successful in leveraging skills, staff time and resources from several partners in Laikipia. Most notably this was through Ol Pejeta Conservancy which committed additional funds and in-kind contributions equivalent to 37% of the total project value. In Y1 the Laikipia Forum covered all staff costs for those working on the project.

At activity level project staff sought practicable solutions to maximise the effectiveness of project expenditure. For example, after engagement with Water Resources Authority (WRA) staff the project team considered the officially mandated review process of Sub-catchment Water Management Plans to not be cost effective ([redacted] USD per SCMP). To address this challenge, in agreement with the WRA, 6 preliminary and technical studies to address gaps in the SCMPs were conducted which could immediately inform effective management of Mutara and Sugoroi sub-catchments. These were widely shared to advise future a review of SCMP and has informed the development of a pathway for long-term solutions to sub catchment issues (see Annexes 7.2.3-7.2.8)

In Y3 the team leader developed a PhD studentship in partnership with the University of Cambridge's Department of Geography. Through funding from the ESRC and the Cambridge Conservation Initiative this has allowed the project to benefit from additional resources and input by the PhD student. Alongside their study on understanding participation in conservation practice supported action learning process for the project throughout Y4.

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

Annex 1 Project's original (or most recently approved) logframe, including indicators, means of verification and assumptions.

Note: Insert your full logframe. If your logframe was changed since your Stage 2 application and was approved by a Change Request the newest approved version should be inserted here, otherwise insert the Stage 2 logframe.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Impact: Natural resources across the Laikipia Plateau are conserved and used sustainably, maintaining environmental integrity for its people and wildlife, and providing a model for other areas. (Max 30 words)			
Outcome: 8,000ha of dispersal area secured for rhino, elephant and predators; grazing and water resources managed for local community and pastoralist wellbeing; and resource conflict reduced across the wider OPC landscape. (Max 30 words)	0.1 By 2021 populations of elephant, wild dog and lion are increasing or stable against Y1 baselines on MCA	0.1 Biomonitoring patrol data collected each year, analysis to generate baselines (Y1) and comparison against baselines (Y2-4), detailed in annual bio-monitoring reports; Aerial survey data (from October 2016) analysed and compared against Y4 aerial survey data	• Continued support from local government • Continued support and cooperation from neighbouring communities • Political situation around 2017 elections does not unduly affect project implementation • MOU between Monarch Group Ltd and OPC for management of MCA remains in place • Human in-migration into MCA that puts pressure on natural resources beyond the scope of this project and number of beneficiaries, does not happen • Increasing predator numbers do not impact viability of herbivore populations • Sustained drought conditions do not occur during the
	0.2 By 2021 rangeland vegetation productivity increased on MCA by 50% from Y1 baseline	0.2 Ecological survey data collected each year, analysis to generate baselines (Y1) and comparison against baselines (Y2-4), detailed in annual ecological survey reports	
	0.3 By 2021 KWS authorisation given for expansion of rhino range to MCA.	0.3 Letter of authorisation for rhino range expansion on MCA from KWS	
	0.4 By 2021 both male and female (minimum 33%) respondents representing 600 households report increased well-being against Y1 baselines through project interventions	0.4 Socio-economic survey data on well-being collected each year, analysis to generate baselines (Y1) and comparison against baselines (Y2-4), detailed in annual socio-economic survey report	

	0.5 By 2021 reports of natural resource conflict decline by 50% against Y1 baselines in MCA, OPC and focal community areas	0.5 Socio-economic survey data on resource conflict collected each year, analysis to generate baselines (Y1) and comparison against baselines (Y2-4), detailed in annual socio-economic survey report; Security incident data from Kenya Police Reserve Laikipia wildlife unit	course of project implementation
Outputs: 1. 8000ha of restored rangeland under active sustainable management that meets the grazing needs of community livestock and wildlife	1.1 By 2017 MCA Management Plan developed with and validated by stakeholders (with at least 30% women, using inclusive gender inclusive practices)	1.1 Stakeholder feedback on draft versions of management plan and validation of final version documented by written feedback and approvals and/or meeting minutes documenting decisions and attendance, gender disaggregated). Published MCA Management Plan acknowledging all contributors.	• Continued support, as above. • Drought conditions do not result in additional pastoralists and their livestock using the area before conditions exist that can support increased use
	1.2 Each year the MCA Management Plan is adapted and implemented based on annual ecological monitoring and social surveys.	1.2 Ecological and socio-economic survey data collected each year, analysis and yearly comparison detailed in annual ecological and socio-economic survey reports, Report detailing decisions, information sources used (survey reports) and reviewers involved in annual review of MCA management plan produced, MCA management plan updated in line with management plan review feedback	
	1.3 By 2021 50% of male and female respondents report increased satisfaction regarding access to	1.3 Ecological and socio-economic data collected each year, analysis to generate baselines (Y1) and comparison against baselines (Y2-4),	

	grazing for their cattle compared with project baselines.	detailed in annual ecological, biomonitoring and socio-economic survey reports	
2. Improved water availability for domestic use, livestock and wildlife in MCA and 75% of households in 6 focal community areas that is managed by representative local institutions.	2.1 By 2019 Sugoroi and Mutara River Water Resource Use Associations (WRUA) functional with quarterly meetings being held and planned activities being implemented.	2.1 Review of published sub-catchment water management plans; quarterly meeting minutes and attendance reports, meeting photos; activity reports.	• Upstream water-use levels remain constant or if changes occur, there is consultation with downstream users.
	2.2 By 2020 Sugoroi and Mutara WRUAs represent a cross-sector of society (at least 33% women) with 75% of WRUA members aware of committee structure and responsibilities	2.2 WRUA membership survey data collected; WRUA membership survey report produced	
	2.3 By 2021 Sugoroi and Mutara WRUA sub-catchment management plans (including livestock and agriculture need/use components) being implemented effectively	2.3 Annual review of WRUA sub-catchment management plans; field assessment of WRUA activities	
	2.4 By 2021 75% of both men and women (at least 33%) representing an estimated 1200 households in 6 focal communities report improved water availability for domestic, livestock and agricultural use	2.4 Socio-economic data collected, analysed in relation to previous years, detailed in annual socio-economic survey reports.	
	2.5 By 2021 water available on MCA that meets the demands of wildlife	2.5 Results of biomonitoring and ecological monitoring surveys detailed	

		in annual MCA Management report showing health of indicator populations and health of vegetation / erosion.	
3. Community cattle and sustainable livelihood scheme, supporting pastoralist income diversification and wellbeing.	3.1 By 2017 eligibility criteria for community cattle project developed (including targets for inclusion of cattle owned by women's groups), using participatory approaches pastoralists, including women, in 4 focal community areas	3.1 Documentation of participatory approach taken to develop criteria (group meeting attendance, gender disaggregated, minutes, photos), socio-economic data collected and analysis demonstrates participation of representative community groups, results detailed in annual socio-economic reports. Published MCA community-cattle eligibility criteria report acknowledging all involved.	• Pastoralist households in focal community groups are willing to participate in cattle scheme after FPIC process • Domestic markets for beef in Kenya remain vibrant and expanding • Livestock owners engaged by the project have influence or control on movements and make decisions on sales
	3.2 By mid-2018 grazing plan designed and implemented that takes into account the majority of stakeholder's needs and opinions, while enabling controlled increase of cattle numbers to a maximum of 2000.	3.2 Documentation of grazing design process including stakeholder participation (records of feedback, attendance). Stakeholder needs and opinions collected and documented. Published grazing plan	
	3.3 By 2021, livestock extension services & training provided to men and women (at least 20%) in 400 households in 4 focal community areas	3.3 Livestock extension officer annual reports; published training manual; Collection of socio-economic data, data analysis (gender disaggregated), detailed in annual socio-economic survey reports	
	3.5 By 2021 250 people representing the equal number of pastoralist households, including at least 40% women have benefited project extension support and training linked to their livelihoods and wellbeing (cattle feed supplementation,	3.5 OPC Community Development Programme Training Records	

	alternative energy models, agricultural extension support for market gardens (including water recycling) and poultry farming).		
	3.6 By March 2021 average price paid for pastoralist livestock supported by the project on cattle feed supplementation is at least KShs 40,000[1]; a 14% increase from the current market prices.	3.6 Survey conducted with recipients of livestock extension support	
	3.7 By March 2021, each of the 50 pastoralist households receiving extension support, through existing women's groups, on market gardens will be growing enough vegetables to meet household needs and generating an average income of KShs 1500 per month from the gardens which is a 40% monthly income increase from group activity.	3.7 Survey conducted with recipients of market garden extension support	
	3.8 By March 2021 each member of youth groups receiving extension support on poultry farming representing 50 pastoralist households would have received an average Ksh 5000 from poultry sales which is a 50% income increase to their current income (from group activities), by the end of 6 months.	3.8 Survey conducted with recipients of poultry extension support	
	3.9 By March 2021, an awareness programme on alternative energy models that have potential to address pastoralist household's energy needs and reduce fuelwood consumption by 40% to will be developed and delivered	3.9 Published training materials and field activity reports	

	to 5 women's groups representing 50 pastoralist households.		
4. Women and men in 2 target communities adopt a community-based fodder production system that supports the diversification of small-scale farmer livelihoods in at least 200 households.	4.1 From 2018 to 2021, agricultural extension services and training, supporting fodder production, provided to 100 men and 100 women representing 200 households in 2 focal community areas 4.2 By 2021, local buyers are contractually linked to 100 men and 100 women representing 200 households producing fodder (primarily hay) 4.3 By 2021 men and women (50%) representing 200 households report increased well-being through community fodder markets 4.4 By 2021 net income of 1200 KShs per acre of hay achieved by participants in fodder production component	4.1 Agriculture extension officer annual reports detailing provision of services (location, number and gender of participants, photos); published training manual; Collection of socio-economic data to confirm recipients of extension services, data analysis (gender disaggregated), results detailed in annual socio-economic survey reports 4.2 Collection of socio-economic data to monitor number and gender of participants linked to local buyers, data analysis (gender disaggregated), detailed in annual FFI socio-economic survey reports; 4.3 Collection of socio-economic data to monitor change in wellbeing and cause, data analysis (gender disaggregated), detailed in annual socio-economic survey reports 4.4 Collection of socio-economic data to monitor participants income sources, data analysis (gender disaggregated), detailed in annual socio-economic survey reports; Hay sales invoices & receipts from survey participants	• Smallholder farming households in focal community groups are willing to participate in hay scheme after FPIC process • Zero-grazing dairy industry continues to grow in Kenya

	4.5 By 2021 both male and female representatives of 200 households report an increase in agriculture related income of at least 15%	4.5 Collection of socio-economic data to monitor change in participants income levels, data analysis (gender disaggregated), detailed in annual socio-economic survey reports; agriculture related sales invoices & receipts from survey participants	
5. Vulnerable and endangered species are under effective protection on MCA	5.1 By 2018 onwards wildlife rangers conduct daily patrols throughout MCA 5.2 By 2021 50% increase in wildlife movement between OPC and MCA 5.3 By 2021 75% decrease in wildlife poaching incidents on MCA against baseline established in Y1 5.4 From 2018 onwards data from ecological monitoring used to actively manage herbivores and predators	5.1 Daily patrol records, data used to develop monthly wildlife ranger patrol reports 5.2 Monthly ecological monitoring corridor camera trap report; Change in indices of wildlife species in MCA drawn from biomonitoring patrol data. 5.3 Daily patrol records, data used to develop monthly wildlife ranger patrol reports 5.4 Ecological survey data collected each year, analysis detailed in annual ecological survey reports, inclusion of results, and subsequent relevant adaptations to management in annual wildlife management report	• Ongoing support from national government and the KWS, including facilitating ongoing protection and management operations for wildlife, including endangered species • Ongoing support from local government and security forces

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

1.1 Establish baseline population estimates of key indicator game species using 2015 HD aerial survey imagery

1.2 Assessment and identification of key locations for restoration activities through field surveys and GIS analysis

1.3 Monitor MCA grazing utilization of rangeland by herbivores to inform management and share MCA Biomonitoring findings to drive MCA's long-term plans/strategies.

1.4 Implementation of ecological restoration measures - restoration of riverine habitat through tree nursery development and planting on Mutara and Sugoroi Rivers upstream of MCA

1.5 Development of an ecological & bio monitoring system linked to existing monitoring across the landscape (including indicator species plan)

1.6 Publication of ecological & bio monitoring training manual

1.7 Training of field staff in ecological & bio monitoring methodology using training manual

1.8 Implementation of an ecological & bio monitoring system linked to existing monitoring across the landscape

1.9 Publication of annual MCA ecological report

1.10 Development of Mutara Conservation Area Management Plan

1.11 Publication of Mutara Conservation Area Management Plan

1.12 Annual review and update of Mutara Conservation Area Management Plan

1.13 Drafting of lessons learned & guidance document on sustainable land management and ecological restoration

1.14 Publication of lessons learned & guidance document on sustainable land management and ecological restoration

1.15 Dissemination of lessons learned & guidance document on sustainable land management and ecological restoration

2.1 Development of socio-economic monitoring guidance (approach, ethics & methods)

2.2 Publication of socio-economic monitoring guidance (approach, ethics & methods)

2.3 Training on socio-economic survey methods with OPC staff and 12 enumerators (6 men, 6 women) drawn from focal communities

2.4 Conduct baseline household surveys to establish current water accessibility and demand by WRUA members on Mutara and Sugoroi rivers

2.5 Stakeholder dialogue and consultation meetings with WRUA members (with both women and men including leaders to promote positive attitudes towards women's participation in project activities)

2.6 Capacity needs assessment for Mutara and Sugoroi Water Resource Use Associations (WRUA)

2.7 Capacity development of Mutara and Sugoroi Water Resource Use Associations (WRUA) informed by needs assessment

2.8 Assessment of existing infrastructure within and upstream of MCA

2.9 Review and update existing sub-catchment management plans for Mutara and Sugoroi rivers

2.10 Publish revised sub-catchment management plans for Mutara & Sugoroi rivers

2.11 Rehabilitate existing water infrastructure within and upstream of MCA

2.12 Ensure appropriate water storage infrastructure and conservation technologies are operational within both MCA and neighbouring communities

2.13 Quarterly web and media updates on water management activities to broader Laikipia audience through MKEWP

2.14 Bi-annual upstream-downstream water user meeting for Mutara and Sugoroi rivers

2.15 Drafting of lessons learned & guidance document on WRUA water management

2.16 Publication of lessons learned & guidance document on WRUA water management

2.17 Dissemination of lessons learned & guidance document on WRUA water management

3.1 Development of socio-economic monitoring guidance (approach, ethics & methods)

3.2 Publication of socio-economic monitoring guidance (approach, ethics & methods)

3.3 Delivery of training on socio-economic survey methods with OPC staff and 12 enumerators (6 men, 6 women) drawn from focal communities

3.4 Baseline socio-economic survey conducted including wellbeing indicators (material, subjective and relational) and cattle price in 4 participating community areas

3.5 Stakeholder dialogue and consultation meetings with focal pastoralist communities (with both women and men including leaders to promote positive attitudes towards women's participation in project activities)

3.6 Develop awareness scheme for holistic management (wildlife-livestock integration and optimal stocking densities)

3.7 Deliver awareness scheme for holistic management (wildlife-livestock integration and optimal stocking densities)

3.8 Develop eligibility criteria for community cattle project using participatory approaches with pastoralists from focal community areas (including women's groups)

3.9 Establish representative community grazing committees drawn from focal pastoralist communities

3.10 Agree assured purchase prices of cattle between OPC and community grazing committees

3.11 Purchase of focal community cattle by OPC - fattening of cattle on OPC land

3.12 Participatory development and implementation of local grazing plans for MCA (including identification of critical areas and periods where conflict between pastoralist livestock and wildlife is likely)

3.13 Agree a comprehensive grazing plan factoring ecological monitoring data and sub-catchment water plans whilst capitalising on project findings and lessons learned on the community livestock scheme, to be integrated into the OPC 2030 strategy.

3.14 Provide extension support for pastoralists' livelihoods & wellbeing that includes links to micro-finance institutions (cattle feed supplementation, alternative energy models, agricultural extension support for market gardens (including water recycling) and poultry farming).

3.15 Develop extension and training services for livestock husbandry participating livestock keepers

3.16 Publish training manual for livestock husbandry, in appropriate format(s) to ensure accessibility for all target users (men, women, elderly & youth)

3.17 Implement extension and training services for participating livestock keepers

3.18 Drafting of lessons learned & guidance document community cattle scheme

3.19 Publication of lessons learned & guidance document on community cattle scheme

3.20 Dissemination of lessons learned & guidance document on community cattle scheme

4.1 Development of socio-economic monitoring guidance (approach, ethics & methods)

4.2 Publication of socio-economic monitoring guidance (approach, ethics & methods)

4.3 Delivery of training on socio-economic survey methods with OPC staff and 12 enumerators (6 men, 6 women) drawn from focal communities

4.4 Baseline socio-economic survey conducted included wellbeing (material, subjective and relational) and agricultural production in participating community areas (Ex-Erok and Withare)

4.5 Stakeholder dialogue and consultation meetings with focal communities (with both women and men including leaders to promote positive attitudes towards women's participation in project activities)

4.6 Engage with smallholder farmers in focal communities to promote innovative climate-smart fodder crops (primarily hay, as a safeguard against drought)

4.7 Develop extension and training services for conservation agriculture (including on-farm water management) in appropriate format(s) to ensure accessibility for all target users (men, women, elderly & youth)

4.8 Publish training manual for conservation agriculture (including on-farm water management) in appropriate format(s) to ensure accessibility for all target users (men, women, elderly & youth)

4.9 Conduct conservation agriculture (including on-farm water management) trainings with participating smallholder households, ensuring that 50% are female participants

4.10 Facilitate market linkages between local fodder producers and local consumers (including MCA community cattle)

4.11 Integrate fodder production with sub-catchment water management plans

4.12 Target agricultural extension to farmer groups who have chosen to participate in increased and sustainable production of fodder

4.13 Drafting of lessons learned & guidance document on conservation agriculture and creation of market linkages

4.14 Publication of lessons learned & guidance document on conservation agriculture and creation of market linkages

4.15 Dissemination of lessons learned & guidance document on conservation agriculture and creation of market linkages

5.1 Co-ordination meetings between OPC, AWF, Eland Downs and KWS to improve the quality and extent of wildlife corridors in the greater OPC landscape

5.2 Biodiversity conservation awareness 1-day module developed

5.3 Biodiversity conservation exposure visits by participating households to OPC

5.4 Monthly camera trapping of wildlife corridors to monitor wildlife movement between OPC and MCA

5.5 Data from ecological monitoring (Activity 1.9) used to actively manage populations of grazing and browsing herbivore and predator species

5.6 Expansion of wildlife ranger patrol units (90% locally recruited)

5.7 Conduct regular wildlife ranger patrols on Mutara Conservation Area

[1] Revision of cattle value from KShs 50,000 to KShs 40,000 as access to improved breeding from OPC cattle herd not achievable

Annex 2 Report of progress and achievements against final project logframe for the life of the project

Project summary	Measurable Indicators	Progress and Achievements
Impact: Natural resources across the Laikipia Plateau are conserved and used sustainably, maintaining environmental integrity for its people and wildlife, and providing a model for other areas.		Significant progress has been made for the restoration of MCA enabling of increasing mobility and dispersal of threatened species: Home ranges for 3 lion prides established in OPC have now extended to MCA. Prey base numbers have increased overtime including rare species including a herd of Beisa Oryx, Patas monkeys and Gerenuk gazelles now which now reside in the MCA (Annex 7.1.6) MCA bird surveys (x3) with 210 species were recorded;16 Afrotropical migrants and 22 Palearctic migrants. Rare sightings include the Orange-winged Pytilia (first record in Laikipia) and the fourth report on the Kenya Bird Map in 2019. Nine threatened species of conservation concern recorded indicate that Mutara is a critical ecosystem for the survival of these species. (Annex 7.1.7). An overall 27.5% decrease in water access conflicts was recorded in 2021 compared to the 2018 baselines, indicating more equitable water sharing. (Annex 7.5.5). Improved yields and incomes especially among those receiving extension services - community members adopted conservation agriculture, 76% of whom reported an increase in crop yields (3 to 10 bags of maize and beans per acre) and a total of 73% reported an income increase of above 30% form agriculture after adopting training methods (Annex 7.4.1). Linkages have been established with local organizations in the landscape to sustain project gains: The data collected from 11 elephants collared by Space for Giants linked to OPC Earth Ranger system to monitor elephant utilization of MCA in relation to the wider landscape and inform long term wildlife connectivity management (Annex 7.1.18); WRA, County government of Laikipia, WRUA representatives, MKEWP and OPC to continue to work together to mobilize resources to construct Mutara common intake to long term water management in the landscape (Annex 7.2.1 Mutara and Sugoroi WRUAs engagement report).

Project summary	Measurable Indicators	Progress and Achievements
Outcome Outcome: 8,000ha of dispersal area secured for rhino, elephant and predators; grazing and water resources managed for local community and pastoralist wellbeing; and resource conflict reduced across the wider OPC landscape.	0.1 By 2021 populations of elephant, wild dog and lion are increasing or stable against Y1 baselines on MCA	MCA confirmed as a healthy ecosystem with growing or stable wildlife populations (Output 1 and 5); Lions sighted 39 times with home range of 3 lion prides established in OPC now extended to include the MCA and in addition a young lion male and a female leopard were relocated to the MCA in 2019(Annex 7.1.6) Data from 11 collared elephants show movement from OPC and further North through Mutara (Annex 7.1.18-collared elephants' movement in Laikipia); Prey base numbers have increased over time to include Beisa Oryx and Patas monkeys which are both in general decline (Annex 7.1.6).
	0.2 By 2021 rangeland vegetation productivity increased on MCA by 50% from Y1 baseline	Quarterly pasture assessments have established seasonal variation of pasture resource utilisation and MCA productivity during the dry and wet seasons. Between 2018 and 2021, significant recovery in biomass was recorded. In March 2018 assessments recorded 886kg biomass/ha, the highest recorded biomass was in June 2020 with 6473kg biomass/ha. From 2018 to 2021 there has been an in increase in the dominance of 'decreaser' species at MCA, indicating improved rangeland condition.
	0.3 By 2021 KWS authorisation given for expansion of rhino range to MCA.	Developing the MCA as an expansion site for the OPC black rhino population was included in the KWS Black Rhino Action Plan 2017-2021(Annex 7.1.16). This document was finalised in Y1 of the project and by 2020 conditional approval for the black rhino expansion had been given by KWS (Annex 7.1.17). Habitat and site assessments by KWS have been on-going throughout the project term with the MCA remaining a suitable site for rhino expansion.
	0.4 By 2021 both male and female (minimum 33%) respondents representing 600 households report increased well-being against Y1 baselines through project interventions	Between Y1 and Y3 there was a consistent improvement to levels of household wellbeing and by Y3 49% more households reported a high level of wellbeing than in the 2018. Those reporting improved wellbeing change in Y3 was high in Ex-Erok (85%), Mutara (76%) and Withare (95%) communities and were attributed by respondents to increased extension services (livestock and agriculture) and better livestock feed access through fodder adoption. However,

Project summary	Measurable Indicators	Progress and Achievements
		in Y4 there was an overall reduction in households reporting higher wellbeing by 13%. Withare which was engaged by the project from 2019 on fodder production recorded a 17% increase of those reporting high wellbeing index by 2021 while Ex Erok wellbeing index remained relatively stable with a small (3%) decrease in those reporting high wellbeing. This has demonstrated the ability of fodder production to buffer communities against drought and improve wellbeing (Annex 7.5.5).
	0.5 By 2021 reports of natural resource conflict decline by 50% against Y1 baselines in MCA, OPC and focal community areas	Natural resource conflicts consistently reduced throughout the project. In the final Y4 survey there was a 26% decrease of those reporting HWC compared to the Y1 baselines. Between Y1 and Y4 the following forms of natural resource conflict also decreased – farmer-pastoralist conflict (by 21.5%), pasture access conflicts (by 26.5%) and water access conflicts (by 27.5%) (see Annex 7.5.5). Though there was an overall decrease in NR conflicts; the set target was not achieved. To impactfully address the issue of conflicts, additional landscape approaches and infrastructural investment will be needed especially in: balancing community grazing needs and enhancing equitable water access.
Output 1. Insert **agreed** Outputs with Activities relevant to that output in lines below 8000ha of restored rangeland under active sustainable management that meets the grazing needs of community livestock and wildlife	1.1 By 2017 MCA Management Plan developed with and validated by stakeholders (with at least 30% women, using inclusive gender inclusive practices) Each year the MCA Management Plan is adapted and implemented based on annual ecological monitoring and social surveys.	In the first year of the project the management plan for the MCA was developed (Annex 7.1.13). This was actively used as a management tool by OPC and was reviewed and updated on an annual basis to integrate new information from the project's socio-economic survey findings and annual bio-monitoring and ecological reports (Annex 7.5.5 and Annex 7.1.6).
	1.2 By 2021 50% of male and female respondents report increased satisfaction regarding access to grazing for their cattle compared with project baselines.	Overall, sustainable management of the MCA that meets the needs of wildlife was met, but with an unstable governance and climatic conditions it was challenging to do this throughout the whole term of the project in a way that consistently meets the grazing needs of community owned livestock. (Annex 7.3.8).

Project summary	Measurable Indicators	Progress and Achievements
		In Y2 and Y3 the project achieved a continual improvement in satisfaction with grazing access. In 2020, the majority of respondents (64%) were satisfied with access to grazing. This was a 25% increase compared to 2018 baselines and predominately a result of satisfactory rains received in 2019. However, in Y4 satisfaction for grazing access declined with 83.5% of respondents (79% male and 88% female) stating they were not satisfied with grazing access, 35% lower than the project baselines. Although there has been a sharp decline in grazing satisfaction, the projects activities in Output 3 (see activities 3.17, 3.14 and Annex 7.3.1) have had a significant impact on the survivability of cattle herds during period of drought with pastoralists reporting to have lost up to 35 % herds in 2017 compared with no livestock losses throughout the project, including the drought experienced in Y4.
Activity 1.1 Establish baseline population estimates of key indicator game species using 2015 HD aerial survey imagery (Y1 & Y4)		HD aerial dataset for 2015 survey data (ca. 16,000 images) acquired by project consultant and analysed in Y1 as baseline (Annex 7.1.1) Aerial survey carried out by OPC in Y1-Y4 were analysed and used to measure the impact of project interventions on key indicator game species populations and comparisons made with the baselines (Annex 7.1.2)
1.2 Assessment and identification of key locations for restoration activities through field surveys and GIS analysis		Field assessments conducted in MCA through field surveys and GIS analysis in Y1 and key locations for restoration identified and mapped. The monitoring of areas marked for restoration was done concurrently with activity 1.8 to measure impact of project interventions. (See Annexes 7.1.3: and 7.1.6).
1.3: Implementation of ecological restoration measures - mobile cattle corrals that create ecosystem 'hotspots' to significantly increase populations of browsing wildlife (Y3Q1-Q4)		The construction of 6 mobile cattle corrals and 3 herder huts completed in Y2 Q4. The locations of the corrals were identified informed by the ecological monitoring findings for the Mutara Conservation Area (Activity 5.5). The water infrastructure and piping repairs completed in Y2 to enable this activity. However, factors outside of the project's control caused significant delays in reaching an agreement on the roll out of the community cattle scheme within the project period between project implementing partners, the MCA leaseholder (Monarch Group) and the MCA owner (Agricultural Development Corporation) (see Activity 3.1, Output 3).

Project summary	Measurable Indicators	Progress and Achievements
1.3a Monitor MCA grazing utilization of rangeland by herbivores to inform management and share MCA Biomonitoring findings to drive MCA's long-term plans/strategies.		A change request was submitted in year 4 (see Annex 7.5.10) and the activity was reviewed from activity 1.3 to activity 1.3 a. The biomonitoring assessments carried out from Y1-Y4 has established MCA rangeland utilization and findings have been documented and shared to inform MCA long term strategies (see Annexes 7.1.6 and 7.1.14).
1.4 Implementation of ecological restoration measures - restoration of riverine habitat through tree nursery development and planting on Mutara and Sugoroi Rivers upstream of MCA		River pegging conducted for Mutara River with support from the WRA to riparian zones where no farming or logging takes place as stipulated by the law. 57 (30 male & 27 female) community members trained on tree nursery establishment.6 tree nurseries established and 8000 river-friendly trees planted on Mutara and Sugoroi Rivers riparian pegged areas In Y4 Q1, the Sugoroi WRUA working with the area Chiefs uprooted 1800 existing eucalyptus (high water demanding exotics) and replaced with 5,000 indigenous trees. Links Established with Seed Balls Kenya to trial restoration of degraded areas using 12,000(25kg) Acacia Xanthophloea and Acacia Kirkii seed balls dispersed across identified degraded areas within MCA and riverine areas. Farmers neighbouring riparian land encouraged to plant cover fodder crops[11] to provide soil cover before the planted trees mature and provide additional benefit livestock. Farmers close to the riparian trained on and encouraged to practice conservation agriculture techniques to reduce soil erosion and water needed for irrigation. (Annex 7.2.1)

[11] Napier grass and desmodium

Project summary	Measurable Indicators	Progress and Achievements
1.5 Development of an ecological & bio monitoring system linked to existing monitoring across the landscape (including indicator species plan)		Biomonitoring protocols developed for MCA and harmonised with existing protocols within OPC in Y1: pasture assessment protocol; abandoned and current boma monitoring; predator call back protocol; herbivore monitoring; corridor monitoring (Annex 7.1.4).
1.6 Publication of ecological & bio monitoring training manual		Ecological and bio monitoring manual was completed and published and shared in Y2. (Annex 7.1.4)
1.7 Training of field staff in ecological & bio monitoring methodology using training manual		10 OPC field assistants given a refresher training and participated in the implementation of Activity 1.8 in Y1-Y4. One day training done in Y1 on bio-monitoring protocols for 35 (23 Men; 12 Women) participants. They comprised of students from national universities, OPC patrol rangers and OPC research assistants (see Annex 7.1.5).
1.8 Implementation of an ecological & bio monitoring system linked to existing monitoring across the landscape		Three bird surveys done at MCA (February 2019, and October 2019 and February 2021. 212 species recorded in the MCA among them migrants and showed evidence of Mutara being a transitional zone for highland and dryland birds. (Annexes 7.1.6 and 7.1.7) Quarterly pasture assessments undertaken- Rapid pasture assessments in March, June, September and an intensive pasture assessment in December. Daily rainfall data collected and analysed annually. Daily Wildlife movement and occurrence monitoring on the wildlife corridors and analysis done annually to monitor wild movement between OPC and MCA; lion movement to MCA monitored using collars (Annex 7.1.6)
1.9 Publication of annual MCA ecological report		Annual ecological report for Y1 -Y4 finalised and shared with project partners (Annex 7.1.6).
1.10 Development of Mutara Conservation Area Management Plan		The lapsed management plan for MCA was accessed, reviewed and updated in Y1. In Y2 the plan was further reviewed through a comprehensive planning process that utilises recently published KWS management plan guidance (Annex 7.1.12). Those involved in the review of the management plan included Kenya Wildlife service (KWS), The Monarch Group Limited (TMGL), Ol Pejeta Conservancy (OPC), Agricultural Development Corporation (ADC), and the Laikipia county Government (Annex 7.1.8).

Project summary	Measurable Indicators	Progress and Achievements
		The approval of the MCA plan was not realized within the project timelines due to circumstances outside of the project control (See activity 1.3 and output 3) on the community livestock scheme and management structure of MCA. OPC is committed to pursue approval with KWS once a consensus is arrived at.
1.11 Publication of Mutara Conservation Area Management Plan		The publication could not be done without approval (see activity 1.10 and output 1). The draft plan was reviewed annually to integrate socio-economic and ecological findings.
1.12 Annual review and update of Mutara Conservation Area Management		MCA management plan developed in Y1 allowed for the on-going management of the MCA. In Y2-Y4 the plan was further reviewed taking into consideration the socio-economic and ecological assessment to inform management of the conservation area. (Annex 7.1.13).
1.13 Drafting of lessons learned & guidance document on sustainable land management and ecological restoration		Lessons learned & guidance document on sustainable land management and ecological restoration drafted in Y4 (Annex 7.1.14)
1.14 Publication of lessons learned & guidance document on sustainable land management and ecological restoration		Publication of lessons learned & guidance document on sustainable land management and ecological restoration completed in Y4.
1.15 Dissemination of lessons learned & guidance document on sustainable land management and ecological restoration		Lessons learned & guidance document shared with a broad range of stakeholder in Laikipia in Y4.
Output 2. Improved water availability for domestic use, livestock and wildlife in MCA and 75% of households in 6 focal community areas that is managed by representative local institutions.	2.1 By 2019 Sugoroi and Mutara River Water Resource Use Associations (WRUA) functional with quarterly meetings being held and planned activities being implemented.	By the end of the project, 87% of community members (84% men and 92% women) interviewed within Mutara and Sugoroi sub-catchments had heard about their WRUA which is an increase of 48.5% compared to 2018 baselines. 90% of those who have heard about their local WRUA (92% men and 88% women) understood its committee structure and roles. Reduced water access conflicts by 26.5% at the end of the project despite prevailing dry conditions. This change was attributed to regular stakeholder meetings organized by the project and subsequently improved functionality of the WRUAs (Annex 7.2.1).

Project summary	Measurable Indicators	Progress and Achievements
	2.2 By 2020 Sugoroi and Mutara WRUAs represent a cross-sector of society (at least 33% women) with 75% of WRUA members aware of committee structure and responsibilities	The inclusivity of WRUA membership and management has increased with 77% (75% of men and 78% of women) in focal community areas reporting WRUA membership in 2021 (Annexes 7.2.2 and 7.5.5). The organisational capacity of both WRUAs has seen continual improvement through capacity support from the project with the following key outputs: three priority actions required to improve water security: 1. construction of Mutara common intake and 2. establishment of a collaborative river monitoring and enforcement system. From 2019 the WRUAs were initiating meetings to address water access conflicts to compliment meetings organized by the project in, implementing initiatives for the restoration of riverine habitat initiatives and employing water rationing plans during periods of water scarcity that reduced water access conflicts. (Annex 7.2.1)
	2.3 By 2021 Sugoroi and Mutara WRUA sub-catchment management plans (including livestock and agriculture need/use components) being implemented effectively	Focusing around an issue of common interest for WRUAs, water projects and the WRA the development of a common intake water project within the sub-catchments has resulted in common purpose, A joint roadmap of 8 milestone steps developed towards achievement of the common intake. The project supported the completion of the first four steps (Annex 7.2.4-7.2.8) and was complimented by co-financing mobilized by the project partners. The Community Water project members have committed to contribute in kind (provide labour) to reticulate old pipes towards the common intake. Application for authorization has been made and awaiting review and approval by WRA. A common intake committee has been established to provide oversight for the completion of the two pending steps: Fundraising and resource mobilization for constructing and permit application for water use. (Annex 7.2.1).
	2.4 By 2021 75% of both men and women (at least 33%) representing an estimated 1200 households in 6 focal communities report improved water availability for domestic, livestock and agricultural use	During the first three years of the project there were consistent levels of rainfall and during this period, due to the project's engagement and support to local organisations, institutions, farmers and livestock keepers there was a 14% increase among those reporting adequate water for domestic use, a 9% increase among those reporting adequate water for livestock, and a

Project summary	Measurable Indicators	Progress and Achievements
		25.5% increase among those reporting adequate water for agriculture in 2020 compared to Y1 baselines. However, these interventions were not enough to overcome increased water stress in year 4 when less than half of rainfall was received as compared during to the same periods in the previous three years. This resulted in a large decline in those reporting inadequate water availability in 2021; 25% increase of those reporting water inadequacy for domestic use, an increase 28.5% of those reporting inadequate water for livestock use, an increase 28.5% of those reporting inadequate water for agriculture use in reference to the 2018 baselines.
	2.5 By 2021 water available on MCA that meets the demands of wildlife	Rehabilitation of water infrastructure and piping on MCA (Activity 2.11) as well as improved management of Mutara and Sugoroi rivers facilitating river flows through the project period (Annex 7.2.6) increasing water availability that met the demand of wildlife needs within MCA.
2.1 Development of socio-economic monitoring guidance (approach, ethics & methods)		A socio-economic monitoring guidance document on engagement of communities, standard project operating procedures, gender and links to appropriate participatory rural assessment tools was developed by FFI and OPC staff in Y1 (see Annex 7.5.1: Socio-economic monitoring guidance). The document benefitted from the input of an intern who worked on the project between August and September 2017 on intermission from his PhD studies on conservation and cattle markets in Laikipia. **Note:** Activities 2.1, 3.1 and 4.1 reflect the development of the same overarching document that informed delivery of activities for each respective output
2.2 Publication of socio-economic monitoring guidance (approach, ethics & methods)		The socio-economic monitoring guidance was published and shared in Y1 with project implementation partners and other relevant stakeholders. The document was disseminated to a total of 31 people (17 men & 14 women) drawn from Laikipia-based government, conservation and development

Project summary	Measurable Indicators	Progress and Achievements
		organizations[12] at a one-day workshop meeting held on 27th March in Nanyuki. Another meeting was held on 28th March 2018 at Wiyumire town to reach out to the government officers and stakeholders at the grass roots level where the project is being implemented (see Annex 7.5.2: Baseline's findings and socio-ecological monitoring guidance sharing workshop Activity report). Note: Activities 2.2, 3.2 and 4.2 reflect the publication of the same document that informed delivery of activities for each respective output.
2.3 Training on socio-economic survey methods with OPC staff and 12 enumerators (6 men, 6 women) drawn from focal communities		Two-day trainings on socio-economic survey methods were done annually. Cumulatively from 53 (25 women & 28 men) enumerators drawn from five[13] focal communities were trained on: Open Data Kit (ODK) collect to conduct smart phone/tablet-based household surveys; GPS training and communication skills for conducting household surveys. In Y1,10 OPC staff (6 male & 4 female) received training on gathering an analysing household survey data; and 10 OPC staff (7 male & 3 female) trained on integrating social issues into conservation for project design, implementation and monitoring. (See Annexes 7.5.3: Training of OPC staff and enumerators on socio-economic survey methods attendance list and Annex 7.5.4: Training of OPC staff on socio-economic survey methods presentation).
2.4 Conduct baseline household surveys to establish current water accessibility and demand by WRUA members on Mutara and Sugoroi rivers		Annual household surveys conducted in project focal[14] community areas to establish baseline and monitor change on: water accessibility and management; Wellbeing (material, subjective and relational) and agricultural production in participating community areas; Natural resource conflict status; Current Resource grazing access; Availability of extension

[12] Laikipia Wildlife Forum, Ol Pejeta Conservancy, IMPACT, KWAHO, CETRAD, ASDSP Laikipia county, Mount Kenya Ewaso Water Partnerships, Kenya Forest Service, National Drought Management Authority, Water Resource Authority, County Government of Laikipia, KPLRP, LAIOKONAR Network, Water Resource Users Associations, National Government Local Administration chiefs

[13] Kiamariga, Mutara, Tangi Nyeusi, Ex Erok and Withare

[14] Tangi-Nyeusi, Ex-erok, Kiamariga, Mutara and Withare, Sugoroi and Mutara sub catchments.

Project summary	Measurable Indicators	Progress and Achievements
		services (livestock and crop farming). (See Annex 7.5.5: Socio-economic surveys report). Six community inception meetings and focus group discussions were conducted in the project community areas (see Annex 7.5.7: Focus Group Discussion attendance lists)-gathered baseline information on natural resource use, natural resource conflicts, communities' perceptions of boundaries, stakeholder working within the area and understand variability of livelihood activities and events in a calendar year (see Annex 7.5.6: Focus Group Discussions activity report). **Note**: Activities 2.4, 3.4 and 4.4 were concurrently and the socio-economic report covers finding for all the three activities.
2.5 Stakeholder dialogue and consultation meetings with WRUA members (with both women and men including leaders to promote positive attitudes towards women's participation in project activities)		Regular dialogue meetings between WRUAs and water stakeholders has provided a forum where challenges are flagged and action plans developed in a participatory manner. In total dialogue 20 meetings were done with Water stakeholders within the project period. -WRUAS, OPC, LF, FFI, KFS, CFA with 307 households (represented by 250 men and 57 women) engaged (see Annex 7.2.1 and Annex 7.2.11). More than 20 community meetings with 800 farmers and pastoralists organized by WRUAs and occasionally joined by project partners (WRA, LF, OPC), and National Government Officers.
2.6 Capacity needs assessment for Mutara and Sugoroi Water Resource Use Associations (WRUA)		The project facilitated two capacity needs assessments for the Water Resource Users Associations (WRUAs); the baselines in November 2017 and a repeat assessment in September 2020. A total of 18 (9 men and 9 women) and 15 (10men and 5 women) representatives participated in the assessment in Y1 and Y4 respectively (Annex 7.2.1)
2.7 Capacity development of Mutara and Sugoroi Water Resource Use Associations (WRUA) informed by needs assessment		Capacity development of WRUAs was by the findings of Activity 2.6. The capacity areas covered included: Water sector reforms with emphasize on roles of WRA, WRUA and County Government; Leadership, communication and conflict resolutions; Tree nursery establishment; Catchment and riparian protection/rehabilitation; Water permitting processes; WRUA procedures and enforcement; Water conservation; Reviewing WRUAs'

Project summary	Measurable Indicators	Progress and Achievements
		constitutions to strengthen the WRUAs operations; acquisition of office space; Technical support in pursuance of construction of a common intake as a long term solution to water conflicts and equitable sharing of water resources . (See Annex 7.5.5).
2.8 Assessment of existing infrastructure within and upstream of MCA		Assessment of water infrastructure within and upstream of Mutara was completed in Y1Q4 (see Annex 7.1.3)) The information was used to advise restoration measures and strategies to improve water availability (see annex 7.1.6).
Activity 2.9: Review and update existing sub-catchment management plans for Mutara and Sugoroi rivers (Y2 Q1):		Review of SCMPs is conducted in accordance to the WRUA Development Cycle (WDC) framework. After engagement with WRA staff it was found by the project team not to be cost effective (approximately 8000 USD per SCMP). To address this challenge, in agreement with the WRA, 6 preliminary and technical studies to address gaps in the SCMPs were done report and already informing effective management of Mutara and Sugoroi sub-catchments and shared to advise future review of SCMP (see Annexes 7.2.3-7.2.8) The studies incorporated learning from relevant project activities (A2.4-2.8, 2.14) as well as from other stakeholder's initiatives within the two catchments and made 7 key recommendations which was used to prioritize actions supported by the project to address identified challenges in the two catchments: construction of a common intake, water rationing during dry season, and empowerment of WRUA committees, WRA performance monitoring, water allocation plan development, donor diversification and incorporation of the WRUA agency model[15](Annex 7.2.1)
2.10 Publish revised sub-catchment management plans for Mutara & Sugoroi rivers		Publication of the preliminary report on effective management of Mutara and Sugoroi rivers in Y2Q4 (Annexes 2.3)) and common intake technical studies (Annexes 2.4-2.8) in Y4 to inform management and future review and implementation of the Mutara and Sugoroi rivers SCMPs completed.

[15] WRUA agency model aims to professionalize the WRUA services by making them agents in water resource management such that the WRUAs could be paid for rendering their services of ensuring water availability in the sub-catchment.

Project summary	Measurable Indicators	Progress and Achievements
2.11 Rehabilitate existing water infrastructure within and upstream of MCA		Rehabilitation of water infrastructure within MCA was completed in Y2 Q4 with one borehole (Mbuthia) piping system rehabilitated to connect water to two rehabilitated water troughs and two repaired tanks distributed across MCA. Monitoring of water infrastructure that had been rehabilitated on MCA in Y2 was conducted in Y3 and Y4 by MCA rangers to ensure that any faults were promptly attended to (See Annex 7.1.6). The OPC Agriculture and Water Officer continued to support communities with technical support to construct and maintain on farm water harvesting structures upstream of MCA. As from Y1, a total of 36 households have constructed water pans, 16 group owned, 8 women owned and 12 men through matched funding and through a direct link to the service providers (The water pans have a capacity of 30m³ and can supply the household with water for 3 months for domestic use, a kitchen garden, and 4 heads of livestock. The cost of dam liner for one pan is [redacted] and the labour costs are [redacted] making it affordable for many small-scale farmers. The costs can be reduced further if the owner provides labour. Farmers in the project area have been organized into groups where demonstrations are conducted and group members provide labour and pool finances for purchasing dam construction materials for each member in rotation (Annex 7.2.1).
2.12 Ensure appropriate water storage infrastructure and conservation technologies are operational within both MCA and neighbouring communities		See Activity 2.11
2.13 Quarterly web and media updates on water management activities to broader Laikipia audience through MKEWP		Ten publications to create awareness on the water resource use and management activities implemented through the project. Water scarcity remained the major topic of discussion by both upstream and downstream water users of both Mutara and Sugoroi rivers. 1. http://laikipia.org/wp-content/uploads/2018/10/MUTARA-STUDY-REPORT.pdf 2. http://laikipia.org/lessons-farmers-field-day-laikipia-meru-counties/ 3. https://www.youtube.com/watch?v=QSVcj6nVqsk&t=268s

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		4. http://laikipia.org/using-community-led-solutions-solve-community-problems/ 5. https://www.facebook.com/plugins/post.php?href=https%3A%2F%2Fwww.facebook.com%2FLaikipiaForum%2Fposts%2F2581505071922560 6. https://laikipia.org/water-resources-authority-commit-to-end-illegal-abstraction-in-mutara-river/ 7. https://laikipia.org/stories-of-change-community-voices-on-the-impact-of-the-laikipia-cattle-water-and-wildlife-project/ 8. https://laikipia.org/mutara-wrua-the-journey-from-water-access-equality-to-equity/ 9. https://laikipia.org/2020/12/22/mutara-ready-for-a-common-intake/ 10. https://laikipia.org/2021/04/05/community-members-give-a-mutara-common-intake-the-greenlight/ The project engaged services of a mainstream media to publicize the project efforts in addressing water challenges in Mutara and Sugoroi. Two publications were produced in 2020 by the Standard Newspaper on water scarcity and solutions in Mutara and Sugoroi sub catchments. 11. https://www.standardmedia.co.ke/the-standard-insider/article/2001391970/the-fight-for-laikipias-key-rivers-why-locals-are-fighting-for-rivers-in-laikipia 12. https://www.standardmedia.co.ke/rift-valley/article/2001398915/sh40m-solution-for-laikipia-water-disputes The project developed a documentary on enhancing rangeland and water resource management within MCA. The documentary content was fed by key stakeholders' experiences in the Basin, the LCWW strategies and objectives, and community indigenous knowledge. The documentary was uploaded on YouTube and shared with County Governments, National Government, and

Project summary	Measurable Indicators	Progress and Achievements
		other local stakeholders. It remains a powerful information source for policy makers, planners and implementers working in the landscape. https://www.youtube.com/watch?v=E1ftmGDrFgw&t=338s Two case studies developed for best practices and solutions for water insecurity within the MCA and adjacent communities. The partners used the case studies to share information for lobbying and scaling the best practices in the Basin, and among WRUAs nationally. These case studies focus on community-based water resource management zooming into challenges, strategies, successes and recommendations to improve the existing capacities and structures. The case studies targeted audience includes water policy makers, local stakeholders, donors, philanthropic organizations, and private sector players within the landscape. 250 copies were produced and distributed for the first case study, and 200 copies produced and distributed for the second case study (Annex 7.2.15).
2.14 Bi-annual upstream-downstream water user meeting for Mutara and Sugoroi rivers		The Mutara WRUA cluster established in 2018 as a platform to advance water access discourse between upstream and downstream water users within Mutara Conservation Area-acted as a platform for WRUA collaboration in addressing water shortages in 2019 and 2020 during the dry months. Two cluster meetings in September 2018 and January 2019 to develop water rationing programs [16]for Mutara and Sugoroi WRUAs. A stakeholder's meeting held on June 19, 2020 and attended by 11 people (3 women, 8 men) discussed the need to develop a robust river water monitoring system for Mutara and Sugoroi WRUAs at the grass root level. This effort was designed to assist WRA and WRUA in monitoring illegal water abstractions and reporting to the WRUAs for further action with WRA and Area Chiefs. A similar monitoring system is implemented by Lake Bogoria Basin WRUA, which both WRUAs visited in March 2020 on a field trip. 36 (30 men and 13 women) members of Mutara and Sugoroi WRUAs conducted a best-practice "benchmarking" trip to Lake Bogoria Basin (L.B.B) WRUA in Rift Valley Basin Area. (Annex 7.2.1)

[16] The water rationing programs are tools for managing water abstractions during the dry seasons with the aim of safeguarding the environmental flows.

Project summary	Measurable Indicators	Progress and Achievements
2.15 Drafting of lessons learned & guidance document on WRUA water management		Lessons learned & guidance document on WRUA water management drafted in Y4
2.16 Publication of lessons learned & guidance document on WRUA water management		Lessons learned & guidance document on WRUA water management Published in Y4 (See Annex 7.2.14)
2.17 Dissemination of lessons learned & guidance document on WRUA water management		Lessons learned & guidance document on WRUA water management disseminated to a broad range of Laikipia stakeholders in Y4
Output 3: Output 3: A community cattle to market system, that supports pastoralist livelihoods and reduces stocking densities in 4 focal community areas, is in place on MCA. **Output 3a: Community** cattle and sustainable livelihood scheme, supporting pastoralist income diversification and wellbeing.	3.1 By 2017 eligibility criteria for community cattle project developed (including targets for inclusion of cattle owned by women's groups), using participatory approaches pastoralists, including women, in 4 focal community areas 3.2 By mid-2018 grazing plan designed and implemented that takes into account the majority of stakeholder's needs and opinions, while enabling controlled increase of cattle numbers to a maximum of 2000. 3.3 By 2021, livestock extension services & training provided to men and women (at least 20%) in 400 households in 4 focal community areas	Prior to a change request that was approved in Y4 this output focused on the development and implementation of a community cattle marketing scheme. Due to circumstances outside of the project control this was not feasible but prior to the approved revision of the output to **Output 3a**, the earlier output activities had resulted in significant lessons in terms of the feasibility, enabling conditions and risks of such an approach. A total of 32 dialogue meetings were conducted within the 3 communities to discuss and design the community livestock scheme including the design of the MCA grazing plan and eligibility criteria for the community livestock scheme. The total number of people engaged represented 506 households (374 men and 132 women) (Annex 7.3.2). The comprehensive dialogue and meetings with communities (see Annex 7.3.1) held through the project period and MCA bio-monitoring findings (Activity 3.13a, see Annex 7.1.6) has gathered and documented lessons (Annex 7.1.14 and 7.3.11) that will inform the review and implementation of livestock schemes within MCA and the wider Laikipia landscape to continue working towards a sustainable balance between community grazing needs and wildlife conservation. At the end of the project, 57.5% (54% men and 61% women) reported to have received extension support. This was 41 % increase of respondents in Year 4 compared to the baselines (Annex 7.5.5). According to the livestock extension officer records, a total of 429 households (250 men and 169 women) benefited from the project livestock extension support which had exceeded the project target (Indicator 3.3) of 400 households (Annex 7.3.1). In 2021, those receiving livestock extension survey: 22% of farmers reported

Project summary	Measurable Indicators	Progress and Achievements
		reduced livestock mortality ;27% reported better disease management which enjoins to reduce livestock mortality; 20% recorded improved milk production and 27% reported increased income/ reduced costs (Annex 7.3.1)
	The project submitted a change request in September 2020 (see Annex 7.5.10) when it was evident that the community livestock scheme was not feasible within the project timelines. The implementation of sustainable livelihood scheme was approved and implemented and additional indicators included to measure the impact of the scheme (Indicators 3.5-3.9).	
	3.5 By 2021 250 people representing the equal number of pastoralist households, including at least 40% women have benefited project extension support and training linked to their livelihoods and wellbeing (cattle feed supplementation, alternative energy models, agricultural extension support for market gardens (including water recycling) and poultry farming).	By March 2021 330 pastoralist households (227 women; 103 morans and 63 elders) (Indicator 3.5) had participated in the project's diversified livelihoods scheme and their household wellbeing had improved through adoption of diversified livelihood scheme. This exceeded the project target of 250 households (Annex 7.3.1).
	3.6 By March 2021 average price paid for pastoralist livestock supported by the project on cattle feed supplementation is at least KShs 40,000[1]; a 14% increase from the current market prices.	The project trained 48 elders and supported to them to supplement their livestock to maintain during periods of scarcity. By March 2021 average price paid for pastoralist livestock supported by the project on cattle feed supplementation was at least KShs 40,0005; a 14% increase from the 2020 prices market prices (Annex 7.3.1).

Project summary	Measurable Indicators	Progress and Achievements
	3.7 By March 2021, each of the 50 pastoralist households receiving extension support, through existing women's groups, on market gardens will be growing enough vegetables to meet household needs and generating an average income of KShs 1500 per month from the gardens which is a 40% monthly income increase from group activity.	By March 2021 each of the 5 women groups consisting of 96 pastoralist households trained on market garden production and each put up 2 kitchen garden and were saving KS [redacted] per month for not purchasing vegetables and group income of KS [redacted] per month through vegetable sales. Over a 6-month period this was a 53 % group income in a period of 6 months (Annex 7.3.1).
	3.8 By March 2021 each member of youth groups receiving extension support on poultry farming representing 50 pastoralist households would have received an average Ksh 5000 from poultry sales which is a 50% income increase to their current income (from group activities), by the end of 6 months.	By March 2021 6 women groups representing 129 pastoralist households and 3 youth groups representing 63 pastoralist households had been trained in poultry production and seeded with 11 chicken per group. The groups were earning an average monthly group income of KS [redacted] from egg sales which was a 100% and 25% increase in income for women and youth groups respectively by the end of 6 months. The groups have also doubled their chicken numbers allowing them to be able to double their income after another six months (October 2021). Each group is projected to make additional income from poultry meat sales of approximately KS [redacted] The groups were also supported to construct chicken structures that can hold up to 100 birds thus over time the groups have potential to grow their income up to KES [redacted] per month through egg sales and KES [redacted] every 6 months from meat sales. The groups were guided to construct a structure that can hold up to 100 birds to allow the numbers to grow overtime through brooding of chicks which can be doubled every 7 months (takes 7 months for a chick to grow to maturity).
	3.9 By March 2021, an awareness programme on alternative energy models that have potential to address pastoralist household's energy needs and reduce fuelwood consumption by 40% to will be developed and delivered to 5 women's	41 people (23 women and 18 men) learned how to use of energy saving jikos to reduce the volume of fuelwood needed by households. A total of 7 jikos were given to 7 women representing 7 groups. An initial assessment of those using energy saving jikos demonstrated potential to address pastoralist household's energy needs and 40 % reduction in fuelwood consumption (Annex 7.3.1).

Project summary	Measurable Indicators	Progress and Achievements
	groups representing 50 pastoralist households.	
3.1 Development of socio-economic monitoring guidance (approach, ethics & methods)		See activity 2.1
3.2 Publication of socio-economic monitoring guidance (approach, ethics & methods)		See activity 2.2
3.3 Delivery of training on socio-economic survey methods with OPC staff and 12 enumerators (6 men, 6 women) drawn from focal communities		See activity 2.3
3.4 Baseline socio-economic survey conducted including wellbeing indicators (material, subjective and relational) and cattle price in 4 participating community areas		Done concurrently with Activity 2.4
3.5 Stakeholder dialogue and consultation meetings with focal pastoralist communities (with both women and men including leaders to promote positive attitudes towards women's participation in project activities)		A total of 32 dialogue meetings were conducted in Tangi Nyeusi (20), Mutara (4), Ex Erok (5) and Sugoroi (4) communities to discuss and design the community livestock scheme. The total number of people who participated in the meetings were 407 (267 men and 140 women). Emerging issues were discussed; illegal grazing on MCA, Youth and women inclusion; impacts of MCA fencing; barriers to the implementation of the community livestock scheme. Separate meetings were held in Tangi Nyeusi to enable them to participate freely. A total of 33 women representatives representing 8 women groups from Tangi Nyeusi were engaged separately as joint meetings were not possible due to cultural values (see Annex 7.3.2).
3.6 Develop awareness scheme for holistic management (wildlife-livestock integration and optimal stocking densities)-Y1		Awareness scheme for holistic management developed jointly between the project team and Ol Pejeta's Livestock department based on Ol Pejeta's livestock and wildlife integrated model. (See Annex 7.1.9)

Project summary	Measurable Indicators	Progress and Achievements
3.7 Deliver awareness scheme for holistic management (wildlife-livestock integration and optimal stocking densities)		Annual (Y1-Y4) exposure visits to Ol Pejeta Conservancy for community groups from focal areas were conducted. The awareness scheme included education and exposure to wildlife - livestock integration management by Ol Pejeta. A total of 594 (317men +277 women) community members participated. (See Annexes 7.1.10). A 1-week exposure visit to Maasai Mara Community Conservancies was undertaken by 2 project staff to learn from experiences in establishing conservancies where communities are benefiting from controlled grazing and wildlife protection (Annex 7.3.9). 15 (10 men and 5 women) community livestock committee members and 4 (2 men and 2 women) members of project staff from Ol Pejeta Conservancy and FFI attended training in Pioneer feedlots located at Kiganjo in Central Kenya on livestock management to avoid livestock losses due to drought (Annex 7.3.1).
3.8 Develop eligibility criteria for community cattle project using participatory approaches with pastoralists from focal community areas (including women's groups)-Y1		Three meetings held in Mutara, Ex Erok and Mutara pastoralists and agro-pastoralist communities to discuss the eligibility criteria for community livestock in the MCA with 82 (55 men and 27 women) engaged. (See Annexes 7.3.4 and Annex 7.3.10)
3.9 Establish representative community grazing committees drawn from focal pastoralist communities(Y2)		A 15 member (10 men and 5 women) representative livestock committee from three communities was established in Y2. Deliberate measures were taken to ensure representation by age and gender; one election meeting for all groupings was done but in Tangi-Nyeusi separate meetings were done for elders (men), youth and women to ensure inclusivity. A follow up meeting was also conducted in Mutara to select a representative from the Somali community who had no representation in the first meeting. (Annex 7.3.1).
3.10 Agree assured purchase prices of cattle between OPC and community grazing committees(Y2)		Engagement with the 15 livestock committee members in Y2 Q4 and the following agreed on: pricing was to be based on the live weight of the animal as opposed to carcass weight; the price was set at Ksh 120-125 per kg for cattle below 250 kilograms and Ksh125-130 per kg for cattle above 250 kg;

Project summary	Measurable Indicators	Progress and Achievements
		the accepted age of the animal was set at a maximum of 3 years (Annex 7.3.1 Livestock engagement and extension report).
3.11 Purchase of focal community cattle by OPC - fattening of cattle on OPC land		Ol Pejeta in Q4 Y2 made livestock purchases of 175 cattle from two local communities in Y2 of the project but only 27 of these were from project focal communities. These purchases were limited in scope as they occurred prior to completion of the community engagement process and establishment of a representative grazing committee (Annex 7.3.1)
3.12 Participatory development and implementation of local grazing plans for MCA (including identification of critical areas and periods where conflict between pastoralist livestock and wildlife is likely)		The grazing plan was developed and reviewed with communities (see Annex 7.3.8) but not implemented due to multiple factors outside of the project's control which caused significant delays in reaching final agreement on the roll out of the community cattle scheme between project partners, the MCA leaseholder (Monarch Group) and the MCA owner (Agricultural Development Corporation) (see Activity 1.3). Securing MCA for long term conservation is a priority for OPC and the guidelines developed and lessons learnt has been shared to inform long term management.
~3.13 Integrate local grazing plans with ecological monitoring data and sub-catchment water management plans 3.13a Agree on a comprehensive grazing plan factoring ecological monitoring data and sub-catchment water plans whilst capitalising on project findings and lessons learned on the community livestock scheme, to be integrated into the OPC 2030 strategy.		The grazing plans took into consideration the water plans in planning the distribution of grazing plots based on water availability (Annex 7.3.8) Three meetings held to review the grazing plan (see 7.3.8 Mutara Conservation Area Grazing plan) developed in Y2 with 26 pastoralists from Mutara (22 men + 4 women), 21 elders (21 men) from Tangi Nyeusi and the Tangi Nyeusi Livestock Committee (5 men+ 2 women) (Annex 7.3.2). The ecological monitoring data and sub-catchment studies (Annex 7.2.4-7.2.8) informed the initial development grazing plan. Lessons learned shared and informing OPC 2030 strategy development which is still in progress; the long-term management of MCA (captured in OPC conservation strategy (Annex 7.5.9) and engagement of the new

Project summary	Measurable Indicators	Progress and Achievements
		additional communities have been co-opted as OPC communities to benefit from CDP wider programmes.
3.14: Purchase of focal community cattle by OPC – fattening of cattle on MCA with mobile corral system		Ol Pejeta in Q4 made livestock purchases of 175 cattle from two local communities in Y2 of the project but only 27 of these were from project focal communities. These purchases were limited in scope as they occurred prior to completion of the community engagement process and establishment of a representative grazing committee (A3.9)
3.14a Provide extension support for pastoralists' livelihoods & wellbeing that includes links to micro-finance institutions (cattle feed supplementation, alternative energy models, agricultural extension support for market gardens (including water recycling) and poultry farming).		Extension support on alternative livelihoods delivered on the following areas: 3 training sessions were conducted to train women and youth on poultry management and 3 on kitchen gardens. The project supported 9 groups[17] from Tangi Nyeusi community with 99 hens and 11 cocks to 9 groups each receiving an average of 10 hens and 1 cock. A total of 6000 cattle from project areas targeted by the project benefited from crisis access grazing on MCA between Dec 2020 and to date. A total of 4000 and 2000 from Tangi Nyeusi and Mutara. 2 trainings with the 48 elders to train them on the importance of supplementation, different available supplements and ingredients and how to supplement livestock in Three villages in Tangi Nyeusi 13 women and 5 youth groups linked to micro finance institutions with cumulative membership of 330 (225 women; 105 youths). Due to covid restrictions 79 (66 women and 13 youths) representatives from the 18 groups participated on a 3-day training conducted by Women Enterprise Fund. The groups were awarded a certification of participation which is a key component in credit application for the funds. Key outcomes of the training included: 7 groups applied for the loans, 7 groups were supported to renew their annual licence, and 3 groups were supported to register with the office of social services to facilitate them access funds in the future. The loans of the 7 groups who applied have been approved and will be cumulatively receiving KES [redacted] with two groups receiving KES [redacted] each and 5 groups receiving KES [redacted] each (Annex 7.3.1).

[17] Namunyak, Kiserian, Pois (Youth), Nabula (Youth) (Tangi Nyeupe), Amani, Namaiyana, Tangi Nyeusi Youth (Tangi Nyeusi), Momuruti and Nyamawa.

Project summary	Measurable Indicators	Progress and Achievements
3.15 Develop extension and training services for livestock husbandry participating livestock keepers		A total of 152 (85 men and 67 women) community members engaged in the development the project livestock husbandry manual. The activity allowed participatory identification and prioritization of community issues and training needs which informed development of the Livestock extension manual (Annex 7.3.5).
3.16 Publish training manual for livestock husbandry, in appropriate format(s) to ensure accessibility for all target users (men, women, elderly & youth)		The training manual for livestock husbandry was published in Y2 Q4 and informed community extension support from Y3 Q2-Y4. The manual was continually adapted to address emerging community needs (Annex 7.3.5).
3.17 Implement extension and training services for participating livestock keepers		Cumulatively a total 429 (250 men and 169 women) households agropastoral and pastoralists who received livestock extension support on diseases management and diseases through the project period (Annex 7.3.6 Livestock Extension support attendance list). The specific training areas were on: Impacts and management of nomadic pastoralism; disease prevention, detection and treatment; establishment and management of a drug kitty; parasite and pest control in livestock and record keeping (Annexes 7.3.5)
3.18 Drafting of lessons learned & guidance document on community cattle scheme		Lessons learned & guidance document on community cattle scheme drafted
3.19 Publication of lessons learned & guidance document on community cattle scheme		Lessons learned & guidance document on community cattle scheme published (Annex 7.3.11)
3.20 Dissemination of lessons learned & guidance document on community cattle scheme		Lessons learned & guidance document on community cattle scheme shared with stakeholders
4. Women and men in 2 target communities adopt a community-based fodder production system that supports the diversification of small-scale farmer livelihoods in at least 200 households.	4.1 From 2018 to 2021, agricultural extension services and training, supporting fodder production, provided to 100 men and 100 women representing 200 households in 2 focal community areas	Within the project focal area, between Y1 and Y4 there was a 24.5% increase in the number of households who had received agricultural extension support (Indicator 4.1). A total of 565 households (represented by 305 men and 260 women) from 47 communities were supported with agricultural extension on fodder production, conservation agriculture and on-farm water harvesting. A targeted extension support surveys confirmed:

Project summary	Measurable Indicators	Progress and Achievements
	4.2 By 2021, local buyers are contractually linked to 100 men and 100 women representing 200 households producing fodder (primarily hay)	The majority of those who adopted fodder production used it solely for subsistence (68%) with only 32% of households selling part of their harvest. Thus only 96 out of the 300 households which had taken up fodder farming sold some of their hay, with 54 of these farmers reporting to have sold hay to pastoralists in the project focal communities (Tangi Nyeusi, Mutara or Ex Erok communities). More than 200 farmers in Ex Erok and Tangi Nyeusi communities were linked to Nyala Dairies Limited to market their fodder but only 59 sold to them because the profit margin was low. Nyala provided machinery to harvest fodder and gave farmers KS.[redacted] per bale [redacted] after the deduction of harvesting and baling costs (see Annex 7.4.1).
	4.3 By 2021 men and women (50%) representing 200 households report increased well-being through community fodder markets	In Ex-Erok and Withare communities which had high adoption of fodder farming; the number of those reporting improved wellbeing change (indicator 4.3) increased by 41% in year 3 of compared to baselines. Though there was a slight drop in Y4 caused by prolonged dry period and covid effects, Withare community recorded a 17% increase in of those reporting higher wellbeing index by end of the project 2021 while Ex Erok, maintained a fairly stable wellbeing index-with only a 3% decrease of those reporting higher wellbeing. Withare community which was engaged by the project on fodder production from 2019 with 100% adoption of fodder farming by those trained, in total 152 (76 men and 76 women) from the two communities were trained on fodder - Based on the adoption rate an average of minimum of 136(68 men and 68 women) households increased or maintained stable wellbeing by 2021 despite the prevailing dry conditions in 2021.
	4.4 By 2021 net income of 1200 KShs per acre of hay achieved by participants in fodder production component	The majority of the fodder farmers reported production ranging between 250 and 500 bales. The mean production per acre was 524 bales per year which has 2 harvest seasons. Average price per bale is KS[redacted] and cost of production and bailing is KS[redacted]. The average net profit per acre/annum (indicator 4.4) by the end of the project was 524 bales@ KS [redacted] totalling to KS[redacted]

Project summary	Measurable Indicators	Progress and Achievements
	4.5 By 2021 both male and female representatives of 200 households report an increase in agriculture related income of at least 15%	400 households had adopted CA with 76 % translating to 308 households reporting crop yields of 3 to 10 bags of maize and beans per acre 73 % translating to 292 households reporting an income increase of above 30 % which exceeds the project target of 15 % increase in agricultural income after adopting CA; 300 households in four targeted communities had established fodder crops resulting in improved income and milk production ;and 200 farming households' had adopted on-farm water techniques; 36 lined water pans excavated in 36 households improving household water security(Annex 7.4.1).
4.1 Development of socio-economic monitoring guidance (approach, ethics & methods)		See 2.1
4.2 Publication of socio-economic monitoring guidance (approach, ethics & methods)		See activity 2.2
4.3 Delivery of training on socio-economic survey methods with OPC staff and 12 enumerators (6 men, 6 women) drawn from focal communities		See activity 2.3
4.4 Baseline socio-economic survey conducted included wellbeing (material, subjective and relational) and agricultural production in participating community areas (Ex-Erok and Withare)		See activity 2.4
4.5 Stakeholder dialogue and consultation meetings with focal communities (with both women and men including leaders to promote positive attitudes towards women's participation in project activities)		A total of 6 dialogue meetings were held in 4communities in Y1 to prioritize farmer needs that informed the manual development and continuous reviewing to capture changing farmer's training needs (Annex 7.4.2).
4.6 Engage with smallholder farmers in focal communities to promote innovative climate-smart fodder crops (primarily hay, as a safeguard against drought)		A total of 565 (305 men and 260 women) farmers households were trained on fodder production. Some of the farmers within this number also benefited from training in conservation Agriculture, and on farm water harvesting (7.4.4). To date a total of300households have established fodder crops (Rhode grass) as a result of these engagements (Annex 7.4.1).

Project summary	Measurable Indicators	Progress and Achievements
4.7 Develop extension and training services for conservation agriculture (including on-farm water management) in appropriate format(s) to ensure accessibility for all target users (men, women, elderly & youth)-Y2		The agricultural training manual (Annex 7.4.1) for training was developed in year two informed by the community needs identified during the community dialogue meetings in year 1. The manual was also aligned with the agriculture policy and the County Integrated Development Plans (CIDP) to ensure sustainability.
4.8 Publish training manual for conservation agriculture (including on-farm water management) in appropriate format(s) to ensure accessibility for all target users (men, women, elderly & youth)		The manual was published in Y2 Q4 (7.4.3)
4.9 Conduct conservation agriculture (including on-farm water management) trainings with participating smallholder households, ensuring that 50% are female participants		Implemented concurrently with activity 4.6
4.10 Facilitate market linkages between local fodder producers and local consumers (including MCA community cattle)		Four community meetings organized in collaboration with local service providers where a total of 174 hay farmers (64 men and 110 women) which established market links with Nyala dairies. Majority (76.9%) of farmers supported who sold has sourced for their own market -of these 40 % reported to be pastoralists, of which 75 % were pastoralists from Tangi Nyeusi, Ex Erok and Mutara communities (see Annex 7.5.5)
4.11 Integrate fodder production with sub-catchment water management plans		The fodder farming using conservation agriculture promoted by the project has been adopted in WRUA plans as a livelihood activity to reduce pressure on rivers as it is drought resistant, to reduce riverbank erosion by encouraging farmers near the river to plant fodder crops (Napier grass and desmodium), to provide soil cover before the planted trees mature, and use conservation agriculture techniques to reduce soil erosion and pressure on rivers. This aligns with the three additional Sub Catchment Water Management Plan chapters on Livelihood Enhancement (see Annex 7.4.1)).
4.12 Target agricultural extension to farmer groups who have chosen to participate in increased and sustainable production of fodder		In Y3, extension support focused on 383 farmers (205 men and 178 women) of the Y1-2 cadre who showed continued commitment to participate in increased and sustainable fodder production, conservation agriculture and on farm water harvesting (see Annex 7.4.4). The numbers of farmers trained to date now significantly exceeded project targets. Training was delivered through 12 farmer groups at village level for

Project summary	Measurable Indicators	Progress and Achievements
		which each group identified a demonstration farm located in one of the group members' lands. (See Annex 7.4.1).
4.13 Drafting of lessons learned & guidance document on conservation agriculture and creation of market linkages		Lessons learned & guidance document on conservation agriculture and creation of market linkages drafted in Y4
4.14 Publication of lessons learned & guidance document on conservation agriculture and creation of market linkages		Lessons learned & guidance document on conservation agriculture and creation of market linkages published in Y4 (Annex 7.4.5)
4.15 Dissemination of lessons learned & guidance document on conservation agriculture and creation of market linkages		lessons learned & guidance document on conservation agriculture and creation of market linkages disseminated in Y4
5. Vulnerable and endangered species are under effective protection on MCA	5.1 By 2018 onwards wildlife rangers conduct daily patrols throughout MCA	A total of 21 (17 men and 4 women) and rangers had been deployed prior to the start of the project by OPC with additional support from an anti-stock theft unit and the Kenya Police Reserve (KPR). All rangers and KPR have been locally recruited from communities adjacent to Mutara Conservation area. The rangers patrol (Annex 5.1) for 5 hours each day which was on-going throughout Y1-Y4 and data on wildlife sightings, livestock sightings, and rainfall were collated and sent through on a daily basis (Annex 7.1.6). The data collected was analysed and informed ongoing management within MCA.
	5.2 By 2021 50% increase in wildlife movement between OPC and MCA	The total number of Herbivores that moved from MCA to OPC were 10,918 and those that moved Out from OPC to MCA were 11, 776. Movement by carnivores were 2298 into OPC from MCA and 2472 moved out to MCA. In both cases, the numbers that moved out from OPC are more than the numbers that moved in from MCA. Which explains the increased numbers of wildlife in Mutara as also captured by ranger reports on daily sightings. lions were sighted 39 times in Mutara conservation area- their home ranges as established in OPC has now extended to MCA (Annex 7.1.3)

Project summary	Measurable Indicators	Progress and Achievements
	5.3 By 2021 75% decrease in wildlife poaching incidents on MCA against baseline established in Y1	No poaching incident reported on MCA within the project implementation period (7.1.3 MCA Bio-monitoring Assessment Activity report).
	5.4 From 2018 onwards data from ecological monitoring used to actively manage herbivores and predators	The ecological monitoring findings on migratory species continually informed management strategies in MCA established MCA as an important dispersal area and connectivity of OPC wildlife to the wider landscape. The findings informed development of Mutara conservation areas grazing plan (Annex 7.3.8) and development and annual review of Mutara conservation area management plan (see Annex 7.3.8 Annex 7.1.13). A lion that was predating on Rhino calves on OPC and a leopard that was predating on livestock on OPC was moved to MCA. The projects developed and shared a lessons document on recommendations for MCA long term sustainable management (Annex 7.1.14)
5.1 Co-ordination meetings between OPC, AWF, Eland Downs and KWS to improve the quality and extent of wildlife corridors in the greater OPC landscape		14 coordination meetings held in Y1 –Y4 on the following: 5 coordination meetings to review MCA management plan draft with local stakeholders[18] to review MCA management plan and deliberate on securing of MCA as a dispersal area. (See Annex 7.1.8 and Annex 7.1.6); 7 meetings held between ADC and OPC to discuss management of crisis grazing on MCA (December 2020-date (Annex 7.1.6); In addition, OPC, ADC and Monarch met on 2 occasions, firstly at ADC Board and SMT level (September 2019) and secondly at Director and SMT level (December 2019) to discuss MCA management structure and partner roles. Meetings and communication between OPC and KWS are also regular and on-going to move forward the process of preparing MCA for black Rhinos.

[18] Laikipia Wildlife forum, OPC, KWS, ADC, Monarch group, Space for Giants, Water Resource Authority, WRUAs and community representatives from Tangi-Nyeusi, Mutara and Kiamariga

Project summary	Measurable Indicators	Progress and Achievements
		AWF were not engaged as initially indicated as they no longer actively work within the project focal area and have no office or representation of the staff on the ground.
5.2 Biodiversity conservation awareness 1-day module developed		Biodiversity conservation awareness module developed and was used to deliver Activity 5.3. The module was reviewed throughout the project cycle to capture the capacity needs of the target beneficiaries (see Annex: 7.1.9).
5.3 Biodiversity conservation exposure visits by participating households to OPC		594 (317 men and 277women) community members from five communities participating in the project (Kiamariga, Ex-erok, Tangi-Nyeusi, Mutara and Withare) visited OPC in the course of the project. The focus on the visits was to create awareness on: wildlife conservation, natural resource management and the role that communities can play in conservation (Annex 7.1.10) In year 4, due to covid-19 restrictions: community open were held within community areas on sustainable livelihoods. The content and activities were designed develop capacity on sustainable livelihoods and in turn serve to conserve our shared ecosystems. Four themes were selected which include awareness in bee farming, Sustainable agriculture, Livestock husbandry and alternative energy (Annex 7.1.11).
5.4 Monthly camera trapping of wildlife corridors to monitor wildlife movement between OPC and MCA		Camera traps at wildlife corridors were established prior to the start of the project and this activity is on-going. A comprehensive camera trap analysis is produced annually by OPC. Daily monitoring was conducted by rangers at the corridor using animal marks and monthly analysis reports are compiled. In the reporting period the sorting of 2018-2020 corridor images was completed, analysed and results documented in the ecological report. (Annex 7.1.6)
5.5 Data from ecological monitoring (Activity 1.9) used to actively manage populations of grazing and browsing herbivore and predator species		In Y1-Y4, data on the following were collected and analysed: quarterly assessments on pasture availability and composition; connectivity of OPC and MCA through camera trapping and spoors; daily rainfall and daily livestock densities. The analysed report has been documented and shared

Project summary	Measurable Indicators	Progress and Achievements
		to support the population management of grazing and browsing herbivores and predator species (see annexes 7.1.6 MCA and 7.1.14).
5.6 Expansion of wildlife ranger patrol units (90% locally recruited)		A total of 21(17 men and 4 women) and rangers had been deployed prior to the start of the project by OPC with additional support from an anti-stock theft unit and the Kenya Police Reserve (KPR). All rangers and KPR have been locally recruited from communities adjacent to Mutara Conservation area.
5.7 Conduct regular wildlife ranger patrols on Mutara Conservation Area		Daily patrols by 21 rangers for 5 hours each day have been on-going throughout Y1-Y4 and data on wildlife sightings, livestock sightings, and rainfall is collated and sent through on a daily basis. MCA rainfall data are recorded daily from four stations (Zulu 3, Zulu 4, Zulu 7, Golf Whiskey) which are placed strategically at the different patrol camps (see Annex 7.1.6).

Annex 3 Standard Measures

Code	Description	Total	Nationality	Gender	Title or Focus	Language	Comments
Training Measures							
1a	Number of people to submit PhD thesis	1	British	Female	Political Ecology	English	Will be submitted in 2022
1b	Number of PhD qualifications obtained						
2	Number of Masters qualifications obtained						
3	Number of other qualifications obtained						
4a	Number of undergraduate students receiving training	2	Kenyan	1 Female 1 Male			Undergraduate attachment and studentship
4b	Number of training weeks provided to undergraduate students	24 weeks					
4c	Number of postgraduate students receiving training (not 1-3 above)						
4d	Number of training weeks for postgraduate students						
5	Number of people receiving other forms of long-term (>1yr) training not leading to formal qualification (e.g., not categories 1-4 above)						
6a	Number of people receiving other forms of short-term education/training (e.g., not categories 1-5 above)	45	Kenyan	33 Male 12 Female	Training of field staff in ecological & bio-monitoring		
		63	Kenyan	34 Male 29 Female	Training of OPC staff and enumerators on socio-economic		

					survey methods		
		565	Kenyan	305 Male 260 Female	Training small holder farmers in conservation agriculture, fodder farming and on farm water harvesting (Agriculture extension support		
		948	Kenyan	614 male 334 female	Training on livestock husbandry		People trained represented 429 households
6b	Number of training weeks not leading to formal qualification	144					Extension support done over a period of 3 years
7	Number of types of training materials produced for use by host country(s) (describe training materials)	3			Biodiversity conservation awareness training module Agriculture training manual Livestock training manual		

Research Measures		Total	Nationality	Gender	Title	Language	Comments/ Weblink if available
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country (ies)	7			Mutara Conservation Area Management Plan Study report on effective management of Mutara and Sugoroi sub catchments Mutara common intake feasibility report Hydrological assessment report for Mutara River Technical assessment report for Mutara common intake water supply project		All the documents were done in a participatory manner where the relevant stakeholders were engaged in the development progress as well in the continuous review of the documents.

					Engineering design plan for the common intake Environmental impact report for the proposed Mutara river common intake		
10	Number of formal documents produced to assist work related to species identification, classification and recording.	1			Ecological & bio-monitoring manual		
11a	Number of papers published or accepted for publication in peer reviewed journals						
11b	Number of papers published or accepted for publication elsewhere	3			Socio-economic monitoring guidance Mutara common intake; proposed solution for equitable water sharing case study		Location?

					Mutara and Sugoroi WRUAs management case study		
12a	Number of computer-based databases established (containing species/generic information) and handed over to host country						
12b	Number of computer-based databases enhanced (containing species/genetic information) and handed over to host country						
13a	Number of species reference collections established and handed over to host country(s)						
13b	Number of species reference collections enhanced and handed over to host country(s)						

Dissemination Measures		**Total**	**Nationality**	**Gender**	**Theme**	**Language**	**Comments**
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work						
14b	Number of conferences/seminars/ workshops attended at which findings from Darwin project work will be presented/ disseminated.						

Physical Measures		**Total**	**Comments**
20	Estimated value (£s) of physical assets handed over to host country(s)	£[redacted]	Mobile cattle bomas

Physical Measures		Total	Comments
21	Number of permanent educational, training, research facilities or organisation established		
22	Number of permanent field plots established		Please describe

Financial Measures		Total	Nationality	Gender	Theme	Language	Comments
23	Value of additional resources raised from other sources (e.g., in addition to Darwin funding) for project work *(please note that the figure provided here should align with financial information provided in section 9.2)*	£[redacted]					

Annex 4 Aichi Targets

Please note which of the Aichi targets your project has contributed to.

Please record only the **main targets** to which your project has contributed. It is recognised that most Darwin projects make a smaller contribution to many other targets in their work. You will not be evaluated more favourably if you tick multiple boxes.

	Aichi Target	Tick if applicable to your project
1	People are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.	x
2	Biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.	
3	Incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio-economic conditions.	
4	Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.	
5	The rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.	
6	All fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem-based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.	
7	Areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	x
8	Pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.	
9	Invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.	
10	The multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.	
11	At least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably	x

	managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.	
12	The extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.	x
13	The genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	
14	Ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.	x
15	Ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.	
16	The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.	
17	Each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.	
18	The traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.	
19	Knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.	x
20	The mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.	

Annex 5 Publications

Type * (e.g. journals, manual, CDs)	Detail (title, author, year)	Nationality of lead author	Nationality of institution of lead author	Gender of lead author	Publishers (name, city)	Available from (e.g. web link, contact address etc)
Case Study	Mutara & Sugoroi Sub -Catchments Situation, Results and Actions Ann Komen, Bernard Mwangi, Mercy Waithira, Paul Waweru, James Mwangi & Benedict Erik Omond 2020	Kenyan	UK	Female	FFI	https://tinyurl.com/3m525v4a
Case Study	Mutara common intake; proposed solution for equitable water sharing case study Ann Komen, Bernard Mwangi, Mercy Waithira, Paul Waweru, James Mwangi & Benedict Erik Omond 2020	Kenyan	UK	Female	Laikipia Forum, Nanyuki	https://tinyurl.com/s5rn95e7
Manual	Cattle, Water and wildlife: enhancing Socio-ecological resilience in Laikipia - Agriculture Training Manual	Kenyan	Kenyan	Male	Ol Pejeta Conservancy, Nanyuki	to be uploaded to partner websites

	Mwangi, B. 2019					
Manual	Cattle, Water and wildlife: enhancing Socio-ecological resilience in Laikipia - Mutara Conservation Area Ecological report Waithira, M. 2019	Kenyan	Kenyan	Female	Ol Pejeta Conservancy, Nanyuki	to be uploaded to partner websites
Manual	Cattle, Water and wildlife: enhancing Socio-ecological resilience in Laikipia – Livestock Husbandry Manual Waweru, P. 2019	Kenya	Ol Pejeta Conservancy	Male	Nanyuki	To be uploaded to partner websites
Manual	Small, R., Shaughnessy, S., Anthem, H., Komen, A. & Muthoki, M.	British	FFI	Male	Cambridge	To be uploaded to partner websites

Annex 6 Darwin Contacts

Ref No	24-002
Project Title	Cattle, water and wildlife: enhancing socio-ecological resilience in Laikipia
Project Leader Details	
Name	Rob Small
Role within Darwin Project	Project Lead
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Phone	
Fax/Skype	
Email	
Partner 1	
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Organisation	Ol Pejeta Conservancy
Role within Darwin Project	OPC project focal point
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Email	

11 Checklist for submission

	Check
Is the report less than 10MB? If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line.	X
Is your report more than 10MB? If so, please discuss with Darwin-Projects@ltsi.co.uk about the best way to deliver the report, putting the project number in the Subject line.	
If you are submitting photos for publicity purposes, do these meet the outlined requirements (see section 10)?	
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.	X
Do you have hard copies of material you need to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number. However, we would expect that most material will now be electronic.	
Have you involved your partners in preparation of the report and named the main contributors	X
Have you completed the Project Expenditure table fully?	X
Do not include claim forms or other communications with this report.	