

Darwin Initiative Final Report

*To be completed with reference to the Reporting Guidance Notes for Project Leaders (<http://darwin.defra.gov.uk/resources/>) it is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)*

Darwin project information

Project reference	21-015
Project title	Balancing development and conservation in Kenya's largest freshwater wetland-Yala Swamp
Host country(ies)	Kenya
Contract holder institution	Nature Kenya
Partner institution(s)	The Royal Society for the Protection of Birds (RSPB), The Inter-ministerial Technical Committee for the sustainable management of Kenya Deltas (IMTC), Kenya Wildlife Service (KWS), National Environment Management Authority (NEMA), The Yala Wetland Environmental Volunteers (YAWEV)-now reconstituted to form Yala Ecosystem Site Support Group
Darwin grant value	£280,000
Start/end dates of project	Start: April 2015 End: April 2017
Project leader's name	Serah Munguti
Project website/blog/Twitter	www.naturekenya.org
Report author(s) and date	Serah Munguti , Emily Mateche, 15 th May 2017

1 Project Rationale

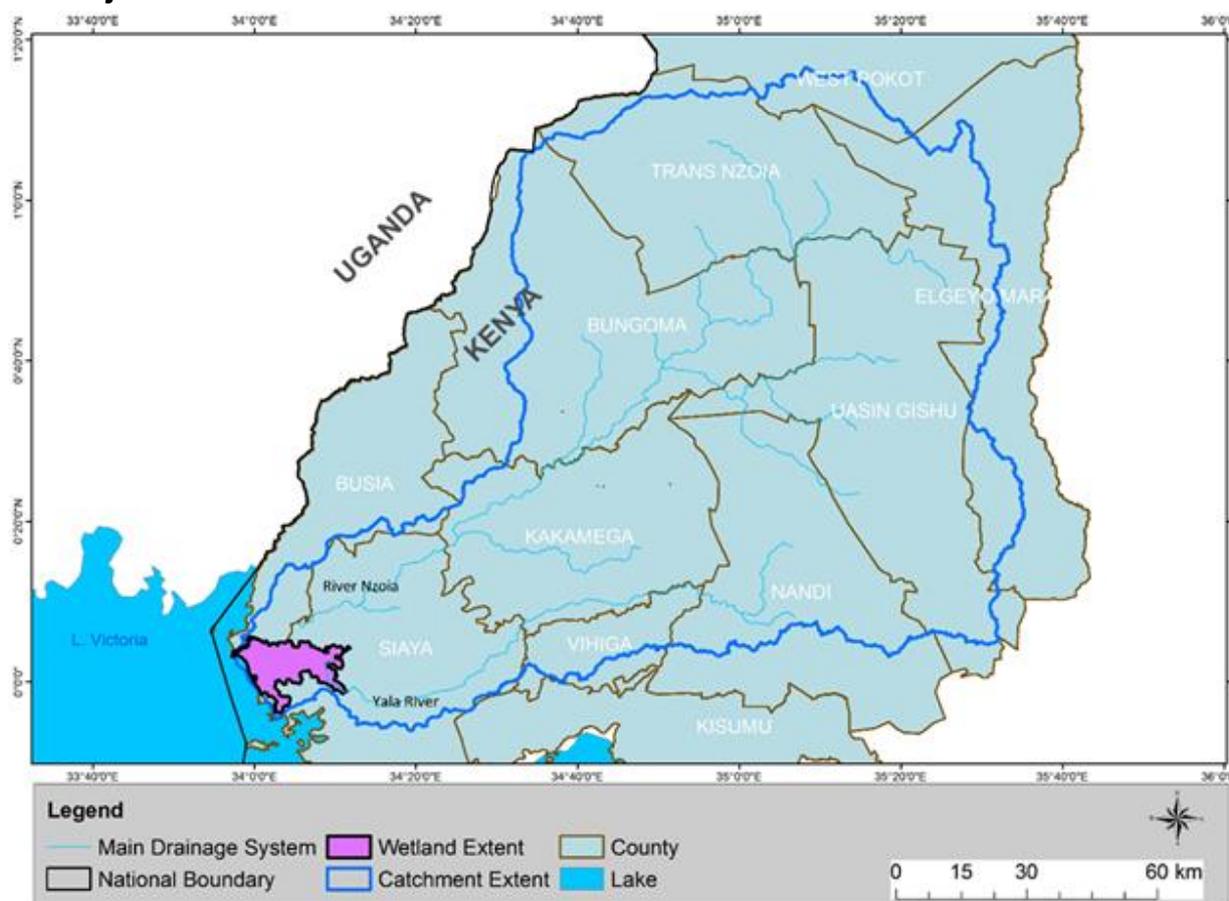


Figure 1: Location of the Yala Swamp

Figure 2: Map of the Yala Swamp complex

The Yala swamp covers an area of 17,500 ha on the north-eastern shore of Lake Victoria. It is Kenya's largest freshwater wetland, and is of great importance both for biodiversity and a stronghold for ecosystem services that support livelihoods. It is a key site for the nationally threatened semi-aquatic antelope Sitatunga (*Tragelaphus spekeii*) and other larger mammals; for numerous wetland birds, including the globally threatened Papyrus Yellow Warbler (*Chloropeta gracilirostris*); and for cichlid fish endemic to Lake Victoria, many of which have extirpated in the main lake by introduced Nile Perch. In addition, it acts as a 'filter' for water flowing from Rivers Yala and Nzoia into the lake, and provides the people who live around it with vital resources such as fish, papyrus and wood. These people number approximately 250,000 and many are extremely poor.

Unfortunately, Yala Swamp is threatened by establishment of a large-scale rice-farming operation there, and to a great extent by over-exploitation of its natural resources by competing local communities. The American company Dominion has already converted 1,700 ha of the delta to rice fields, and proposes to convert a further 15,000 ha. The conversion work carried out to date has not only destroyed natural habitats directly, but – together with earlier engineering schemes – has also caused detrimental hydrological changes over a wider area. Also the production system includes use of pesticides, including non-specific *Quelea* bird pest control measures, which kill untargeted species. The monopolistic exploitation of Yala by Dominion with the exclusion of local population has led to community driven negative impacts: competition to also exploit following tragedy of the commons approach, unsustainable harvesting of papyrus and destruction of papyrus for small scale unsustainable agriculture. While Lake Kanyaboli, a satellite lake within Yala Swamp is now gazetted as National Reserve, the rest is unprotected and active management does not exist and wetland degradation is increasing. The Dominion Farm has expressed commitment to work with Nature Kenya towards sustainable management of the delta and to support local communities within their Corporate Social Responsibility (CSR) program. The problems were identified from previous Nature Kenya work in the site.

The main aim of the project was to take key steps to secure the future of the Yala Delta, recognising both development and conservation needs. The project had four objectives: (1) to develop an evidence-based 'business case' for the sustainable management of the Yala Delta; (2) to create, restore and protect wildlife habitat in and upstream from the delta; (3) to improve the livelihoods of local people in sustainable ways; and (4) to ensure that lessons learned inform delta policy and practice throughout Kenya. To achieve the objectives the project proposed to:

- (i) bring together stakeholders, including Dominion Farms, to agree on a model for a new, less adversarial approach to delta management in Kenya, involving the identification of balanced solutions that are acceptable to all and that take account of social and ecological factors as well as macro-economic concerns. To achieve this the project undertook a detailed assessment of the ecosystem services provided by the Yala Swamp;
 - ii) Present this analysis to Dominion Farms and the relevant authorities, and then work with them to implement key actions to protect the delta. Specifically, we planned to: incentivise 100 farmers, through a 'payment for ecosystem services' scheme, to plant bamboo and native trees over an area of 100 ha along the River Yala upstream of the delta; define degraded areas within the delta where Papyrus stands, the most important wildlife habitat there, would be allowed to regenerate; designate 1,000 ha of pristine Papyrus stands as Community Conservation Areas; develop guidelines on sustainable Papyrus harvesting; and secure the water supply to Lake Kanyaboli in the east of the delta, the main refuge for cichlids.
- (iii) For objective three we proposed to create 10 fishponds to improve household diets, increase household income and reduce the pressure on wild fish; help households to increase the income they derive from Papyrus, by training them to process this material into high-value products and enabling them to market these products effectively; train wildlife guides, taking advantage of the ecotourism opportunities offered by the delta. All of these activities were to target the poorest households in the area.
- (iv) Regular sharing of lessons learned with the Inter-ministerial Technical Committee for Deltas, and with all other bodies involved in managing deltas in Kenya.

2 Project Partnerships

Partnerships have been established with the county governments of Siaya and Busia including specialist agencies such as the Department of Fisheries, Kenya Wildlife Service (KWS), Water Resources Management Authority (WRMA), National Environmental Management Authority (NEMA), Kenya Forest Service (KFS) and the local communities. Apart from enhancing buy-in and consensus building these partnerships provide technical support at no cost to the project with Kenya Forest Service providing hands on training to groups growing tree seedlings and participating in the actual rehabilitation process and providing government backing for the restoration initiative. Fish farmers benefited from hands on training by government fisheries officers from the identification of fish pond sites, excavation of ponds, stocking, and through the entire fish rearing process at no cost to the project. In addition, the 2 county governments are represented in the project's Site Advisory Committee while the national agencies (i.e. KWS, KFS, NEMA) are represented in the project's National Advisory committee.

The National Environmental Management Authority (NEMA) as the lead institution in wetlands conservation in collaboration with Wetlands International and the County government of Siaya organized a panel discussion on Yala swamp on 27th January 2015 in Siaya County. Nature Kenya was represented among the 9 panelists in the panel discussion. The forum, apart from being a built up event towards the celebrations to mark the World Wetlands Day on 2nd February 2015 was successful in coming up with deliberations. Key among the deliberations was that Yala swamp is under threat and there is urgent need for an integrated management plan for the wetland. With regard to resource use, there was consensus that there is need to move from conflict to synergy-enhancing activities that support local livelihoods, development and conservation (gravitating towards a balanced approach) (Appendix 1).

The County government of Siaya recognizes Nature Kenya as a key partner in conservation and development (Appendix 2). In December 2015, the County government of Siaya nominated

Nature Kenya to represent non-governmental organizations in the County Environment Committee which is responsible for the proper management of the environment within the county, among other functions as provided for in the Environmental Management and Coordination Act (EMCA), 2015 (Appendix 3). The committee and stakeholders developed a five year county strategic environmental action plan for Siaya County and an Integrated Management Plan for Yala swamp (Appendices 4 and 5).

During the initial stages of implementation of the Darwin project, staff from the Royal Society for the Protection of Birds (RSPB) provided technical expertise using the Toolkit for Ecosystems Services Assessment (TESSA) to conduct a detailed assessment of ecosystem services in Yala swamp. The highly consultatively developed ecosystem service assessment report (Appendix 6) that provides a business case for Yala Swamp, provided evidence that the conservation of significant areas of the Yala swamp is crucially important for the sustenance of ecosystem services that support the economy, biodiversity and livelihoods. This report formed the foundation for the formulation of the draft Yala Swamp land use plan, informed by a strategic environmental assessment.

In order to provide a clear framework for decision making that balances the conservation and development of the Yala Swamp, (with co-funding from the MacArthur Foundation and USAID-PREPARED), Nature Kenya supported the formulation of a land use plan (LUP) for the Yala Swamp. The Yala Swamp LUP is informed by a Strategic Environmental Assessment (SEA), with the SEA/LUP processes running concurrently. The planning process is led by a technical team from the Inter-Ministerial Technical Committee (IMTC) for the Sustainable management of Kenya Deltas. Yala Swamp SEA Scoping Report (Appendix 7) and Land Use Planning Framework (Appendix 8) were completed with the input of all stakeholders. The County Governments of Siaya and Busia were supported to publish a ‘notice of the intention to plan’ (Appendix 9) in national newspapers as required under Kenyan laws. The Yala LUP and SEA are currently in advanced draft stage (Appendix 10). The LUP is a negotiated document which provides a framework on how land within the swamp and the surrounding areas will be used.

Nature Kenya and the IMTC successfully lobbied the County Governments of Siaya and Busia (since the Yala Swamp lies within the two counties) to fully support the Yala Swamp LUP/SEA process (Appendix 11). As a result the county governments supported the formation of two committees at the county and community levels to support the technical team to deliver a LUP and SEA that are acceptable to all. The Yala Swamp Inter-County Land Use Planning Steering Committee is made up of 36 members drawn in equal numbers from Siaya and Busia counties. Its membership is made up of county executives from relevant dockets, and county level national government officers – National Environment Management Authority, Water Resources Management Authority, Kenya Forest Service, Kenya Wildlife Service, National Land Commission, Members of County Assembly, Chief Officers, county secretaries among others. The Yala Planning Advisory Committee (YPAC) was formed by 47 community representatives from the swamp drawn from Busia and Siaya Counties, taking into account diverse community interests. Members of the Siaya and Busia County Assemblies who come from within the Yala Swamp Planning Area are represented in the YPAC as ex-official members. Government officers working at the lowest level among the community e.g. agricultural and livestock extension officers are represented in the YPAC to provide technical support. The IMTC and the County Governments of Siaya and Busia gave government credence to the entire land use planning and Strategic environmental assessment process.

Advanced drafts of the Yala Swamp land use plan and strategic environmental assessments were in September 2016 presented to the Inter County Steering Committee and the YPAC. During the formulation of these documents at least five meetings were held with the YPAC and the inter-county land use planning steering committee (Appendix 12, 13, 14, 15, 16, 17, 18, and 19). Meetings were also held with the Governor, Siaya County Government. Due to the extensive consultative process the documents are accepted and owned by the county governments of Siaya and Busia who legally have the mandate to produce land use plans within their area of jurisdiction; and the communities living within and around the Yala Swamp.

Dominion Farms Limited, a privately owned firm agreed to collaborate with Nature Kenya and utilize the ecosystem service business case and regime for regulating water flows and restoration of Yala wetland. The firm is also represented in the project's Site Advisory Committee.

Nature Kenya supported the community to form the Yala Ecosystem Site Support Group (SSG), currently made up of 55 constituent groups. Nature Kenya works with Site Support Groups to conserve Important Bird Areas in Kenya. The Yala SSG is a legacy for the project as it comprises community members who advocate for the conservation of the Yala Swamp, promote sustainable benefits; provide support to groups to restore habitat along the River Yala through planting of indigenous tree seedlings (134 ha already planted); rehabilitating the Yala swamp through planting of papyrus (300 ha planted); create awareness on the importance of the Swamp; monitor the swamp and submit data to the National Museums of Kenya for compilation of the Important Bird Areas annual Status and Trends Report. The Yala Ecosystem SSG is represented in the Yala Swamp planning advisory committee; the SSG successfully lobbied and partnered with the county government of Siaya to organize county level World Wetlands Day and World Environment Day celebration with the county government meeting half of the costs of the events to the tune of Ksh. 100,000. When the County Government of Siaya moved to initiate a process to allot land within the Yala Swamp to an Indian company called Godavari Enterprises the Yala Ecosystem SSG wrote to the National Land Commission to object the move and held a media interview featured in a national newspaper (Appendix 20). The Yala Ecosystem SSG developed a draft Site Support Group Advocacy Strategy for Yala Swamp (Appendix 21) in consultation with communities and identifies Ramsar designation as a priority issue of advocacy.

In partnership with Pathfinder International, the project contributed to the environmental management and sustainable development of the Lake Victoria Basin region and improved wellbeing of its vulnerable populations through institutionalizing integrated population, health, and environment initiatives.

Partners were not involved in writing this report. However the project impacts will be disseminated to partners through a summary of this end of project report.

The established partnerships will go on even after project completion since we will continue with implementation of the MacArthur Foundation funded project in Yala Swamp.

3 Project Achievements

3.1 Outputs

Output 1: A clear, evidence-based 'business case' is developed for the sustainable management of the Yala Delta

Indicators:

Indicator 1: By end Year 1 A detailed assessment of the ecosystem services provided by the delta has been carried out, in consultation with local communities.

The Darwin project supported the Yala Swamp Ecosystem Service Assessment report. To assess ecosystem services provided by the Yala Swamp we used the Toolkit for Ecosystem Service Site-based Assessment (TESSA) developed by Peh et al (2013) to conduct the assessment (<http://www.birdlife.org/worldwide/science/assessing-ecosystem-services-tessa>)

Based on the findings of a rapid appraisal, we identified two possible future scenarios; namely, continued development and balanced scenarios (where conservation and development coexist). We assessed climate regulation, cultivated goods, harvested wild goods, water services and recreation services provided by the swamp in the current and future scenarios. Most of the data on cultivated crops, harvested wild goods and water services were obtained by interviewing Yala Swamp residents. Data on harvested crops from Dominion Farms were based on a questionnaire filled by the farm management, staff interview and field observations. We assessed habitat carbon stocks and recreation value of the swamp using methods laid out in Peh et al (2013).

Soil and vegetation carbon pools at Yala were greatest in natural and semi-natural papyrus dominated habitats and lowest in the drained farmed areas. Current land use in the Yala swamp basin has a net global cooling effect but if reclamation of the organic soils of the swamp continues at the current rate and the stated aims of the rice farming franchise are realised, this net cooling effect is likely to change into a nationally significant net warming effect.

We estimated the net income realised from cultivated crops to be Ksh 113,789,749 for all village farms, but Ksh 509,481,518 for the Dominion rice farm, under current land use. This is expected to increase in the continued development and in the balanced scenarios. Fish is the most valuable wild good harvested from the swamp, earning the residents an estimated Ksh 314,192,139 in the current state. The residents also earn an estimated Ksh 80,865,635, Ksh 57,627,056 and Ksh 8,572,344 from papyrus, firewood and thatch grass, respectively, in the current state. The amount of harvested goods from the swamp is expected to decline if the continued development pathway is followed.

Nearly all respondents interviewed obtained water from various sources within the swamp, including from Lake Kanyaboli, canals within the swamp, rivers, boreholes, and dams. However, the residents think that there is already a problem with water quality. There is a need to conduct a more detailed water quality analysis to conclusively determine the impact of increased agricultural activities on the water quality. On recreation, the swamp receives both national and international visitors who spend Ksh 1,170,200 per year at the site. Although this is a rather tiny value compared to those of other services, there is great potential for enhancement through investments in tourism infrastructure, marketing and capacity building among stakeholders. However, this potential would be lost if the continued development pathway is followed.

Yala Swamp has a very high realized and potential monetary value. Continued development would likely lead to an increase in cultivated food production by both Dominion Farms Limited and local residents. However, it would also lead to a nationally significant reduction in climate regulation value, reduced wild goods harvest, lower recreation value and reduced capacity to regulate water quality and flow. Overall, increased agricultural activities by large scale enterprises would lead to increased cultivated food production but the benefits will be enjoyed by a smaller segment of society. On the other hand, expansion of agricultural activities by small holders would lead to increased benefits to a larger segment of society. Although a balance between development and conservation would lead to reduced agricultural potential, the site would have higher climate, water quantity and quality regulation, and higher recreation values. We therefore recommend that Yala Swamp land use and management policies and plans adopt a balance between development and conservation, so as to improve the socio-economic well-being of the local residents while protecting the diverse biodiversity, and ecosystem services that the site provides.

The findings of the ecosystem services assessment greatly contributed to the land use plan development and to the formulation of the strategic environmental assessment for the Yala Swamp.

Indicator 2: By end Year 1 a 'business case' for the sustainable management of the delta is available.

A detailed description of a business case for Yala Swamp is described in Chapter 12 of the SEA – *balanced/hybrid scenario* (Appendix 74). In particular Table 8.4 in the Yala Swamp SEA gives a summary of the economic value of Yala Swamp in different development pathways

Table 8.4 (in the Yala Swamp SEA): the economic value of Yala Swamp in different development pathways

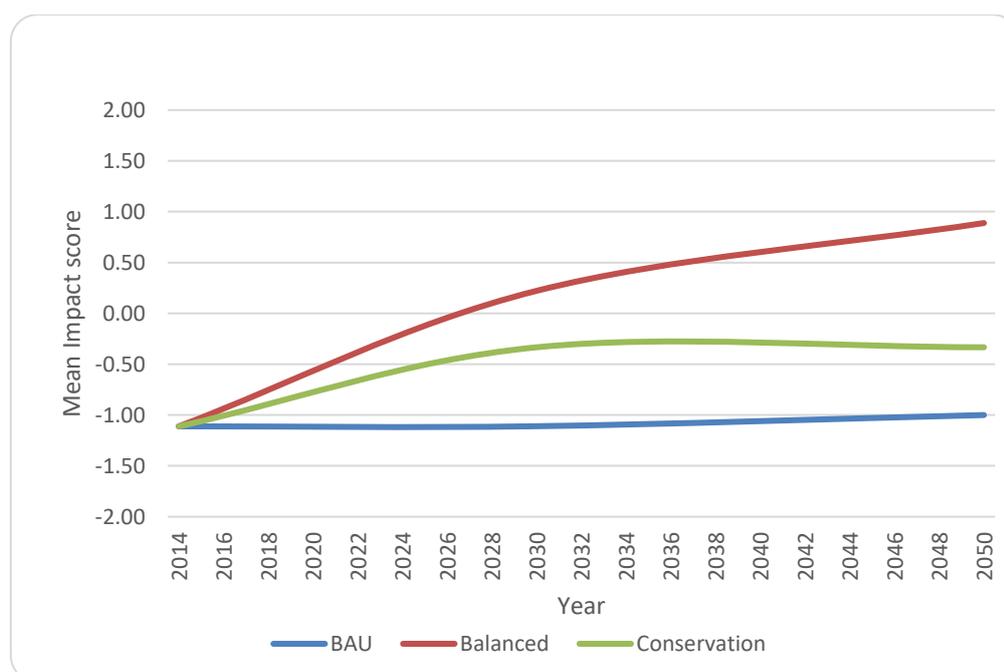
Table Economic activity	Baseline	BAU		Conservation		Balanced	
	2014	2030	2050	2030	2050	2030	2050
Subsistence crop	113,789,749	130,564,299	210,996,112	0	0	99,004,122	138,757,4

Commercial crop	509,481,518	1,181,391,279	1,907,356,743	0	0	769,575,619	1,015,568
Livestock	215,141,348	378,414,624	542,039,587	0	0	378,414,624	542,039,5
Fisheries	314,192,139	157,096,070	78,548,035	416,938,447	416,938,447	319,694,711	280,820,9
Tourism	1,170,200	585,100	-	2,554,400	6,777,583	3,216,230	3,216,230
Papyrus	80,865,635	40,432,818	20,216,409	80,865,635	80,865,635	85,675,653	75,405,78
Fuel wood	57,627,056	28,813,528	14,406,764	57,627,056	57,627,056	61,054,806	53,736,22
Thatch grass	8,572,344	4,286,172	2,143,086	8,572,344	8,572,344	9,082,241	7,993,561
Transport(Boda Boda, boats)	42,240,000	55,395,164	77,827,277	55,395,164	77,827,277	55,395,164	77,827,27
Total	1,343,079,989	1,976,979,054	2,853,534,013	621,953,046	648,608,342	1,781,113,170	2,195,365

The Yala Swamp SEA concludes that the balanced development pathway is the best route to take for Yala Swamp. It ensures that all existing legal land uses can be accommodated while it also gives room for the development of new land uses. Although the employment and economic potentials in this scenario appear to be below that in the business as usual scenario, this can easily be rectified by:

1. developing alternative livelihoods especially through value addition in the existing and emerging economic activities
2. development of tourism sector
3. Exploring the feasibility of marketing the climate regulation potential of the swamp.

Figure 8.4 (from SEA) Mean environmental, social and economic impacts of various land use and economic activities in different development pathways



Output 2: Vital wildlife habitat is restored and protected, in part by means of a 'payment for ecosystem services' scheme

Indicators:

Indicator 1: By end Year 2 50 ha, and by the end of Year 3, 100 ha of land within the Watershed Protection Zone along the Yala River, upstream of the delta, planted with bamboo and native trees

Through this Darwin funded project Nature Kenya provided a framework for the development a PES scheme through which the users of climate regulation and water services can pay for the conservation of the swamp so that they can continue to enjoy these services (see appendix 24). The ecosystem service providers who can participate in this scheme include the local communities living in ecologically sensitive areas of Yala River basin, local communities in the swamp, the county governments of Busia and Siaya- who are the legal custodians of the swamp, and various conservation organisations with mandate in environmental conservation. The potential buyers of the ecosystem services include the voluntary carbon market, companies with a high carbon footprint, water service providers in Yala Swamp basin, companies that rely on the swamp for their raw materials and donors. We propose that the Yala PES scheme be developed and implemented through a participatory process in which stakeholders will agree on the marketable ecosystem services, the providers and the buyers. Yala PES scheme can be ran by a Board through a lean secretariat that harnesses the technical expertise of intermediaries and other stakeholders. We suggest that initially an intermediary works with the county governments of Siaya and Busia to coordinate the process until the board is in place.

Indicator 2: By end Year 1 Degraded parts of the delta covering a total area of 1,000 ha are 'set aside' so that Papyrus is able to regenerate there naturally. See indicator 3 below

Indicator 3: By end Year 2 Pristine Papyrus stands covering a total area of 1,000 ha are designated as Community Conservation Areas,

The project supported expansion of national protected areas network through the designation of a 8,404 ha community conservation area (CCA). This CCA is factored in the draft Yala Swamp Land Use Plan. The designation of a community conserved area has long term impacts for the survival of the biodiversity of the Yala Swamp. It also provides a practical framework for community engagement in the swamp's conservation.

A criteria was formulated for selection of community conserved areas within the Yala Swamp (appendix 32). Using this criteria community conserved areas (CCAs) with a total acreage of 8,404 ha were selected. Within the CCAs 443.8ha were identified as degraded areas that were targeted for restoration with a total of 300 ha restored so far. Key considerations for development of criteria for selection of CCAs are: presence of key biodiversity; threats to biodiversity; intactness of the habitat; vulnerability to conversion through agricultural expansion; representativeness in terms of habitat, biodiversity, ecological function and ecosystem services; connectivity among the CCAs; suitability for community engagement; and potential for ecotourism.

To address environmental degradation by reducing the use of woodfuel, 135 schools and 2000 households were installed with energy saving devices. The schools have a combined population of 28,156 pupils who are on the school feeding programme.

Indicator 3: By EOP Communities are fully engaged in management actions

The project supported the rehabilitation of 135ha of the riparian zone of River Yala with bamboo and native trees. Rehabilitation efforts are on-going with 65ha of the riparian zone targeted for tree planting under the coordination of the Yala Ecosystem SSG in partnership with the Kenya Forest Service. In March 2017 the project supported community groups to develop guidelines for the management of the Yala Swamp Community Conserved Area (see appendix 39)

Indicator 4: By end Year 2 a water control regime is established to ensure that sufficient water is flowing into Lake Kanyaboli to support cichlid population

The water control regime that will sustain the ecological functions of Lake Kanyaboli is described in the Yala Swamp Strategic Environmental Assessment (SEA). The SEA

determined that L. Kanyaboli needs a minimum flow of 5m³/sec. The description of the hybrid or "middle way" on page 85 is as follows:

Option C: The Middle Way: This option is based on the assumption that some further reclamation of areas in the Upper Swamp can be accepted and encouraged, despite the loss of natural habitat that this will entail. In order to achieve this outcome it will be necessary to excavate a new canal from half way along the existing diversion channel which will lead the bulk of the River Yala flood waters out into the Middle Swamp. (This channel was used in the early reclamation schemes prior to 2000). **At the same time a minimum flow of 5m³/sec will be fed to Lake Kanyaboli and this water will find its way down to the Middle Swamp through the areas of reclaimed farmland in the Upper Swamp.**

This approach (Option C or the Middle Way) recognises that the conversion of the Dominion Farms area (and from studying Google Earth, quite a lot of land lying outside the Farm security fence and extending out into the Upper Swamp around Lake Kanyaboli) is now a "done deal" and it would be politically very difficult to convert the land back to swamp - although technically it would be quite easy).

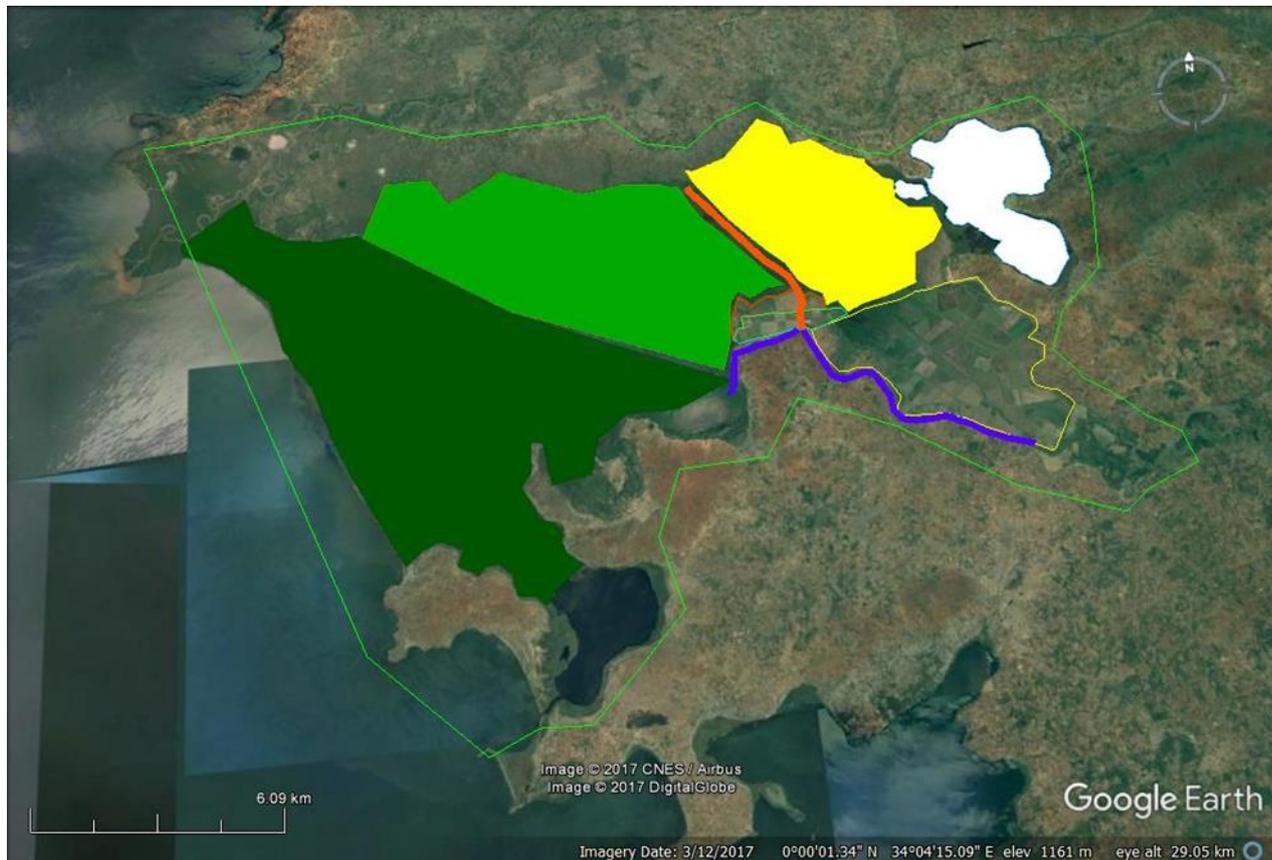
It also accepts the argument that the expanding local population needs somewhere to grow food. Consequently all of the land shown yellow can be regarded as 'available for agriculture' but with 1) a permanent wetland around the Lake Kanyaboli; 2) the creation of a permanent river corridor from the Yala to Lake Kanyaboli and 3) an extension of this corridor through the yellow area to maintain continuity between Kanyaboli and the lower/middle swamp as is shown in the LUP proposal).

The light green area will be served under this option (C) with a continuous flow of water from the River Yala via a new river/canal shown in red. Consequently, all of the light green area can be retained as swamp.

Finally the dark green lower swamp will continue to receive water from the current southern canal and also renewed supplies from the middle swamp (light green) area. As a result it should return to prime ecological condition.

Obviously, there are different permutations which could be introduced in terms of areas to be irrigated or retained/reverted to swamp under all three of the options - but we believe the key to unlocking the planning impasse is the adoption of a new hydrological regime and water management system based on this Option C which allows river water to be delivered where it is needed and when it is needed.

A model of Option C from the Yala Swamp SEA



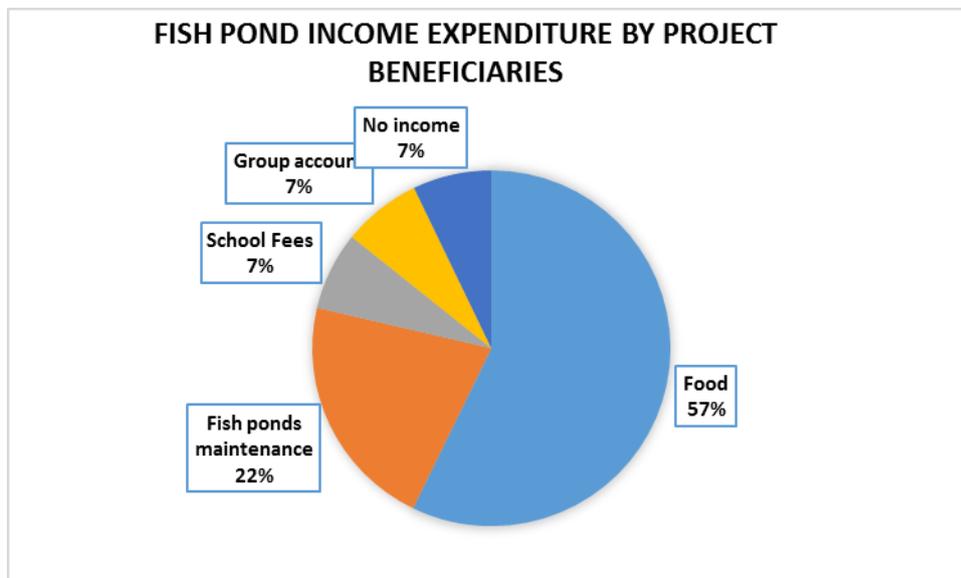
Output 3: Poor people living around the Yala Delta are empowered to improve their livelihoods in ways that contribute to or are consistent with the long-term conservation of the delta’s natural resources

Indicators

Indicator 1: By the end of the project the weight of high-quality protein (i.e. fish and meat) consumed by 100 of the poorest households (500 people; 50% male, 50% female) in the area increases by 25% compared to the baseline

156 people (40% male, 60% female) benefited from support in fish farming through fish ponds. According to the end of project survey (Appendix 75), the average monthly income by residents who received support to engage in fish farming (fish pond support) was Ksh.7623. This does not take into account the expected earnings from the newly stocked 17 fishponds expected to give beneficiaries 5.6 tons of fish later in the year. According to Ministry of Agriculture, Livestock and Fisheries (MoALF), 2016, the mean annual household income for Siaya County was Ksh 124,286. Assuming the same applies to residents of the both Siaya and Busia parts of the Yala swamp, then the annual income of residents participating in the Fish farming activity increased by Ksh 91,477 representing a 74 % raise. The mean monthly income for female headed household increased by 84% while that of male headed households increased by 69% due to participation in fish farming through this project.

Establishment of fishponds was expected to improve the protein intake of the local residents. However, the beneficiaries only consumed 8 % of the produce and sold the rest, probably because of other pressing financial needs. The end of project survey revealed that 57 % of the respondents used income from sale of fish to purchase other food stuffs, 21 % of the income for maintaining fish ponds while others use it to pay school fees for their children or to contribute to fishers group account. During the end of project survey, none of the local residents considered fish as a staple food but is probably considered a source of income so as they can purchase other food types that they consider staple food.



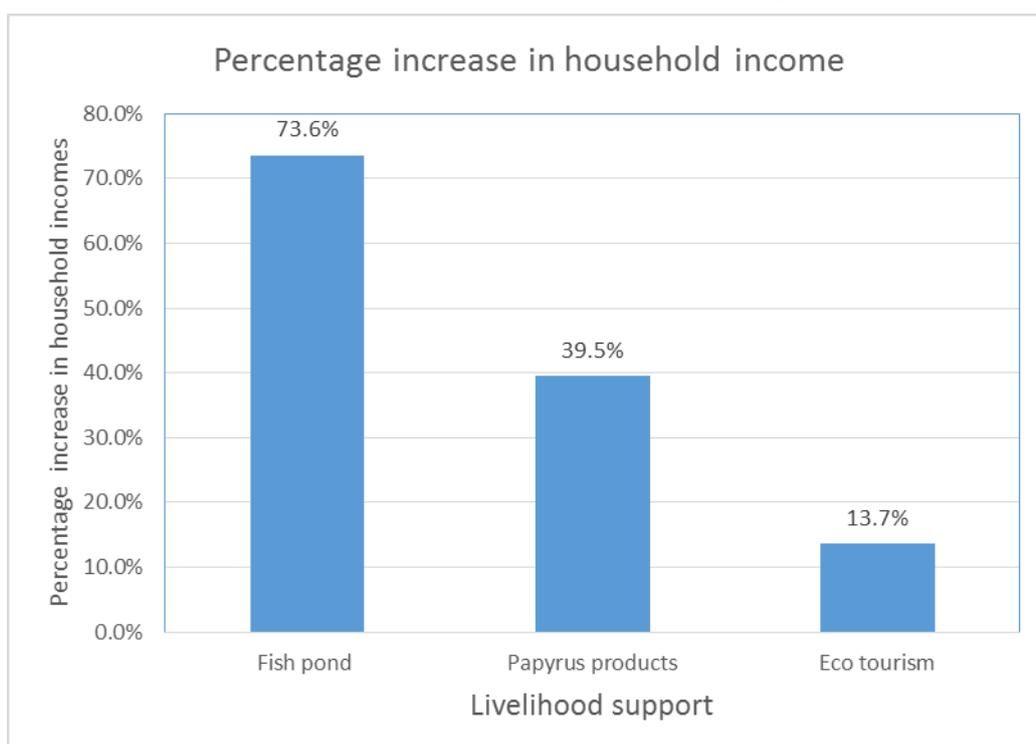
Indicator 2: By the end of the project 100 households (50% male; 50% female) increase their income from marketing Papyrus products by 15% compared to the baseline.

55 beneficiaries (30% male, 70% female) were supported to produce and market high quality papyrus products. According to the end of project evaluation the monthly income of beneficiaries at the end of the project was Ksh. 4,092. Therefore, going by the MoALF baseline the annual income of residents participating papyrus products business improved by Ksh 49,100 representing an increase of 40 %.

Indicator 3: By the end of the project the total income generated by 20 households through ecotourism has increased by 25% compared to the baseline

At the end of the project the 20 beneficiaries (10% male, 90% female) in tour guiding had a monthly income of Ksh. 1415. The annual household income of residents engaged in tour guiding increased by KSh16, 982, a 14% increase.

Out of the combined 231 beneficiaries of income generating activities 138 (60%) were women.



Output 4: Lessons learned from the project are disseminated effectively to all relevant stakeholders

Indicators

Indicator 1: Findings and recommendations from the project are shared with the Inter-Ministerial Technical Committee on Deltas, the National Environment Management Authority, the Office of the Prime Minister, and all other relevant bodies at least annually throughout the project (i.e. at the end of each project year)

The Inter-ministerial Technical Committee and the county governments of Siaya and Busia are using the recommendations of the ecosystems services assessment to prepare a land use plan for the Yala Swamp informed by a Strategic Environmental Assessment.

Recommendations from studies conducted including ecosystem services assessment, baseline surveys, socio-economic surveys, biodiversity surveys were shared in various forums e.g. presentations to stakeholders in more than 20 workshops and consultative meetings. The findings have also been made available to County technical officers for reference. At the regional level a paper entitled '*Ecosystem Services and Sustainable Livelihoods inform Land Use Planning in Kenya's Yala Delta*' was presented in the African Great Lakes Conference in Entebbe (appendix 76). We are pursuing publication in a number of journals especially Journal of Great Lakes Research and Lakes and Reservoirs: Research and Management.

Project achievements have been shared through various publications including the Darwin Newsletter, Kenya Birding magazine etc. (See Annex 5: Publications).

Dissemination activities done with publication of project activity updates in the Nature Kenya monthly newsletter (See Annex 5: Publications).

Dissemination activities done with publication of project activity updates in the Nature Kenya monthly newsletter, Darwin Newsletter, Kenya Birding magazine etc. (See Annex 5: Publications). 3322 people including 1,524 school children have so far been reached through environmental awareness campaigns by the SSG through World Environment Day, World Wetlands Day, and World Migratory Bird Day celebrations. This does not take into account numerous village level awareness meetings. A video documentary of project activities was also produced. 2,000 copies of the 2017 calendar featuring project activities and the biodiversity of the Yala Swamp have been published and currently are being distributed at national and county levels

Consultative discussions held with relevant stakeholders throughout the project cycle See Appendix 67 - Appendix 70

Indicator 2: By end of project stakeholders are communicating lessons and recommendations from the project into relevant policy formation and decision making processes.

Recommendations of the Ecosystem Services Assessment have informed the Yala Swamp land use plan and strategic environmental assessment, which are policy documents that will govern the use of land in and around the swamp.

Reports from the County Assembly of Siaya recognize the on-going Land Use Planning process and recommend the land use plan as one of the requisite policy planning tools to reduce conflicts within Yala swamp (See Appendix 71 and Appendix 72-Cries of Our People).

Discussions are on-going as part of the land use planning process including how the Kenya Wildlife Service (KWS) will support the county government and local stakeholders to set up a conservancy that will supplement the legally protected Lake Kanyaboli on jumpstarting the management planning process for designation of Yala as a Ramsar wetland of international importance.

3.2 Outcome

Outcome: Key steps are taken to secure the future of Kenya's Yala Delta, recognizing both development and conservation needs, and to promote similar work in other Kenyan deltas.

Outcome indicators

1. By End of project populations of 6 key wildlife species (e.g. Sitatunga, the Papyrus endemic' bird species Papyrus Yellow Warbler, Carruthers' Cisticola, White-winged Warbler and Papyrus Canary) have increased significantly compared to the baseline in areas where habitat is created or allowed to regenerate

The water quality and biodiversity survey findings of December 2016 (appendices 79 & 80), indicated some significant increase in the trigger species. The cichlids believed to be extinct in the main Lake Victoria were caught namely *Oreochromis variabilis*, *Oreochromis esculentus* and *Oreochromis leucostictus*. These endemic cichlids species were not recorded in the biodiversity surveys of 2015 and 2014. The findings show the importance of the satellite lakes of Yala swamp as a refuge to species displaced from Lake Victoria and thus the urgent need to conserve this important resource to protect populations of *Oreochromis variabilis*, and *Oreochromis esculentus* which are critically endangered. From the bird surveys of 2016, records of the Papyrus Gonolek, Carruther's Cisticola and Papyrus-yellow Warbler were noted. Among the papyrus specialist birds, only the Papyrus Canary was missed during the survey, yet it was recorded in 2015 and 2014. Generally, the population sizes of the papyrus endemic birds were higher in areas with large swaths of pristine papyrus and relatively undisturbed habitats compared to the degraded habitats (areas where papyrus has been burnt or cleared). The findings indicate that papyrus specialists require dense papyrus stands for survival and breeding thus conservation of papyrus habitat is important in conserving papyrus endemic birds and other biodiversity. Biodiversity monitoring is on-going to assist detect any changes

2. By end of project the populations of 6 or indicator species in areas where habitat is protected (i.e. 1,000 ha of pristine Papyrus stands) have not fallen below the baseline level

All the surveys in indicator 1 above were carried out in the 8,404 ha Community Conserved Area

3. By end of project the pollutant levels in the water flowing from Yala Delta into Lake Victoria have reduced from the baseline towards the national benchmark due to increased 'watershed protection' upstream of the delta.

Monitoring reports from November 2016 (Appendices 79 & 80) recorded an increase in Nitrates and Phosphates in water indicating that there was an elevation on nutrient surge into the wetland. This was attributed to the increased sedimentation in the river, ash emanating from illegal burning of papyrus on the fringes of the swamp or run off from use of fertilizer.

4. By midterm 1,100 people (50% male, 50% female) of target group engaged in project activities.

By end of project A total of 1,100 (50% male; 50% female) extremely poor people report significant improvements in their diet and/or increases in income in comparison to the baseline.

A total of 1,126 people (505 males, 621 females) translating into 45% males 55% females are direct project beneficiaries engaged in habitat restoration, advocacy, biodiversity monitoring, and awareness creation through the Yala Ecosystem SSG. Further, the project supported 231 people 47% males 53% females directly through income generating activities (fish farming, papyrus products development, tour guiding). In addition, 2000 households and 153 schools around Yala Swamp were fitted with energy saving cookers to reduce deforestation.

The income of project beneficiaries including poor households increased by 74% from fish farming, by 40% from sale of papyrus products and by 14% from tour guiding as detailed in 3.1 above.

Habitat rehabilitation, use of energy saving devices, fish farming and all other project activities benefited the entire delta dependent community as outlined above.

5. By end of project a further 250,000 'delta-dependent' people benefit indirectly from the project, as it secures the long-term future of the natural resources on which they rely.

The population of the planning area (5km radius of the swamp boundary) was estimated at 130,838 in 2014. These people will directly benefit from better management regime of the Yala

Swamp through the land use planning and SEA process. In addition the entire populations of Busia and Siaya counties (743,946 people) will benefit from policy processes generated from the Yala land use plan. It is now a requirement within national law for all counties to formulate land use plans. Siaya and Busia County Governments have already indicated that they intend to borrow from the LUP SEA processes for county wide planning.

6. By the end of the project, policies and plans governing the management of other Kenyan deltas incorporate lessons learned from the project clearly and explicitly.

See output 4 indicator 2 above.

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

- **Project impact: Sustainable management regimes are established for deltas throughout Kenya, supported by all relevant stakeholders, and ensuring that the needs of industry, local people and wildlife are met indefinitely.**

The Ecosystem Services Assessment laid the foundation to the formulation of a land use plan for the Yala Swamp, informed by a strategic environmental Assessment. The Yala Swamp Land Use Plan and Strategic Environmental Assessment constitute insurance for the future of the Yala Swamp. The two documents provide a clear framework for decision making on conservation and development of the swamp in the long term. This feeds into the wider objective of the government led Inter-Ministerial Technical Committee (IMTC) for the Sustainable Management of Kenya Deltas.

The Yala Ecosystem Site Support Group was established through bringing together more than 38 community based groups for a common vision for the long term conservation of the Yala Swamp. The SSG has been very instrumental in bringing together communities, mobilizing constituent groups in habitat rehabilitation through tree planting along the River Yala and within the Yala Swamp, installation of energy saving devices, advocacy among others. The SSG is a legacy for the project as it continues to function after the project was completed. The SSG members agreed to set aside 10% of all proceeds from income generating activities as an 'environmental fund' to be used for conservation activities such as advocacy and biodiversity monitoring. In September 2016 the SSG started its own income generating activity (i.e. an income generating activity managed directly by the SSG secretariat and not by a constituent group of the SSG) where they buy plain tea mugs, brand the with the papyrus endemic birds found in the Yala Swamp and a simple conservation message and then sell for a small profit which is all remitted to the conservation fund. By the end of the project a total of Ksh. 296,344 had been remitted activities to the conservation fund which is managed by the SSG.

The designation of Yala Swamp community conserved area expands the protected areas network in Kenya and has long term impacts for the survival of the biodiversity of the Yala Swamp. It also provides a practical framework for community engagement in the swamp's conservation.

Habitats have been restored along the River Yala and within the Yala Swamp community conserved area. Habitat restoration through planting of indigenous trees increases tree cover with attendant benefits to biodiversity, soil and water conservation.

Through the implementation of various sustainable livelihoods, the wellbeing of Yala Swamp communities has improved: 156 households are expected to benefit from the harvest of 5.6 tons of fish from 17 fishponds. In the most recent production phase (6-9moths), already 1494kg of fish have been harvested from 12 ponds with 114kg consumed at household level and the rest (1380kg) sold for Ksh. 266,500. Over the last 12 months, 55 households translating into 287 individuals are benefiting from sale of high value papyrus products with products worth Ksh. 108,600 already sold. During the same period, six of the trained community guides earned a combined income of Ksh. 101,890 from guiding tourists visiting the Yala Swamp. During the rainy season in mid-2016, 24 individuals benefited from the sale of 3000 indigenous tree seedlings worth Ksh. 115,000, the seedlings were a surplus of the tree seedlings raised for habitat restoration.

4 Contribution to Darwin Initiative Programme Objectives

4.1 Contribution to Global Goals for Sustainable Development (SDGs)

Goal 1: End poverty in all its forms everywhere

The project directly increased incomes of 231 households with the least increasing by 14% and the highest by 74%.

Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture

156 households who are represented in various beach management units were supported with 17 fishponds. From a first crop of fingerlings they harvested 1494kg of fish from 12 ponds. 114kg were consumed at household level and the rest (1380kg) sold for Ksh. 266,500. The fishponds were restocked with the second crop of fingerlings and beneficiary households are expected to harvest 5.6 tons of fish from 17 fishponds.

Goal 5: Achieve gender equality and empower all women and girls

The strategy for livelihood Support in Yala Swamp (Appendix 22) outlines a selection criteria for beneficiaries including the following; selection of the poorest households, women headed households and vulnerable households. Specifically, the project supported 5 women groups with 120 active members (i.e. 3 groups in habitat restoration; 1group in fish farming and 1group in advocacy). Overall, women formed 60% of all direct beneficiaries from the livelihood initiatives detailed in 3.1 above. According to the end of project evaluation report the incomes for female headed households increased by higher percentages compared to male headed households (see 3.1 above). Nature Kenya also has a gender strategy for the project in which we applied the one third gender rule in implementation of all project activities. This is drawn from national constitutional requirements.

Goal 13: Take urgent action to combat climate change and its impacts

We contributed to this goal through the installation of 2,000 energy saving cookers at household level. The end of project evaluation showed that this cut firewood consumption at each beneficiary household by 50% thus saving trees. A further 153 energy saving cookers were installed in as many schools across Siaya and Busia Counties. In addition Bunyala Weavers were supported to produce 53 fireless cookers which are basically padded baskets. Hot food is placed in the basket which then preserves heat eliminating the need for lighting a fire to warm the food later.

300 ha of degraded swamp were restored through planting of papyrus while 135 ha of riparian area along the River was planted with indigenous tree seedlings and bamboo. This vegetation will continue to absorb green houses as the plants grow.

8,404 ha were designated as community conservation areas (CCAs) to be managed for biodiversity conservation and ecological functions of the wetland. Therefore any degraded areas within the CCA are expected to be restored through natural regeneration which will have a net climate cooling effect.

Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Nature Kenya leveraged funding (from Mac Arthur Foundation and USAID-PREPARED) to support the formulation of a Land Use Plan (LUP) for Yala Swamp, informed by a Strategic Environmental Assessment (SEA). The formulation of a LUP for Yala swamp forms the framework guidance for the long term sustainable use of the Yala Swamp with benefits both for biodiversity and local livelihoods.

The project directly supported expansions of national protected areas network through the designation of 8,404 ha community conservation areas (CCAs)-the CCAs are factored in the draft Yala Swamp Land Use Plan. Within the CCAs, 300 ha of degraded areas were rehabilitated using papyrus.

Habitat restoration - Within a span of 2 years, the project supported 14 community based organizations to raise 173,064 indigenous tree seedlings and 1,200 bamboo seedlings (phase1) and 210,000 seedlings (phase 2) for rehabilitation of the lower River Yala riparian area. Already 135ha of the riparian zone of River Yala has already been rehabilitated with some of the seedlings. The upstream planting will protect the watershed zone, conserve biodiversity, capture carbon dioxide (carbon sequestration) and yield fuel and construction materials.

The 2,000 and 153 energy saving devices installed in households and schools respectively are a direct significant contribution to mitigating habitat loss.

4.2 Project support to the Conventions or Treaties (CBD, CMS, CITES, Nagoya Protocol, ITPGRFA)

CBD: The project has contributed to the achievement of many CBD objectives, especially those described under Articles 6 (general measures), 8 (in situ conservation), 10 (sustainable use), 14 (minimizing adverse impacts), 17 (exchange of information) and 18 (technical cooperation). In addition, it will contribute to the attainment of several Aichi Biodiversity Targets, including 2 (integration of biodiversity into development strategies), 4 (sustainable production), 5 (habitats), 7 (agriculture), 12 (threatened species), 14 (ecosystem services) and 15 (ecosystem resilience).

CMS: The Yala Delta, the project site, is believed to support the near-threatened Great Snipe. This is a migratory member of the family Scolopidae, and as such is included in Appendix 2 of the CMS.

Nature Kenya is recognized as a significant contributor to the implementation of the Convention on Biological Diversity (CBD) in Kenya and is usually included in Government Delegations during COP conferences. Nature Kenya is also included in the CBD National Reporting Committee for Kenya. The National Environment Management Authority (NEMA) has identified Nature Kenya to lead on reporting on biodiversity monitoring and indicators within the CBD programme of work. In addition Nature Kenya participated in the drafting of the (National Biodiversity Strategy and Action Plan (NBSAP). Nature Kenya was therefor able to share the findings and lessons from this project with the national CBD programme.

4.3 Project support to poverty alleviation

As indicated in the Strategy for livelihood support (Appendix 22), the selection criteria included targeting to support the poorest and vulnerable households. Through the implementation of various sustainable livelihoods, the wellbeing of Yala Swamp communities has improved: 156 households are expected to benefit from the harvest of 5.6 tons of fish from 17 fishponds. In the most recent production phase (6-9months), already 1494kg of fish have been harvested from 12 ponds with 114kg consumed at household level and the rest (1380kg) sold for Ksh. 266,500. Over the last 12 months, 48 households translating into 287 individuals are benefiting from sale of high value papyrus products with products worth Ksh. 108,600 already sold. During the same period, six of the trained community guides earned a combined income of Ksh. 101,890 from

guiding tourists visiting the Yala Swamp. During the rainy season in mid-2016, 24 individuals benefited from the sale of 3000 indigenous tree seedlings worth Ksh. 115,000, the seedlings were a surplus of the tree seedlings raised for habitat restoration.

Skills training has been conducted to build the capacity of 398 individuals; (231males 167females) in various areas including papyrus product development, welding, tour guiding, fish farming, policy, advocacy and resource mobilization, tree nursery establishment, leadership and governance, data collection, strategic planning and financial management, entrepreneurship and business management. Out of the aforementioned number of individuals, 10 have further undergone formal training attaining a Certificate in Ornithology and biodiversity monitoring.

4.4 Gender equality

Nature Kenya drafted a gender strategy for the project, in which the one third gender rule was applied in implementation of project activities. Women constituted 53% of all project activity beneficiaries. This was enabled by the fact that Nature Kenya sought to meet the 30% gender rule as per the national constitutional requirements. In almost all activities women representation surpassed this requirement. In addition Nature Kenya specifically targeted women by working with 3 women groups with a total membership of 73. This increased women beneficiaries in project activities. In a sense women were the main beneficiaries of this project.

4.5 Programme indicators

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

Yes. The Yala Planning Advisory Committee (YPAC) comprises of 47 community representatives from the Swamp drawn from Busia and Siaya Counties, taking into account diverse community interests. Similarly, the governance structure for the management of the CCAs comprises of 24 community representatives from the Swamp drawn from Busia and Siaya Counties.

- **Were any management plans for biodiversity developed?**

Yes. The Yala Swamp land use plan and strategic environmental assessments are in advanced stages.

The Yala Ecosystem Site Support Group in collaboration with government agencies at the county level developed guidelines for the management of Yala Swamp Community Conservation Area (see appendix 39)

Nature Kenya provided input into the development of the draft Yala Swamp Management plan, a process led by the National Environment Management Authority (see appendix 5)

- **Were these formally accepted?**

There is no formal acceptance yet, since all the documents are in draft form. However due to the extensive consultative process the documents are accepted and owned by the county governments of Siaya and Busia who legally have the mandate to produce land use plans within their area of jurisdiction; and the communities living within and around the Yala Swamp.

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

They were fully inclusive and participatory through many meetings as indicated in the appendices. In each of the structures, the one third gender rule applies.

- **Were there any positive gains in household (HH) income as a result of this project?**

Yes.

- **How many HHs saw an increase in their HH income?**

231 households benefited from income generating activities initiated through the project:

156 – fish farming

55 – production and marketing of high value papyrus products

20 – Ecotourism and tour guiding

26 – sale of surplus tree seedlings

- **How much did their HH income increase (e.g. x% above baseline, x% above national average)? How was this measured?**

According to results from the final project evaluation report on average household incomes increased by 74% (from fish farming); 40% from sale of high value papyrus products and 14% from tour guiding above baseline

4.6 Transfer of knowledge

Skills training has been conducted to build the capacity of 398 individuals; (231males 167females) in various areas including papyrus product development, welding, tour guiding, fish farming, policy, advocacy and resource mobilization, tree nursery establishment, leadership and governance, data collection, strategic planning and financial management, entrepreneurship and business management. Out of the aforementioned number of individuals, 10 have further undergone formal training attaining a Certificate in Ornithology and biodiversity monitoring.

Did the project result in any formal qualifications?

10 individuals (9male, 1 female) underwent a Certificate course training in Ornithology and biodiversity monitoring.

4.7 Capacity building

At the end of the project John Kiptum (M), an extension officer, was promoted to Policy and Advocacy Officer for Nature Kenya.

Serah Munguti (F), the Project Leader was nominated into IUCN's Commission on Ecosystem Matters. At a national level she was nominated into a taskforce that drafted the National Wetlands Policy and reviewed the National Wetlands Regulations.

5 Sustainability and Legacy

Yala Ecosystem Site Support Group (SSG) is a legacy for the project as its members are drawn from the community. The SSG has come up with its own ways to raise money for conservation through the 'conservation fund' where 10% of all proceeds from income generating activities is set aside to be used for conservation activities such as awareness creation, advocacy and biodiversity monitoring. So far a total of Ksh. 44,000 has been remitted from the various income generating activities to the conservation fund which is managed by the SSG. With a strategic plan in place (Appendix 23) and many of the income generating activities picking up it is to be expected that the SSG will have some cash flow to deliver basic conservation actions long after the project is completed.

Partnerships formed through engagement of the county government will go on even after project completion. In addition the trained community members are now Trainers of Trainers who will continue to provide support to other community members in income generating activities and other project components.

Through the established structures and partnerships, we shall lobby the County Governments of Siaya and Busia to adopt the land use plan (LUP) and strategic environmental assessment (SEA) as policy documents as this will enable them to prepare specific policies, guidelines, regulations and action plans for the implementation of the LUP. Adoption of the LUP and SEA as policy documents will also enable the two County Governments to allocate budgets for their implementation.

Policy impact: The LUP and SEA are policy documents that eventually will have to be approved by the County Governments of Siaya and Busia County.

The Yala Community Conservation Area expands the protected areas network in Kenya and provides for enhanced management of the Yala Swamp by all stakeholders for posterity.

6 Lessons learned

Key Lessons learnt from this project are:

- Poverty, like in many other parts of Kenya remains a key driver to environment destruction in Yala swamp. Poverty has driven people to exploit natural resources to fulfil their immediate human needs like food with less regard of the consequences of uncontrolled overexploitation of resources which ironically threatens their very own future existence and the existence of other organisms within the Yala swamp ecosystem.
- Community involvement is pertinent in all aspects of sustainable management planning. When consulted and fully involved in key decision making processes, their wealth of traditional knowledge on conservation can be valuably utilized in natural resources management and biodiversity conservation
- Time spend building partnerships with key stakeholders is time well spend. There are benefits to reap for functional partnerships with governments at national and county level who are now champions of the land use plan and strategic environmental assessment. These partnerships have saved the project money by providing free technical support. The partnerships lend government legitimacy to activities which are more acceptable to community. Linkages with the lowest government officers in the field constitute security that after the project is completed initiatives will continue. For instance the fish farmers groups directly link with fisheries officers on the ground without involving Nature Kenya.
- Building the capacity of local communities to take informed action on the environmental matters that affect them and to claim their rights from decision makers is a powerful tool for delivering conservation and development. With training and initial support, the Yala Ecosystem Site Support Group (SSG) has become a community champion for conservation within the larger Yala Ecosystem. Nature Kenya was able to channel resources for habitat restoration through the SSG which in turn facilitated and supervised its constituent groups within the framework of memorandums of understanding. 300 ha of papyrus were planted within six months through this arrangement.
- Innovation increases the speed of activity delivery and replicates impacts. When we trained the first 10 trainers of trainers (ToT) to install energy saving devices at household and institutional level we envisaged that we will work with them at a small fee to deliver all the devices that needed to be installed. But then we changed the strategy and set them a target – in every target village each ToT would install 10 devices and in the process train other 10 ToTs from that village who would also repeat the cycle. This worked like magic and soon a lot of energy saving devices were installed, with the first ToTs to be trained in each village ensuring quality control. The exercise took a relatively short time, built the capacity of many local people to install devices, created demand for the devices to the extent that many households repaired dilapidated kitchens (or even constructed new kitchens detached from the main house) to meet the criteria for installation of the devices.

6.1 Monitoring and evaluation

Nature Kenya received the following feedback on the Year 1 annual report: *The way the outcome indicators are phrased needs to be addressed as they read more like targets than indicators. It would be a good idea to rephrase them.*

Consequently we refined the outcome and output indicators to make them sharper and easier to monitor and obtained approval for the changes from LTS (Appendix 73). This feedback not only enabled us to define the key species to be monitored, but also enabled us to start collecting gender disaggregated data on activity delivery.

Nature Kenya keeps records of all activities and field staff submit to the Project Leader weekly updates with numbers for all activities e.g. types and numbers of papyrus products sold and for how much; kilos of fish harvested by group, amount consumed by households, kilos sold and for how much; numbers of seedlings planted; meetings/events held and disaggregated participants

data etc. (see sample weekly report Appendix 24). Field staff also submit monthly scorecards capturing data for the whole month (see sample score card Appendix 25). In 2014 Nature Kenya conducted a baseline socio economic survey on the communities living around the swamp and baseline surveys on biodiversity of the Yala Swamp.

Some of the key findings from the baseline surveys for instance, the Participatory Rapid Learning Appraisal (PRLA) conducted in January 2015 (Appendix 26) concluded that the then existing land use practices and other human induced changes within the wetland threatened the ecological integrity and socioeconomic values of the highly dynamic ecosystem. The report further concluded that the absence of a comprehensive wetland management plan and unclear land ownership contributed to unsustainable land management in the Yala swamp. These findings greatly informed project interventions. The baseline survey therefore, laid the foundation for tracking activity delivery and for comparison with the end of project evaluation.

We conducted water quality and biodiversity surveys annually for the entire life of the project. This enabled us to keep track on the impact of the project on the ecology of the Yala Swamp.

Nature Kenya conducted an end of project survey to ascertain impacts of the project on community livelihoods.

6.2 Actions taken in response to annual report reviews

We reviewed the proposal output and outcome indicators and made them sharper (Appendix 73)

7 Darwin identity

The Darwin Initiative logo has been used in all publicity materials including posters, calendars, banners, newsletters magazines, other publications and reports presented to stakeholders. Awareness has been created in all meetings on the Darwin Initiative's funding. The Nature Kenya twitter @naturekenya account is linked back to the Darwin account.

There is full understanding within Nature Kenya and project partners about the Darwin Funding. In presentations at various meetings the Darwin Initiative support was acknowledged.

The Darwin Initiative funding has been identified as a distinct project.

8 Finance and administration

8.1 Project expenditure

Project spend (indicative) since last annual report	2016/17 Grant (£)	2016/17 Total actual Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (from Section 5)			-0.77	
Consultancy Costs			7	
Overhead Costs			-0.07	
Travel and subsistence			1.8	
Operating Costs			-9	
Capital items (from Section 7)			36.5	
Others (from Section 8)			7.8	
TOTAL	78,612	78,612		

Staff employed (Name and position)	Cost (£)
Emily Mateche, Site Project Officer	
Simon Makokha, Extension Officer	
Jared Sajita, Driver	
Paul Gacheru, Species & Sites Manager	
Joel Siele, Local Empowerment Manager	
Serah Munguti, Advocacy & Communication Manager	
Paul Matiku, Executive Director	
John Mwacharo, Communication Officer	
Denvas Gekonde, Finance Manager	
Caroline Kabilu, Programmes Assistant	
Cecilia Mbaluto, Assistant Accountant	
Gilbert Langat, Administrative Officer	
Fred Barasa, Climate Change & Monitoring Coordinator	
TOTAL	29,929
Capital items – description	Capital items – cost (£)
HP Computer Keypad Wifi router	
TOTAL	127

Other items – description	Other items – cost (£)
Project stakeholder meetings Communication-telephone, internet etc. Field vehicle operating costs including insurance Stationery, photocopying Lesson sharing & awareness Support government efforts – meeting costs Field guides	
TOTAL	13,822

8.2 Additional funds or in-kind contributions secured

Source of funding for project lifetime	Total (£)
Royal Society for the Protection of Birds – Staff costs	
MacArthur Foundation supported project – 2015 & 2016	
PREPARED (USAID) supported project-2015 & 2016	
TOTAL	258,050

Source of funding for additional work after project lifetime	Total (£)
MacArthur Foundation supported project – 2017-2018	

TOTAL	60,995

8.3 Value for Money

Project start-up costs were maintained at minimal because the key staff were already engaged at Nature Kenya and the RSPB and the infrastructure needed to deliver the project was already in place.

Additional funding from MacArthur Foundation and PREPARED USAID led to efficient delivery of activities where resources were pooled for similar activities. The additional funding enabled us to use the ecosystem services assessment to inform land use planning leading to greater impacts.

Apart from enhancing buy-in and consensus building the partnerships built as a result of this project provided technical support from government at no cost to the project. Kenya Forest Service provided hands on training to groups growing tree seedlings, participated in the actual habitat rehabilitation process and provided government backing for the restoration initiative.

Fish farmers benefited from hands on training from officers in the ministry of livestock and fisheries through the entire value chain. The government officers ensured standards were met and they were present at site for identification of fish pond sites, excavation of ponds, stocking, and through the entire fish rearing process at no cost to the project. The Inter-Ministerial Technical Committee for the sustainable management of Kenya Deltas and the County Governments of Siaya and Busia gave government credence to the entire land use planning and Strategic environmental assessment process.

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
<p>Impact: Sustainable management regimes are established for deltas throughout Kenya, supported by all relevant stakeholders, and ensuring that the needs of industry, local people and wildlife are met indefinitely.</p>			
<p>Outcome: Key steps are taken to secure the future of Kenya's Yala Delta, recognizing both development and conservation needs, and to promote similar work in other Kenyan deltas.</p>	<ol style="list-style-type: none"> 1. By End of project populations of 6 key wildlife species (e.g. Sitatunga, the Papyrus endemic bird species Papyrus Yellow Warbler, Carruthers' Cisticola, White-winged Warbler and Papyrus Canary) have increased significantly compared to the baseline in areas where habitat is created or allowed to regenerate 2. By end of project the populations of 6 or indicator species in areas where habitat is protected (i.e. 1,000 ha of pristine Papyrus stands) have not fallen below the baseline level 3. By end of project the pollutant levels in the water flowing from Yala Delta into Lake Victoria have reduced from the baseline towards the national benchmark due to increased 'watershed protection' upstream of the delta. 4. By mid term 1,100 people (50% male, 50% female) of target group engaged in project activities. <p>By end of project A total of 1,100 (50% male; 50% female) extremely poor people report significant improvements in their</p>	<ol style="list-style-type: none"> 1. Reports from 'before and after' surveys of target species, as described above 2. Reports from 'before and after' surveys of Papyrus birds and cichlid fish 3. Reports from 'before and after' assessments of water quality 	<p>Assumption 1: Kenya remains politically stable throughout and beyond the project period</p> <p>Assumption 2: The Inter-ministerial Technical Committee on Deltas, and the Kenyan government more generally, remain supportive of a balanced and sustainable approach to delta management</p> <p>Assumption 3: National policies on safeguards and offsets remain supportive of corporate engagement in 'payment for ecosystem services' schemes, so that Dominion remains willing to collaborate in the project</p>

	<p>diet and/or increases in income in comparison to the baseline.</p> <ol style="list-style-type: none"> By end of project a further 250,000 'delta-dependent' people benefit indirectly from the project, as it secures the long-term future of the natural resources on which they rely. By the end of the project, policies and plans governing the management of other Kenyan deltas incorporate lessons learned from the project clearly and explicitly. 	<ol style="list-style-type: none"> Reports from 'before and after' surveys on diet and income, as specified under Output 3 below Report produced at end of project (or section of overall final report) detailing long-term plans for the Yala Delta and specifying how these plans will benefit the 250,000 people who live around it Policy and plan documents 	
<p>Outputs:</p> <p>1. A clear, evidence-based 'business case' is developed for the sustainable management of the Yala Delta</p>	<ol style="list-style-type: none"> By end Year 1 A detailed assessment of the ecosystem services provided by the delta has been carried out, in consultation with local communities By end Year 1 a 'business case' for the sustainable management of the delta is available 	<ol style="list-style-type: none"> Report on ecosystem services assessment Published paper on this assessment 'Business case' document 	<p>Assumption 1: Dominion Farms will remain engaged in the project throughout, and will continue CSR activities after the project ends.</p> <p>Assumption 2: No significant shift of policy or attitude will occur in county or central government</p>
<p>2. Vital wildlife habitat is restored and protected, in part by means of a 'payment for ecosystem services' scheme</p>	<ol style="list-style-type: none"> By end of Year 2 50 ha, and by the end of Year 3, 100 ha of land within the Watershed Protection Zone along the Yala River, upstream of the delta, planted with bamboo and native trees. By end Year 1 degraded parts of the delta covering a total area of 1,000 ha are 'set aside' so that Papyrus is able to regenerate there naturally. By end Year 2 Pristine Papyrus stands covering a total area of 1,000 ha are designated as Community Conservation Areas, 	<ol style="list-style-type: none"> Report on planting work, including maps and dated photographs Report on regeneration zones, including maps and dated photographs Report on Community Conservation Areas, including maps and dated photographs 	<p>Assumption 3: The general election scheduled for Kenya for 2017 will not cause major political instability</p>

	<p>By EOP Communities are fully engaged in management/protection actions</p> <p>4. By end Year 2, a water control regime is established to ensure that sufficient water is flowing into Lake Kanyaboli to support cichlid population</p>	<p>4. Report on water control regime, including maps and dated photographs</p>	
<p>3. Poor people living around the Yala Delta are empowered to improve their livelihoods in ways that contribute to or are consistent with the long-term conservation of the delta's natural resources</p>	<p>1. By the end of the project the weight of high-quality protein (i.e. fish and meat) consumed by 100 of the poorest households (500 people; 50% male, 50% female) in the area increases by 25% compared to the baseline</p> <p>2. By the end of the project 100 households (50% male; 50% female) increase their income from marketing Papyrus products by 15% compared to the baseline.</p> <p>3. By the end of the project the total income generated by 20 households through ecotourism has increased by 25% compared to the baseline</p>	<p>1. Maps and photographs documenting fishpond creation</p> <p>Report documenting findings from 'before and after' studies of the diets of the households targeted</p> <p>2. Reports from training workshops, including photographs</p> <p>Report documenting findings from 'before and after' studies of the incomes of the households targeted</p> <p>3. Reports from training workshops, including photographs</p> <p>Report documenting findings from 'before and after' study of ecotourism activity and income in the delta</p>	
<p>4. Lessons learned from the project are disseminated effectively to all relevant stakeholders</p>	<p>1. Findings and recommendations from the project are shared with the Inter-ministerial Technical Committee on Deltas, the National Environment Management Authority, the Office of the Prime Minister, and all other relevant bodies at least annually throughout the project (i.e. at the end of each project year)</p> <p>2. By end of project stakeholders are communicating lessons and recommendations from the project</p>	<p>1. Records of communications with the Inter-ministerial Committee and other bodies</p> <p>2. Publicly available records of discussions within and between these bodies – e.g. meeting minutes</p>	

into relevant policy formation and decision making processes.

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)

Output 1

Activity 1.1 :Conduct a start-up workshop to agree methodologies and provide training in protocols for the Ecosystem Service Assessment

Activity 1.2:Carry out consultations needed to assess ecosystem services (e.g. discussions about utilization of natural resources)

Activity 1.3: Carry out fieldwork needed to assess the ecosystem services provided by the delta (e.g. studies of water regulation and carbon storage)

Activity 1.4: Compile findings into a detailed report on ecosystem services, and summarize this report into a paper for submission to a peer-reviewed journal

Activity 1.5: Based on this report, produce a detailed 'business case' for presentation to Dominion and the relevant authorities

Output 2

Activity 2.1: Develop a 'payment for ecosystem services' (PES scheme) scheme to incentivize farmers upstream of the delta to plant native trees and bamboo, and carry out a baseline study of selected wildlife in the area to be planted

Activity 2.2: Implement the PES scheme, providing advice and support to farmers as needed

Activity 2.3: Identify in a fully participatory manner degraded areas covering 1,000 ha to be set aside as Papyrus regeneration zones, and carry out a baseline study of selected wildlife (e.g. Papyrus endemics and Sitatunga) in these zones

Activity 2.4: Monitor these zones to ensure that they are allowed to regenerate

Activity 2.5:Identify in a fully participatory manner pristine areas of Papyrus swamp covering 1,000 ha to be designated as Community Conservation Areas (CCAs), and carry out a baseline study of birds in these areas

Activity 2.6: Provide advice and support as needed to communities managing CCAs

Activity 2.7: Working in collaboration with Dominion, design a water control regime that ensures sufficient inflow to Lake Kanyaboli at all times of the year, and carry out a baseline study of cichlids in this lake

Activity 2.8: Implement the water control regime

Output 3

Activity 3.1: Identify households to be provided with fishponds, and carry out a baseline study of diet in these households

Activity 3.2:Create fishponds

Activity 3.3: Identify households to be provided with training in the creation and marketing of high-value Papyrus products, and carry out a baseline study of income in these households

Activity 3.4:Deliver training in these areas

Activity 3.5: Identify individuals to be provided with training in wildlife guiding, and carry out a baseline study of ecotourism activity and income in the delta

Activity 3.6: Deliver training in this area

Activity 3.7: Carry out end-of-project studies of diet and income to match the baseline studies described above

Output 4

Activity 4.1: Compile findings and recommendations from the project at the end of each project year

Activity 4.2: Present these to the Inter-ministerial Committee, the Ministry of Water, Environment and Natural Resources, NEMA and other key bodies through face-to-face meetings and other appropriate channels

Activity 4.3: Monitor records of discussions within and between these bodies, and the content of policy and planning documents, to ensure that the lessons shared are taken into account

Activity 4.4: Carry out broader dissemination activities aimed at non-specialist audiences

Activity 4.5: Advocate to KWS for the designation of Yala swamp as a Ramsar site.

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

Project summary	Measurable Indicators	Progress and Achievements
<p>Impact:</p> <p>Sustainable management regimes are established for deltas throughout Kenya, supported by all relevant stakeholders, and ensuring that the needs of industry, local people and wildlife are met indefinitely.</p>		<p>Ecosystem services assessment was conducted with a business case for balanced development in the Yala Swamp. The ecosystem services assessment findings together with other studies conducted within Yala swamp informed a land use plan (LUP) for the Yala Swamp. The land use plan is also informed by a strategic environmental assessment (SEA). The LUP/SEA process which is advanced stages is supported by the county governments of Siaya and Busia and local communities. We are on the way to establishing a sustainable management regime for the Yala Swamp.</p> <p>Community conserved areas with a total acreage of 8,404 ha were selected and communities are already involved in the management of the swamp through a 25 member committee. (Appendix 39)</p>
<p>Outcome</p> <p>Key steps are taken to secure the future of Kenya's Yala Delta, recognizing both development and conservation needs, and to promote similar work in other Kenyan deltas.</p>	<ol style="list-style-type: none"> 1. Candidate species to be monitored include East Africa's 'Papyrus endemic' bird species (e.g. Papyrus Yellow Warbler, Carruthers' Cisticola, White-winged Warbler and Papyrus Canary) and Sitatunga. By End of project populations of 6 key wildlife species (e.g. Sitatunga, the Papyrus endemic' bird species Papyrus Yellow Warbler, Carruthers' Cisticola, White-winged Warbler and Papyrus Canary) have increased significantly compared to the baseline in areas where habitat is created or allowed to regenerate 2. By mid project 300 ha Papyrus regenerating By end of project the populations of 6 indicator species in areas where habitat is protected (i.e. 1,000 ha of pristine Papyrus stands) have not fallen below the baseline level 	<p>The biodiversity survey findings of December 2016 indicated some significant increase in the trigger species. The cichlids believed to be extinct in the main Lake Victoria were caught namely <i>Oreochromis variabilis</i>, <i>Oreochromis esculentus</i> and <i>Oreochromis leucostictus</i>. These endemic cichlids species were not recorded in the biodiversity surveys of 2015 and 2014. The findings show the importance of the satellite lakes of Yala swamp as a refuge to species displaced from Lake Victoria and thus the urgent need to conserve this important resource to protect populations of <i>Oreochromis variabilis</i>, and <i>Oreochromis esculentus</i> which are critically endangered. From the bird surveys of 2016, records of the Papyrus Gonolek, Carruther's Cisticola and Papyrus-yellow Warbler were noted. Among the papyrus specialist birds, only the Papyrus Canary was missed during the survey, yet it was recorded in 2015 and 2014. Generally, the population sizes of the papyrus endemic birds were higher in areas with large swaths of pristine papyrus and relatively undisturbed habitats compared to the degraded habitats (areas where papyrus has been burnt or cleared). The findings indicate that papyrus specialists require dense papyrus stands for survival and breeding thus conservation of papyrus habitat is important in conserving papyrus endemic birds and other biodiversity. Biodiversity monitoring is on-going to assist detect any changes</p>

	<p>3. By end of project the pollutant levels in the water flowing from Yala Delta into Lake Victoria have reduced from the baseline towards the national benchmark due to increased 'watershed protection' upstream of the delta.</p> <p>4. By mid term 1,100 people (50% male, 50% female) of target group engaged in project activities.</p> <p>By end of project A total of 1,100 (50% male; 50% female) extremely poor people report significant improvements in their diet and/or increases in income in comparison to the baseline.</p> <p>5. A further 250,000 'delta-dependent' people benefit indirectly from the project, as it secures the long-term future of the natural resources on which they rely.</p> <p>6. By the end of the project, policies and plans governing the management of other Kenyan deltas incorporate lessons learned from the project clearly and explicitly.</p>	<p>Fish, water quality and biodiversity monitoring reports from November 2015 (Appendices 77 & 78) showed no increase in pollutants in the water leaving Yala Swamp. However, monitoring reports from November 2016 (Appendices 79 & 80) recorded an increase in Nitrates and Phosphates in water indicating that there was an elevation on nutrient surge into the wetland. This was attributed to the increased sedimentation in the river, ash emanating from illegal burning of papyrus on the fringes of the swamp or run off from use of fertilizer.</p> <p>A total of 1,126 people (505 males, 621 females) are direct project beneficiaries through the Yala Ecosystem SSG. Further, the project supported 10 CBO to establish 17 fishponds directly benefiting 156 households (780 people); 55 households (282 people) are involved in papyrus product development; 42 people are involved as artisans in installation of energy saving jikos; 20 people are trained as community guides. Out of the combined 231 beneficiaries of income generating activities 138 (60%) were women. Generally as a result of the project women's incomes increased by higher percentages compared to those of men. The mean monthly income for female headed household increased by 84% while that of male headed households increased by 69% due to participation in fish farming. For the 55 households that engaged in creation and marketing of papyrus products the income of women headed households increased by 51% while that of male headed households increased by 34%. At the end of the project the 20 beneficiaries (10% male, 90% female) in tour guiding had a monthly income of Ksh. 1415. The annual household income of residents engaged in tour guiding increased by KSh16,982 , a 14% increase. In addition, 2000 households around Yala Swamp were fitted with energy saving cookers to reduce deforestation.</p> <p>Habitat rehabilitation, use of energy saving devices, fish farming and all other project activities benefited the entire delta dependent community as outlined above.</p> <p>The project activities have largely informed the on-going formulation of a land use plan for the Yala Swamp informed by strategic environmental assessment. The LUP/SEA are in advanced stages.</p>
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<p>Output 1. A clear, evidence-based 'business case' is developed for the sustainable management of the Yala Delta</p>	<ol style="list-style-type: none"> 1. By end Year 1 A detailed assessment of the ecosystem services provided by the delta has been carried out, in consultation with local communities 2. By end Year 1 a 'business case' for the sustainable management of the delta is available 	<p>Nature Kenya used the Toolkit for Ecosystem Service Site-based Assessment (TESSA), to undertake a detailed assessment of the ecosystem services provided by the delta. The ecosystem service assessment report (Appendix 6) provided evidence that the conservation of significant areas of Yala swamp is crucially important for ecosystem services that support economy, biodiversity and livelihoods. The evidence based business case for Yala Swamp was mainstreamed into the SEA and LUP processes which are currently in advanced stages. The ecosystem services assessment report proved to be a useful tool as evidence of the value of conserving the Yala delta.</p>
<p>Activity 1.1 Conduct a start-up workshop to agree methodologies and provide training in protocols for the Ecosystem Service Assessment</p>		<p>A start up workshop was completed successfully and stakeholders agreed on methodologies for the Ecosystem Service Assessment (Appendix 25).</p>
<p>Activity 1.2. Carry out consultations needed to assess ecosystem services (e.g. discussions about utilization of natural resources)</p>		<p>Completed. Consultative meetings were conducted for all key stakeholders and were facilitated by experts (consultants) who carried out catchment wide analyses of existing social, economic, hydrological, environmental, biological information existing for the Yala basin. (Appendix 26, Appendix 27, Appendix 28, Appendix 29).</p>
<p>Activity 1.3: Carry out fieldwork needed to assess the ecosystem services provided by the delta (e.g. studies of water regulation and carbon storage)</p>		<p>Completed. See activity 1.1; See (Appendix 30) photos during field data collection</p>
<p>Activity 1.4: Compile findings into a detailed report on ecosystem services, and summarize this report into a paper for submission to a peer-reviewed journal</p>		<p>Completed Paper submitted and presented during the Ecosystems Services for Poverty Alleviation (ESPA) Annual Science Conference in November 2016 Appendix 31</p>
<p>Activity 1.5: Based on this report, produce a detailed 'business case' for presentation to Dominion and the relevant authorities</p>		<p>Completed Dominion Farms Limited has agreed to collaborate with Nature Kenya and utilize the ecosystem service business case and regime for regulating water flows and restoration of wetland. See Appendix water control regime, including maps and dated photographs</p>
<p>Output 2. Vital wildlife habitat is restored and protected, in part by means of a</p>	<ol style="list-style-type: none"> 1. By end of Year 250 ha, and by the end of Year 3, 100 ha of land within the Watershed Protection Zone along the Yala River, upstream of 	<p>To safeguard wildlife habitats that maintain populations of key wetland species and safeguard wildlife habitat, a criteria was formulated for selection of community conserved areas within the Yala Swamp (Appendix 32). Using this criteria community conserved areas (CCAs) with a total</p>

<p>'payment for ecosystem services' scheme</p>	<p>the delta, planted with bamboo and native trees.</p> <p>2. By end Year 1 degraded parts of the delta covering a total area of 1,000 ha are 'set aside' so that Papyrus is able to regenerate there naturally.</p> <p>3. By end Year 2 Pristine Papyrus stands covering a total area of 1,000 ha are designated as Community Conservation Areas,</p> <p>By EOP Communities are fully engaged in management/protection actions</p> <p>4. By end Year 2, a water control regime is established to ensure that sufficient water is flowing into Lake Kanyaboli to support cichlid population</p>	<p>acreage of 8,404 ha were selected. Within the CCAs 443.8ha were identified as degraded areas that were targeted for restoration with a total of 300 ha restored so far. (Appendix 30-photos habitat restoration, Appendix 33, Appendix 34) Key considerations for development of criteria for selection of CCAs are: presence of key biodiversity; threats to biodiversity; intactness of the habitat; vulnerability to conversion through agricultural expansion; representativeness in terms of habitat, biodiversity, ecological function and ecosystem services; connectivity among the CCAs; suitability for community engagement; and potential for ecotourism. The CCAs are managed by a 25 member committee largely dominated by community representatives from the Swamp drawn from Busia and Siaya Counties.</p> <p>To protect the watershed zone, conserve biodiversity, capture carbon dioxide (carbon sequestration) and yield fuel and construction materials, the project supported the rehabilitation of 135ha of the riparian zone of River Yala has been with bamboo and native trees (Appendix 35). Rehabilitation efforts are on-going with 65ha of the riparian zone targeted for tree planting under the coordination of the Yala Ecosystem SSG in partnership with the Kenya Forest Service.</p> <p>To address environmental degradation by reducing the use of woodfuel, 135 schools and 2000 households were installed with energy saving devices. (Appendix 30-photos installation of energy saving devices). The schools have a combined population of 28,156 pupils who are on the school feeding programme. This has reduced wood fuel consumption by households and schools by 50%.</p> <p>The water control regime that will sustain the ecological functions of Lake Kanyaboli is described in the Yala Swamp Strategic Environmental Assessment (SEA). The SEA determined that L. Kanyaboli needs a minimum flow of 5m³/sec. The description of the hybrid or "middle way" is on page 85 of the Yala Swamp SEA.</p>
<p>Activity 2.1. Develop a 'payment for ecosystem services' (PES scheme) scheme to incentivize farmers upstream of the delta to plant native trees and bamboo, and carry out a baseline study of selected wildlife in the area to be planted</p>		<p>The project has been on track. Through this Darwin funded project Nature Kenya provided a framework for the development a PES scheme through which the users of climate regulation and water services can pay for the conservation of the swamp so that they can continue to enjoy these services (see appendix 24). Farmers upstream of the delta were incentivized to plant native trees and bamboo as detailed in Output 2 above (see Appendix 42).</p>

	Through the project, a protocol for wetland monitoring in Yala Swamp was developed (Appendix 36) and baseline studies of selected wildlife successfully conducted (Appendix 37); Subsequent annual assessments on water quality and biodiversity including birds, fish, wildlife, and water were successfully completed in November 2015 and November/December 2015
Activity 2.2. Implement the PES scheme, providing advice and support to farmers as needed	Technical support will be provided to farmers beyond the project cycle through the established partnership with the Kenya Forest Service.
Activity 2.3: Identify in a fully participatory manner degraded areas covering 1,000 ha to be set aside as Papyrus regeneration zones, and carry out a baseline study of selected wildlife (e.g. Papyrus endemics and Sitatunga) in these zones	Completed Mapping of Yala Swamp was done and zones created according to documented land characteristics matched to appropriate land uses taking into account, the development agenda, biodiversity and local community livelihoods. (Appendix 38).
Activity 2.4: Monitor these zones to ensure that they are allowed to regenerate	Completed. Monitoring to continue beyond the project cycle through trained monitors from the local community with basic resources support from the Yala Ecosystem SSG 'conservation fund'.
Activity 2.5: Identify in a fully participatory manner pristine areas of Papyrus swamp covering 1,000 ha to be designated as Community Conservation Areas (CCAs), and carry out a baseline study of birds in these areas	Completed Consultations were conducted with stakeholders to develop & implement key actions to protect & conserve the delta, including validating the designated CCAs and developing guidelines for the management of CCAs (See Appendix 39).
Activity 2.6: Provide advice and support as needed to communities managing CCAs	Completed as stated in Activity 2.5 above. A Community Action Plan was developed for the sustainable management of Yala swamp (Appendix 40). . Specific action plans for each land use zone and catchment will be developed and agreed by stakeholders as part of the advanced LUP process.
Activity 2.7: Working in collaboration with Dominion, design a water control regime that ensures sufficient inflow to Lake Kanyaboli at all times of the year, and carry out a baseline study of cichlids in this lake	Some of the recommendations of the land use plan and strategic environmental assessment on water control regime were implemented. Dominion Farms Limited has agreed to collaborate with Nature Kenya and utilize the ecosystem service business case and regime for regulating water flows and restoration of the wetland.
Activity 2.8: Implement the water control regime	Same as 2.7 above See Appendix 30-dated photos of past and current water control regime

<p>Output 3. Etc.</p> <p>Poor people living around the Yala Delta are empowered to improve their livelihoods in ways that contribute to or are consistent with the long-term conservation of the delta's natural resources</p>	<ol style="list-style-type: none"> 1. By the end of the project the weight of high-quality protein (i.e. fish and meat) consumed by 100 of the poorest households (500 people; 50% male, 50% female) in the area increases by 25% compared to the baseline 2. By the end of the project 100 households (50% male; 50% female) increase their income from marketing papyrus products by 15% compared to the baseline. 3. By the end of the project the total income generated by 20 households through ecotourism has increased by 25% compared to the baseline 	<p>As a result of implementation of various sustainable livelihoods the wellbeing of Yala Swamp communities has improved: 156 households are expected to benefit from the harvest of 5.6 tons of fish from 17 fishponds. In the most recent phase of production (6-9moths), already 1494kg of fish have been harvested from 12 ponds with 114kg consumed at household level and the rest (1380kg) sold for Ksh. 266,500. Over the last 12 months, 55 households translating into 282 individuals are benefiting from sale of high value papyrus products with products worth Ksh. 108,600 already sold. During the same period, six of the trained community guides earned a combined income of Ksh. 101,890 from guiding tourists visiting the Yala Swamp. During the rainy season in mid-2016, 24 individuals benefited from the sale of 3000 indigenous tree seedlings worth Ksh. 115,000, the seedlings were a surplus of the tree seedlings raised for habitat restoration. Percentage increase and gender disaggregation is as indicated in the outputs section above.</p> <p>The capacity of 398 individuals; (231males 167females) has been built through skills training in various areas including papyrus product development, welding, tour guiding, fish farming, policy, advocacy and resource mobilization, tree nursery establishment, leadership and governance, data collection, strategic planning and financial management, entrepreneurship and business management. Out of the aforementioned number of individuals, 10 have further undergone formal training attaining a Certificate in Ornithology and biodiversity monitoring. (See training reports Appendix 42- Appendix 54 and training manuals Appendix 55- Appendix 59). Mentorship, technical advice and support is provided on an ongoing basis to ensure success of the livelihood activities (See Appendix 64- Appendix 66)</p> <p>See Appendix 30-training photos</p>
<p>Activity 3.1: Identify households to be provided with fishponds, and carry out a baseline study of diet in these households</p>		<p>Completed</p> <p>See Appendix 60 and Appendix 61</p>
<p>Activity 3.2: Create fishponds</p>		<p>Completed</p> <p>See Appendix 30- photos farmers engaged in fish farming</p>
<p>Activity 3.3: Identify households to be provided with training in the creation and marketing of high-value papyrus products, and carry out a baseline study of income in these households</p>		<p>Completed</p>

Activity 3.4: Deliver training in these areas	Completed See Appendix 30-training photos
Activity 3.5: Identify individuals to be provided with training in wildlife guiding, and carry out a baseline study of ecotourism activity and income in the delta	Completed. Through partnership with the county governments of Siaya and Busia, there is an ongoing initiative to support community guides by packaging and marketing Yala Swamp as a tourist destination. Appendix 62 and Appendix 63
Activity 3.6: Deliver training in this area	Completed See Appendix 30-training photos
Activity 3.7: Carry out end-of-project studies of diet and income to match the baseline studies described above	Completed. Establishment of fishponds was expected to improve the protein intake of the local residents. However, the beneficiaries only consumed 8 % of the produce and sold the rest, probably because of other pressing financial needs. The end of project survey revealed that 57 % of the respondents used income from sale of fish to purchase other food stuffs, 21 % of the income for maintaining fish ponds while others use it to pay school fees for their children or to contribute to fishers group account. During the end of project survey, none of the local residents considered fish as a staple food but is probably considered a source of income so as they can purchase other food types that they consider staple food.
Output 4. Lessons learned from the project are disseminated effectively to all relevant stakeholders	<ol style="list-style-type: none"> 1. Findings and recommendations from the project are shared with the Inter-ministerial Technical Committee on Deltas, the National Environment Management Authority, the Office of the Prime Minister, and all other relevant bodies at least annually throughout the project (i.e. at the end of each project year) 2. By end of project stakeholders are communicating lessons and recommendations from the project into relevant policy formation and decision making processes. Recommendations of the Ecosystem Services Assessment have informed the Yala Swamp land use plan and strategic environmental assessment • Recommendations from studies conducted including ecosystem services assessment, baseline surveys, socio-economic surveys, biodiversity surveys were shared in various forums e.g. presentations to stakeholders in workshops, consultative meetings. The findings have also been made available to County technical officers for reference. Project achievements have been shared through various publications including the Darwin Newsletter, Kenya Birding magazine etc. (See Annex 5: Publications). Dissemination activities done with publication of project activity updates in the Nature Kenya monthly newsletter (See Annex 5: Publications).
Activity 4.1: Compile findings and recommendations from the project at the end of each project year	Completed as stated in output 4 above

<p>Activity 4.2: Present these to the Inter-ministerial Committee, the Ministry of Water, Environment and Natural Resources, NEMA and other key bodies through face-to-face meetings and other appropriate channels</p>	<p>The Inter-ministerial Technical Committee and the county governments of Siaya and Busia are using the recommendations of the ecosystems services assessment to prepare a land use plan for the Yala Swamp informed by a Strategic Environmental Assessment.</p>
<p>Activity 4.3: Monitor records of discussions within and between these bodies, and the content of policy and planning documents, to ensure that the lessons shared are taken into account</p>	<p>Consultative discussions held with relevant stakeholders throughout the project cycle See Appendix 67 - Appendix 70</p> <p>Reports from the County Assembly of Siaya recognize the on-going Land Use Planning process and recommend the land use plan as one of the requisite policy planning tools to reduce conflicts within Yala swamp (Appendix 71 and Appendix 72-Cries of Our People).</p>
<p>Activity 4.4: Carry out broader dissemination activities aimed at non-specialist audiences</p>	<p>Dissemination activities done with publication of project activity updates in the Nature Kenya monthly newsletter, Darwin Newsletter, Kenya Birding magazine etc. (See Annex 5: Publications)</p>
<p>Activity 4.5: Advocate to KWS for the designation of Yala swamp as a Ramsar site.</p>	<p>Discussions are on-going as part of the land use planning process including how the Kenya Wildlife Service (KWS) will support the county government and local stakeholders to set up a conservancy that will supplement the legally protected Lake Kanyaboli on jumpstarting the management planning process for designation of Yala as a Ramsar wetland of international importance.</p>

Annex 3 Standard Measures

Code	Description	Total	Nationality	Gender	Title or Focus	Language	Comments
Training Measures							
1a	Number of people to submit PhD thesis						
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						
4b	Number of training weeks provided to undergraduate students						
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)	398	Kenyan	231 M 167 F	welding, tour guiding, fish farming, policy, advocacy and resource mobilization, tree nursery establishment, leadership and governance, data collection, strategic planning and	English	Trainees were able to put their skills into use effectively

					financial management, entrepreneurship and business management		
6b	Number of training weeks not leading to formal qualification	9					
7	Number of types of training materials produced for use by host country(s) (describe training materials)	10	TESSA Toolkit, Training manuals, monitoring protocol etc. (see annexes),				
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)	2			Land use plan Strategic environmental assessment		The processes were participatory at local community and county levels
10	Number of formal documents produced to assist work related to species identification, classification and recording.						
11a	Number of papers published or accepted for publication in peer reviewed journals						

11b	Number of papers published or accepted for publication elsewhere						Location?
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	2	Kenyan	50M 33 F	Present findings of Ecosystem services assessment to Yala planning advisory committee and inter county planning Steering committee	English	Ecosystem services assessment was adopted as the basis for formulating land use plan for Yala Swamp
14b	Number of conferences/seminars/ workshops attended at which findings from Darwin project work will be presented/ disseminated.	2	Regional	M	African Great Lakes Conference	English	

Dissemination Measures		Total	Nationality	Gender	Theme	Language	Comments
					and the Ecosystems Services for Poverty Alleviation (ESPA) Annual Science Conference		

Physical Measures		Total	Comments
20	Estimated value (£s) of physical assets handed over to host country(s)		Computers, printers and binoculars
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						Funding from PREPARED USAID and MacArthur Foundation

Annex 4 Aichi Targets

	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.	✓
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.	✓
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 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.	✓
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.	✓
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.	✓
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.)
Article in Nature net-Nature Kenya's monthly newsletter	Site Support Group capacity building key to biodiversity conservation , Joan Gichuki and John Mwacharo, 2015	Kenyan	Kenyan	Female	Nature Kenya, Nairobi	Nature Kenya, P.O Box 44486-00100, Nairobi www.naturekenya.org
Article in the Kenya Birding Magazine	Inaugural monthly bird walk held in Yala, Emily Mateche, 2015	Kenyan	Kenyan	Female	Nature Kenya, Nairobi	Kenya Birding Magazine, August 2015, Issue No. 9 Nature Kenya, P.O Box 44486-00100, Nairobi www.naturekenya.org
Calendar poster	Yala Swamp is important, John Mwacharo, 2015	Kenyan	Kenyan	Male	Nature Kenya, Nairobi	Nature Kenya, P.O Box 44486-00100, Nairobi www.naturekenya.org
Feature Article in a Newspaper- The East African (Regional newspaper)	Yala Swamp: to conserve or develop?, Rupi Mangat, 2015	Kenyan	Kenyan	Female	The Nation Media Group, Nairobi	http://www.theeastafrican.co.ke/magazine/Yala-Swamp--To-conserve-or-develop-/-/434746/2411792/-/10syjeg/-/index.html
Article in Nature net-Nature Kenya's monthly newsletter	Sustainable management of papyrus stock key to conservation of Yala Swamp, Emily Mateche, August 2015	Kenyan	Kenyan	Female	Nature Kenya, Nairobi	Nature Kenya, P.O Box 44486-00100, Nairobi www.naturekenya.org

Article in Nature net-Nature Kenya's monthly newsletter	The value of traditional knowledge in Yala Swamp IBA monitoring, Emily Mateche, November 2015	Kenyan	Kenyan	Female	Nature Kenya, Nairobi	Nature Kenya, P.O Box 44486-00100, Nairobi www.naturekenya.org
Article in the Kenya Birding Magazine	Birding for conservation in Yala Swamp, Emily Mateche, August 2015	Kenyan	Kenyan	Female	Nature Kenya, Nairobi	Nature Kenya, P.O Box 44486-00100, Nairobi www.naturekenya.org
Magazine	The mounting threat of burning papyrus at Yala Swamp, Simon Shati, August 2015	Kenyan	Kenyan	Male	Nature Kenya, Nairobi	Nature Kenya, P.O Box 44486-00100, Nairobi www.naturekenya.org
Newsletter	Balancing development and conservation in Kenya's largest freshwater wetland – Yala Swamp, Emily Mateche, February 2016	Kenyan	Kenyan	Female	The Darwin Initiative, United Kingdom	http://www.darwininitiative.org.uk/assets/uploads/2016/02/February-2016-SDG-Newsletter-FINAL.pdf *
Article in Nature net-Nature Kenya's monthly newsletter	Why plant papyrus? Emily Mateche, May 2016	Kenyan	Kenyan	Female	Nature Kenya, Nairobi	Nature Kenya, P.O Box 44486-00100, Nairobi www.naturekenya.org
Darwin Newsletter	Towards a Payment for Ecosystem Services scheme for habitat restoration in	Kenyan	Kenyan	Female	The Darwin Initiative, United Kingdom	http://www.darwininitiative

	Yala Swamp, Emily Mateche, May 2016					
Darwin Newsletter	Securing the upstream of Yala Swamp through rehabilitation of the riparian zone of River Yala, Emily Mateche, September 2016	Kenyan	Kenyan	Female	The Darwin Initiative, United Kingdom	http://www.darwininitiative
Conference paper	Biodiversity conservation, ecosystem services, and sustainable livelihoods inform land use planning in Kenya's Yala Delta, Paul Muoria, November 2016	Kenyan	Kenyan	Male	Nature Kenya, Nairobi	Nature Kenya, P.O Box 44486-00100, Nairobi www.naturekenya.org
Article in Nature net-Nature Kenya's monthly newsletter	Conservation of Yala Swamp is our collective responsibility Emily Mateche, March, 2017	Kenyan	Kenyan	Female	Nature Kenya, Nairobi	Nature Kenya, P.O Box 44486-00100, Nairobi www.naturekenya.org
Article in Nature net-Nature Kenya's monthly newsletter	Yala Swamp: Home to East Africa's Papyrus Endemics Emily Mateche, March, 2017	Kenyan	Kenyan	Female	Nature Kenya, Nairobi	Nature Kenya, P.O Box 44486-00100, Nairobi www.naturekenya.org
Article in the Kenya	Birding in Yala with up-and-coming tour	Kenyan	Kenyan	Female	The Darwin Initiative,	http://www.darwininitiative

Birding Magazine	guides, Emily Mateche, Issue 11, 2017				United Kingdom	
Magazine	Protection of pristine papyrus stands crucial for survival of populations of key wildlife species in Yala swamp, Emily Mateche, 2017	Kenyan	Kenyan	Female	Nature Kenya, Nairobi	Nature Kenya, P.O Box 44486-00100, Nairobi www.naturekenya.org

Annex 6 Darwin Contacts

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