BLUE FOREST VANGA

PROJECT IDEA NOTE

For validation using
Plan Vivo Standards

March 2017

Summary Information

Project Title	Vanga Blue Carbon Project
Project location – country/Region/District	Kenya, Kwale County, Lungalunga Sub–county, Vanga
Project Coordinator & Contact Detail	In UK: Association of Coastal Ecosystem Services (ACES). Mark Huxham m.huxham@napier.ac.uk In Kenya: Vajiki CFA Mr. Harith Mohammed Tel. +254 724 921 913
Project Developer (organization and contact name with email address and phone)	Kenya Marine and Fisheries Research Institute Contact Name: James G. Kairo Tel. +254 722 798468 Email: jkairo@kmfri.co.ke; gkairo@yahoo.com
Summary of proposed activities	Four activities are proposed namely: – Afforestation/reforestation, – Avoided deforestation, – Improved forest management, – Promotion of alternative income generating activities
Summary of proposed target groups	The target group is the VAJIKI community forest association (CFA) which comprises three villages adjacent to the Vanga mangrove system
Project Start Date and lifespan	Start date: *TBC* Crediting period: 20 years

PART A:	Project Aims and Objectives
A1	Vanga Blue Carbon Project aims to generate benefits in the areas of climate, community and biodiversity under the Plan Vivo System and Standard. The climate objective of the Project is to prevent the emissions of over 93077 t CO_2 in the 20 years crediting period. Overall, the project aims at maintaining a sustainable flow of goods and services provided by mangrove forests by halting further deforestation and degradation, and contributes to improved community livelihood. Specific objectives of the project are: i. To restore the degraded mangroves of Vanga pilot area through community participation. ii. To prevent continued emissions from the deforestation and degradation in a way that can be measured, reported, and verified iii. To promote long-term socio-economic development of the local communities through income generation from mangrove forest resources, including sales of carbon credits. iv. To enhance community capacity on co-management of mangrove areas
Part B:	**Proposed Project Area**
B1	The project is located in south coast of Kenya, Kwale County (4^{o} 39' 00" S and 39^{o} 13' 00''E) (Figure 1). The project area is part of the transboundary mangroves extending from Shimoni in Kenya to Tanga in Tanzania; and includes a mosaic of mangroves of Vanga, Jimbo, Kiwegu, Majoreni and Sii Island, covering a total surface area of ~ 5000 ha. Sii Island is an important buffer zone of the Kisite Mpunguti Marine Protected Area, owing to its biodiversity and contribution to fisheries.

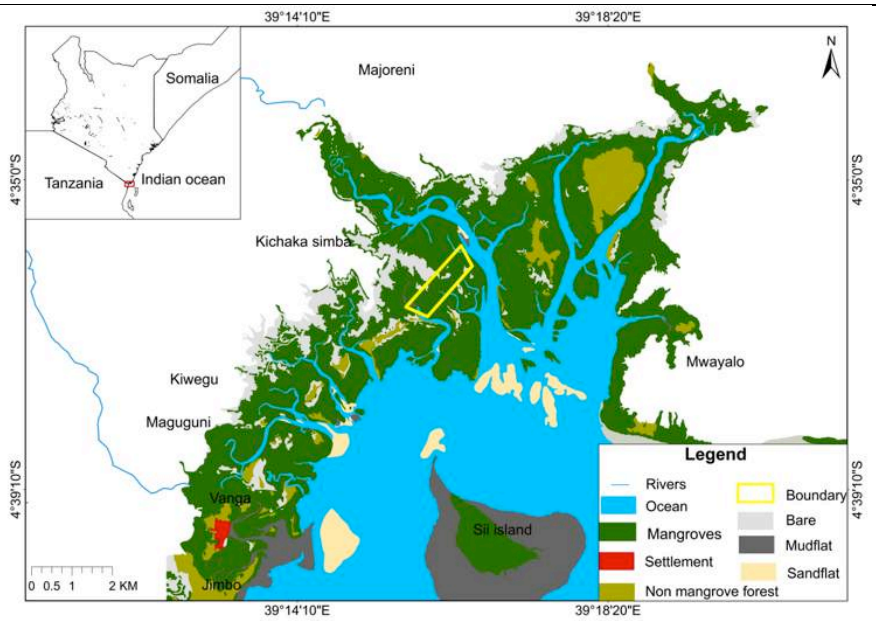

Figure 1. Map of Vanga mangrove ecosystem showing the project area

The Project area experiences tropical wet and dry climate[1]; with seasons strongly influenced by the monsoon winds. Rainfall is bimodal with long rains between April and June, and short rains between October and December [2] . The mean rainfall and temperatures range from 1000 to 1600 mm yr^{-1} and 26 to 30^{o}C, respectively [3] . River Mwena and River Umba that drains from Usambara mountains into the Indian ocean serve the area.

Seven of the nine mangrove species present in the Kenyan coast are reported in the project area. The dominant species are *Avicennia marina*, *Ceriops tagal* and *Rhizophora mucronata* that constitute more than 70% of the forest formation. The mangroves make a rich habitat for fish and other wildlife species; and are a source of livelihood in the project area

Mangroves of the area are exploited for wood and non-wood resources. Based on household surveys, about 87% of the population in Vanga pilot area depends on mangroves for building and energy. Analysis of Landsat data of the project area shows a decrease of

[1]Kottek M., Grieser J., Beck C., Rudolf B., Rubel F. (2006). World map of the Koppen-Geiger climate classification updated. MeteorologischeZeitschrift, 15-3: 259-263

[2] McClanahan, T., Mwaguni, S. and Muthiga, N. (2005). Management of the Kenyan coast. *Ocean and coastal management***48**: 901-93.

[3]Duineveld G.C.A., de Wilde P.A.W.J., Berghuis E.M., Kok A., Tahey T and Kromkamp J. (1997). Benthic respiration and standing stock on two contrasting continental margins in the western Indian Ocean: the Yemen Somali upwelling region and the margin off Kenya. *Deep sea research II* **44**:1293- 1317.

	mangrove forest cover over time. Over the last two decades, the loss of mangroves in Vanga has been estimated at 1.2% by area per year; translating to a loss of 60ha/yr. The loss is higher than the 0.7% national average for mangroves in Kenya[4]. The root causes of mangrove degradation and transformation in Vanga have been identified as population increase, poverty status of the resident community, poor governance, and lack of awareness on true values of mangrove ecosystem. Poor governance manifests itself through illegal harvesting and encroachment of mangrove areas for agriculture and human settlement.
B2	**Average income and main types of income in the area** There are ~6,600 households in the Project area[5]. Dependency ratio is about 1.1, suggesting that only a few people contribute to household income[6]. Artisanal fishing contributes ~80% of the local economy. Other income generating activities include crop farming, animal husbandry, beekeeping and small business enterprises. The wellbeing of the local community is expected to improve with the implementation of the proposed project activities. Considering ~87% of households use mangroves as source of fuel the proposed establishment of woodlots will significantly reduce pressure on mangroves. **Summary of relevant local and national governance structures:** Vanga pilot area is endowed with a wide spectrum of natural resources including mangroves, terrestrial coastal forests, seagrass beds, corals and fisheries. Community access to these resources is governed by local governance structures; enshrined in the Forest Act (2005) for forestry and the Fisheries Act (2008) for marine associated resources. The Law permits community exploitation of natural resources through development of localized participatory forest management plan (PFMP). An approved PFMP already exists for the Vanga pilot area.
PART C:	**Identification of target groups & communities**
C1	The Project targets Vanga, Jimbo and Kiwegu, villages (Figure 1) in

[4] Kirui et al., 2012. *Ocean & Coastal Management* (2012), doi:10.1016/j.ocecoaman.2011.12.004

[5] Government of Kenya (2013). Exploring Kenya's Inequality: Pulling apart or pooling together? Kwale County report, KNBS and SID, Nairobi.

[6] Omwenga, K. (2009). Transboundary socioeconomic monitoring report, KESCOM.

	Vanga location. The total households in these villages are 2,418, with a combined population of ~13,546 people[7]. There are 6,519 males and 7,027 females. The population is youthful with about 79% being below 35 years[4]. There are six ethnic groups namely: Digos, Shirazi Wakifundi, Durumas, Wagunya and Wapemba with Digos representing the highest population (72%). The population is predominantly Muslim[5]. The literacy level is generally low, with 40.5% of the population having no formal education[4]. A majority of the houses are semi-permanent in nature (mud/wood walls, earthen floors and 'makuti' or corrugated iron sheet for roofing). About 87% of households use firewood as the main source of energy. Only 6% of the households are connected to the national grid and the sanitation is generally poor. Generally, women have low representation in decision-making processes. However, they play an important role in fish vending, value addition and run small businesses. The unemployment rate is relatively high with most youth engaging in fishing activities that are seasonal. The local governance structure is such that there is an appointed community leader, representing every 10 households, who reports to the village chairman. The village chairman reports to the assistant chief (Local administrator) who then reports to the chief of the location.
Part D:	**Land tenure & Carbon Rights**
D1	All mangrove forests in Kenya are gazetted, protected and managed as forest reserves under the Forest Act 2005. The Act requires that all national forests, including mangroves, be managed through approved management plans and participation of stakeholders. More specifically, Part IV (Articles 45 – 48) of the Forest Act provides for comprehensive community participation in forest management. The Forest Act also encourages communities living adjacent to forest reserves to register community forest associations (CFAs) in order to co-manage and conserve the forest in collaboration with the Kenya Forest Service. In addition, Article 40 of the Act provides for management of forests for the purpose of carbon sequestration and other environmental services. The Forest Act encourages CFAs to develop management plans for local forests and prescribes traditional forest user rights in terms of goods and services.

[7]Government of Kenya (2010). Kenya Population and Housing Census 2009. Kenya national Bureau of Statistics, Nairobi.

	The proposed Project will be implemented by a registered CFA referred to as VAJIKI (Vanga, Jimbo and Kiwegu) and thus the community will own the carbon rights. KFS has approved a Participatory Forest Management Plan for Vanga pilot area and is in the process of signing for a forest management agreement with VAJIKI. The agreement will enable VAJIKI CFA to carry out sustainable non-consumptive activities in the mangrove forest. In the buffer zones, the project will work with the communities in establishing woodlots for fueldwood inline with national mangrove management plan[8].
Part E:	**Eligible project interventions & activities**
E1	The project envisages generating Plan Vivo Certificates for climate services (carbon sequestration and GHG emissions reduction) from the following interventions and activities:

Activity	**Forest type**	**Area (ha)**	**C benefits (t CO_2 $ha^{-}yr^{-}$)**	**Total annual C benefit (t CO_2yr^{-})**	**Income ($)**
Avoided deforestation	Natural stand	250	17.3[9]	4325.0	30275
Reforestation	10 year old stands (Jimbo)[10]	5	16.5[11]	82.6	578
Reforestation	New plantation	0.5	4	2	14
Total				4409.6	
			Buffer (20%)	881.9	
Total sellable per year				**3527.7**	**24694[12]**

Afforestation/reforestation: The degraded areas of the mangrove forest of Vanga will be restored with appropriate mangrove species. This will enhance biological diversity, biomass accumulation and increased sequestration of carbon by mangroves. Assuming a conservative carbon sequestration

8 GOK (2017). National Mangrove Ecosystem Management Plan (2017-2027). Kenya Forest Service, Nairobi. Kenya

9 Sequestration rate under avoided deforestation is conservatively based on above- and below ground emission rates estimated for dry tropical mangroves (IPCC Guideline 2013). Carbon losses from sediment due to forest clearance are based on carbon flux experiment in mangrove forest in Gazi Bay which is adjacent to Vanga ecosystem (Lang'at et al., 2014).

10 Area of degraded mangroves that have been rehabilitated by community of Vanga pilot area at Jimbo in the last 10 years.

11 Sequestration rates for reforestation exercise area is conservatively based on Kairo et al (2008).

12 Calculation assumes a conservative price of USD7/tCO_2-equivalent.

	potential of ~16.5 CO_2/ha/yr, the activity is expected to offset 82.6 tCO_2/yr from the 5.5ha designated by the community for this activity per year **Avoided deforestation:** The local community has designated 250 ha for this activity. To achieve the activity's objective, several approaches will be employed including; education and awareness to the community on the impacts of deforestation, laws governing forest management and conservation and mangrove monitoring methodologies. The local community will also be engaged in joint regular patrols with KFS rangers and reporting enhanced. Enforcement of the environmental laws and regulations will be made stricter and prompt prosecution of defaulters. Community scouts and KFS rangers will be equipped with suitable monitoring tools and equipment such as GPS and modern communication gadgets. Assuming a conservative carbon sequestration potential of 17.3 tCO_2/ha/yr (Lang'at et al., 2014[13]; IPCC Guidelines, 2013[14]), the emission reduction through avoided deforestation will lead to further sequestration of about 4325.0 tCO_2/yr. **Improved forest management:** In order to mitigate carbon leakage, the project proposes to establish approximately 2.0 ha woodlots in community lands adjacent mangroves. The aim is to generate a sustainable supply of wood and timber and thus remove the pressure on the mangrove forests. This will be achieved through provision of appropriate tree seedlings and technical support on establishment and management of woodlots. The species selected for woodlot is *Casuarina equisetifolia,* which is a naturalized fast growing tree with a single straight trunk bearing branches. The establishment of 2.0 ha of *Casuarina equisetifolia* woodlots with a projected production potential of 15 m^3/ha/yr as reported in tropical and subtropical coastal region (FAO, 2001[15]) is expected to reduce local mangrove wood removal.
Part F:	**Identification of any non-eligible activities**
F1	**Promotion of alternative income generating activities:** The project

[13] Lang'at, et al. (2014) PLoS ONE 9(9): e107868. doi:10.1371/journal.pone.0107868

[14] IPCC (2013). 2013 supplement to the 2006 IPCC guidelines for National Greenhouse gas inventories: Coastal Wetlands. IGES, Japan, 2011.

[15] Mean annual volume increment of selected industrial forest plantation species by L Ugalde & O Pérez. Forest Plantation Thematic Papers, Working Paper 1. Forest Resources Development Service, Forest Resources Division. FAO, Rome (*unpublished*).

	team has many years' experience of supporting community-based initiatives on the Kenyan coast and an extensive network of relevant contacts to help do this. Hence we will use the Blue Forest Vanga project as a platform and catalyst for a range of additional activities. Community organization and business training will be conducted to improve local capacity in forest management and mangrove-based enterprises; such as beekeeping, ecotourism, crab farming, aquaculture and agroforestry. As part of capacity building and economic empowerment, the project will organize seminars through which the community will be trained in entrepreneurial skills. This will include making of business plans, gathering of market information and value addition in order to maximize the earning of artisanal fishers. The project will support the youth in establishment of nurseries for *Casuarina spp. (and other fast growing species)* for sale to the project and other customers. The community will be encouraged to initiate a microfinance credit scheme through which they can borrow small loans. **Socio-economic development:** The community will receive direct benefits from conservation of the Vanga mangrove forest; including, job creation, access to clean water, establishment of education bursary scheme, small business loans, improved health services and other community projects.
Part G Long-term sustainability drivers	Since the Forest Act (2005) fully support participatory forest management in Kenya, this community led project will be indirectly associated with other benefits besides forest conservation and income from the sale of carbon credits. It will contribute to biodiversity restoration and improved fishery resulting to income generation and food security. It is hoped that by the time the project ends, it will have supported the establishment of several income generating projects (contingent on the democratic decisions of local stakeholders; a similar approach is used in Mikoko Pamoja and has proved effective). Mangrove ecotourism will ensure continued flow of funds that will support community livelihood needs. Investment of carbon credit funds in water supplies for households will have multiplier effects such as provision of vegetables and animal products at household levels; which will not only supplement diet but also the income. Bee keeping will be modernized to include processing for the purpose of value addition and hence maximize the profits. Aquaculture projects will be initiated in identified intertidal areas to be a source of income especially during the monsoon when capture fisheries is low. The youth will have regular income through

	the sale of seedlings of fast growing trees such as *Casuarina spp*. At the same time, the community will have an assured income from the sale of tree products from the woodlots. By initiation and strengthening of a credit scheme, the community members will be able to acquire credit facilities for investing in other business activities. The project aims to initiate a bursary scheme which would improve literacy level and eventually help to alleviate unemployment.
Part H	The Vanga Blue carbon project will be implemented by VAJIKI CFA.

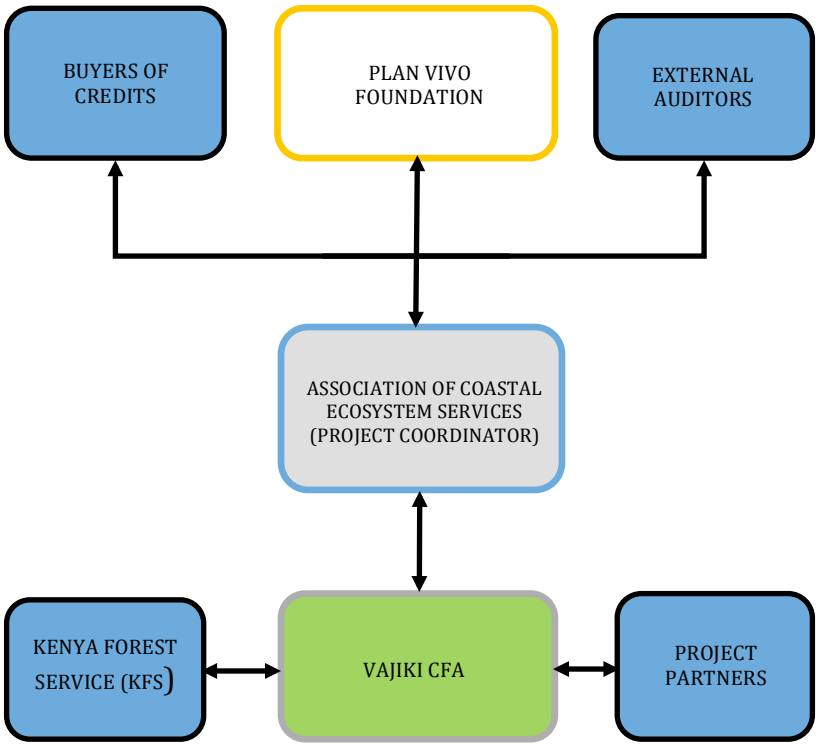

Figure 3:Vanga Blue carbon project organizational structure

Partners

Name	**Kenya Marine and Fisheries Research institute (KMFRI)**
Address	KMFRI P.O.Box 81651-80100, Mombasa, Kenya
Roles and experience	This is a government agency whose mandate is to conduct aquatic research on both fresh and marine resources and advice relevant government policies. KMFRI has a team of experts in aquaculture, fisheries, mangrove management, oceanography, social economics and GIS. The institution has been involved in the

		development of the national mangrove management plan, Vanga mangrove ecosystem participatory management plan, among others. It has also supported several community projects such as aquaculture, bee-keeping, mangrove ecotourism and carbon trading. In the proposed project, KMFRI will be responsible for • Providing technical support during project implementation. • Organizing training programs on forest management and livelihood projects • Educating the community on the challenges of climate change, mitigation and adaptation
	Representative	**Dr. James Kairo** He is a KMFRI senior research scientist in mangrove restoration and management. He is a member of IPCC working group and has a wealth of experience on forest conservation and management having worked in many projects within and outside the country.
	Name	**Kenya Forest Service (KFS)**
	Address	**Kenya Forest Service** **Kwale County, Kwale**
	Roles and experience	A national agency tasked with management of the gazetted and protected forests in Kenya. It has an office in the project area manned by a forest manager that is tasked with sustainable management of the mangrove forest in the project area. KFS works closely with local communities and other stakeholders on implementation of Participatory Forest Management Plans.
	Representative	**Madam Nafasi Mfahaya** The Kwale County Ecosystem conservator is in-charge of management of all forests including mangroves. She has wide experience on participatory forestry management.
	Project Coordinator: The independent, overseas organization which will have oversight of the project and will assist with carbon sales and promotion is the Association for Coastal Ecosystem Services, a charity registered in Scotland that will provide their services voluntarily. A local project coordinator will be employed at the site using revenue from sales. The coordinator will be responsible for overseeing technical aspects	

<table>
<tr><td></td><td>and conducting monitoring of project activities. They will also help coordinate reporting project activities to ACES, the plan vivo foundation, the buyers and the partners. The coordinator will also facilitate community engagements and decision making and ensuring continuous transfer of information to partners. The coordinator will ensure legal compliance by facilitating registration with the relevant government institutions, fair PES agreements and also transparent and due payments of carbon sales.

Applicant organization
<table>
<tr><td>Name</td><td>VAJIKI CFA</td></tr>
<tr><td>Legal status</td><td>A Community Forest Association registered in 2013. As an umbrella body, VAJIKI represents many mangrove user groups in the pilot area; including fishers, mangrove cutters, small scale traders among others. Office bearers of the CFA are democratically elected by community every 3 years.</td></tr>
<tr><td>Representative</td><td>Harith Mohammed</td></tr>
<tr><td>Long term objective of the organization</td><td>- To enlighten the community on the importance of mangroves and reduce their deforestation
- To eradicate poverty and enhance livelihoods through sustainable use of mangrove forest resources
- To conserve and protect biodiversity and socio-culture
- To enhance capacity building of the community through training</td></tr>
<tr><td>Brief history and achievement</td><td>There has been a series of sensitization meetings that led to the formation of the CFA. Since then several forums have been held on leadership training, nature based enterprises, and small businesses.</td></tr>
<tr><td>Current activities</td><td>The CFA is taking part in preparation of participatory forest management plan together with KFS.</td></tr>
<tr><td>Project role</td><td>Main implementer</td></tr>
</table></td></tr>
<tr><td>Part I Community-Led Design Plan</td><td>Community participation in designing the project has been achieved through a series of consultative meetings. The first was held on 9th to 11th December 2014 with participants largely drawn from the VAJIKI Community Forest Association representing Vanga Mangrove Ecosystem. The objectives of the meeting were threefold namely;
i. To appraise the community on the possible potentials of the proposed carbon offset project.
ii. To seek community buy-in on the proposed Vanga mangrove</td></tr>
</table>

	carbon project. iii. To map community activities within and adjacent to Vanga mangrove ecosystem. Generally, the community was highly receptive of the proposed project and actively participated in the identification of beneficiaries and the major threats facing Vanga mangrove ecosystems. The second stakeholders meeting was held on 8th to 13th June 2015 with participants drawn from VAJIKI Community Forest Association (CFA), local administration and the national agencies with some mandate on mangrove conservation with the following objectives: i. To review the existing local Participatory Forest Management Plan ii. To identify and map boundaries of the Vanga mangrove ecosystem iii. To identify of degraded and replanted areas. With local Participatory Forest Management Plan in place, the local community is empowered to co-manage the resource with KFS in the long term and participate in decision making. . The third community stakeholders' meeting was held on November 2015 with following objectives: i. To appraise community progress in Project Idea Note development ii. To seek local community's validation and endorsement of project proposal. The community has validated and unanimously approved the proposed project, through the democratic representation and endorsement of the CFA committee.
Part J Additionality	**Additionality analysis** The proposed project activities, such as forest protection and reforestation are not economically viable without some form of compensatory payments to the local community members. As such, the funds earned from sale of carbon credits will be necessary to implement these activities; the project team has plans to expand and refine our marketing activities through ACES. Although laws and regulations governing protection of Vanga mangrove ecosystem do exist, there has been minimal enforcement largely due to inadequacy in human capacity and finances. This has contributed to ineffective patrols by KFS rangers leading to

	escalation of illegal mangrove harvesting. To curb this barrier, the proposed project will facilitate joint patrols with local community members to enhance forest protection. High poverty levels have also contributed to increased pressure on the mangrove ecosystem. The initiation of alternative income generation activities such as beekeeping, ecotourism, seaweed farming and aquaculture and sale of carbon credits will promote appreciation for conservation while reducing pressure on the mangrove forest. Such community led development initiatives are likely attract further support from the county government of Kwale. Currently, the local community lacks the technical capacity to implement the proposed project activities. Some of the past reforestation activities have been characterized by species mismatch and wrong timing of seedling provenance. Such challenges have contributed to time and labor wastage and thus discouraging the community efforts. In order to overcome these challenges, the proposed project will facilitate restoration training programs in collaboration with relevant agencies that have expertise in mangrove forest management and conservation such as Kenya Forest Service, KMFRI and various Non-Governmental Organizations.
Part K	**Notification of Relevant bodies & Regulations** Vanga Blue Carbon project is aligned with Forest Act (2005), National Mangrove Management Plan (2017-2027), as well as the national development blue print (Vision, 2030) that aim to achieve a low-carbon resilient future. The project is going to monitor any developments regarding Kenya's NDC and jurisdictional approaches to REDD+. The project entity has notified the following government bodies: • Ministry of Environment, water and natural resources • National Environment Management Authority (NEMA) • Kenya Forest Service (KFS) • Kenya Wildlife Service • State Department of Fisheries and Blue Economy • County Government of Kwale The project entity proposes to continually keep the relevant government bodies informed on the progress of the project.
Part L	**Identification of Start-Up Funding**
	• The financial support to facilitate development of the project is

	through KMFRI's research grants funded by Ecosystem Services for Poverty Alleviation (ESPA) program of United Kingdom as well as UNEP's Blue Forest Project. Total financial commitment towards the development of PIN was US$140,000; with additional US$150,000 for developing the PDD. Implementation of the PDD will require additional financing validation/verification of the PDD, community mobilization, as well as employment of project staff to manage the project prior to sale of carbon credits.