COUNTRY PROGRAMME LANDSCAPE STRATEGY FOR THE COMMUNITY DEVELOPMENT AND KNOWLEDGE MANAGEMENT FOR THE *SATOYAMA* INITIATIVE (COMDEKS) PROJECT IN MALAWI

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Yours sincerely, the Research Team

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Cover photo: Agricultural landscape near Tukombo (top) and Tukombo Fish landing site (bottom)

LIST OF ACRONYMS AND ABBREVIATIONS

ADMARC	Agriculture Development and Marketing Corporation
AIDS	Acquired Immuno- Deficiency Syndrome
COMDEKS	Community Development and Knowledge Management for the Satoyama Initiative Project
COP	Conference of Parties
CUMO	Concern Universal Microfinance Organization
EMA	Environmental Management Act
EPA	Extension Planning Area
GOM	Government of Malawi
GEF	Global Environment Facility
HIV	Human Immuno-deficiency Virus
KUDO	Kunyanja Development Organization
MPRSP	Malawi Poverty Reduction Strategy Paper
MARDEF	Malawi Rural Development Fund
MRFC	Malawi Rural Finance Company
NAPA	National Adaptation Programmes of Action
NBSAP	National Biodiversity Strategy and Action Plan
NC	National Coordinator
NSC	National Steering Committee
NEP	National Environmental Policy
SGP	Small Grants Programme
SEPL	Socio-ecological Production Landscapes
SME	Small and medium scale business enterprise
TA	Traditional Authority
VFA	Village Forest Areas
UNDP	United Nations Development Programme

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SUMMARY

Tukombo-Kande area located in Nkhatabay District in Northern Malawi was selected as the target site for the Community Development and Knowledge Management for the Satoyama Initiative project (COMDEKS) in Malawi. The landscape covers an area of 27,000 hectares covering three Traditional Authorities (TA) of Zilakoma, Malengamzoma and Fukamapiri.

The landscape is biodiversity rich, with several pristine vegetation types, and has very high potential for ecotourism, aquaculture, wetland conservation and sustainable agriculture production. It has diverse terrestrial and aquatic biota, and vast agricultural land for production of different agricultural produce. The Tukombo-Kande landscape has massive lake beaches by Lake Malawi which are great potential sites for ecotourism.

The Socio-ecological Production Landscape of Tukombo-Kande was assessed by conducting focused group discussions and key informant interviews with stakeholders from different sectors. A scale rating (1 to 5) of indicators for resilience in production landscapes was adopted from the Satoyama Initiative in line with four main goals of protecting and maintaining biodiversity, increasing agricultural biodiversity, promoting knowledge learning and innovation, and social equity and infrastructure. The main environmental risks of the landscape include high deforestation due to agricultural expansion, traditional brick baking, shifting cultivation, forest fires and overexploitation of tree resources for fish processing. Inadequate water and sanitation amenities constitute some challenges facing the landscape. The soils in the area are poor, and most high nutrient demanding crops do not perform very well. To promote sound socio-ecological production of the landscape there is need for interconnection of agrobiodiversity, for increased agricultural production, wealth creation and continuous provision of ecosystem services for the community. The COMDEKS programme has the objective of promoting conservation of diverse ecosystems for sustainable production of agricultural, aquatic and forestry resources for enhancement of livelihood of all

social groups in the landscape. The objective will be achieved through the following outcomes: (1) Diversified livelihood resources and improved welfare of the landscape (2) Natural woodlands, Village Forest areas and other habitats such as sacred groves, watershed, and aquatic habitats are conserved (3) Sustainable agricultural practices implemented through adoption of agroforestry, crop diversification, conservation agriculture, value addition and processing of produce (4) Community-based ecotourism developed to broaden household income base (6) Community-based institutional governance structures in place.

The COMDEKS programme in Malawi will support local initiatives to maintain and rebuild the socio-ecological production landscape by collecting and disseminating knowledge and the experiences of the community. The successful implementation of the programme is expected to result in sustainable agricultural practices, increased ecosystem resilience, improved access to credit, and improved water and sanitation facilities. The potential projects for funding include those that promote biodiversity conservation, crop diversification, livestock production, bee keeping, value addition and agro-processing, irrigation farming, aquaculture, water and sanitation, and adoption of soil, water and energy saving technologies. Projects that establish and build governance structures for community based organisations (CBOs), village natural resources management committees (VNRMCs), and water and fisheries associations should also be supported.

1.0 INTRODUCTION

The Community Development and Knowledge Management for the Satoyama Initiative (COMDEKS) Project seeks to realize the Satoyama Initiative's vision of promoting sound socio-ecological production landscapes. The Satoyama vision was officially adopted as part of sustainable use in the Convention on Biological Diversity at the 10th Conference of the Parties (COP) in October 2010. Funded by the Japan Biodiversity Fund, the Community Development and Knowledge Management for the Satoyama Initiative Project (COMDEKS) is a unique global project implemented by UNDP as the flagship of the International Partnership for the Satoyama Initiative, and delivered through the Small Grants Programme. Malawi is one of 10 countries taking part in this global pilot, together with Brazil, Cambodia, Ethiopia, Fiji, Ghana, India, Nepal, Slovakia, and Turkey. The main objective of the Project is to develop sound biodiversity management and sustainable livelihood activities with local communities in socio-ecological production landscapes to maintain, rebuild, and revitalize landscapes, in accordance with the following five perspectives of the *Satoyama* Initiative:

- Resource use within the carrying capacity and resilience of the environment
- Cyclic use of natural resources
- Recognition of the value and importance of local traditions and cultures
- Natural resource management by various participating and cooperating entities
- Contributions to local socio-economies

This strategy document, which is referred to as 'COMDEKS Country Programme Landscape Strategy, (COMDEKS CPLS) for Malawi,' was developed with the facilitation and financial support of the Community Development and Knowledge Management for the Satoyama Initiative Project, and financed by a baseline assessment project grant. The overall aim of the baseline assessment project was to produce case study materials, conduct community consultations, mobilize stakeholder participation, identify and pilot indicators for resilience in socio-ecological production landscapes in Tukombo-Kande region, and contribute to the development of the Landscape Strategy.

Specifically the Baseline Survey Research Team was assigned to support the GEF Small Grants Programme (SGP) National Coordinator and National Steering Committee to:

I. conduct a landscape-wide baseline based on a developed set of indicators for resilience in socio-ecological production landscapes;

II. develop the COMDEKS Country Programme Landscape Strategy following the template and guidelines provided for this purpose.

III. synthesize lessons learned from the consultation process and baseline assessment

1.1 Selection of Priority Area for COMDEKS Project in Malawi

The Tukombo-Kande catchment in Nkhatabay District in Northern Malawi was selected due to the existence of a wide diversity of dynamic mosaics of managed ecological landscapes supporting the livelihoods of the communities in the area. The landscape has diverse terrestrial and aquatic biota that are not only vital to the local livelihood, but central to the concept of well-being itself, as variety of food from both ecosystems is considered a manifestation of one's physical, material and social well-being (Nakayama, 2010). There are massive lake beaches by Lake Malawi which are great potential sites for ecotourism if the culture of the inhabitants, agricultural productivity, as well as diversity of the natural resources are considered. The landscape has faced changes in forest cover over the past 30 years where crop fields have expanded at the expense of forest area and use of fallow periods (Kalindekafe *et al*. 2000). There has been rapid practice of slash and burn *(Chitemene*) agriculture and fishing has resulted in high exploitation of tree resources for the production of fish rafters for processing. The landscape has been occupied mostly by the Tonga tribe for several centuries, but other tribes, namely Tumbuka, Ngoni from Mzimba, Chewa from Kasungu, Lilongwe and Nkhotakota, have settled in the area in the past three decades. The inhabitants have deep cultural traditions that have been used in the protection of biodiversity.

1.2 Location

The Tukombo-Kande area is located in Nkhatabay District in the Northern region of Malawi, at about 330 kilometres north of Lilongwe City (Figure 1). The lower boundaries are Dwambazi river/ bridge while the Northern part the strip goes up to Kande Trading Centre, covering an area of about 27,000 hectares. The region is within a single but diverse district with an estimated total area of 407,100 hectares. The region lies within 34^0 E and $34^0$10' E latitude and 11^0 40' to 12^0 15' S longitude at an elevation range of 200 to 700 metres above sea level.

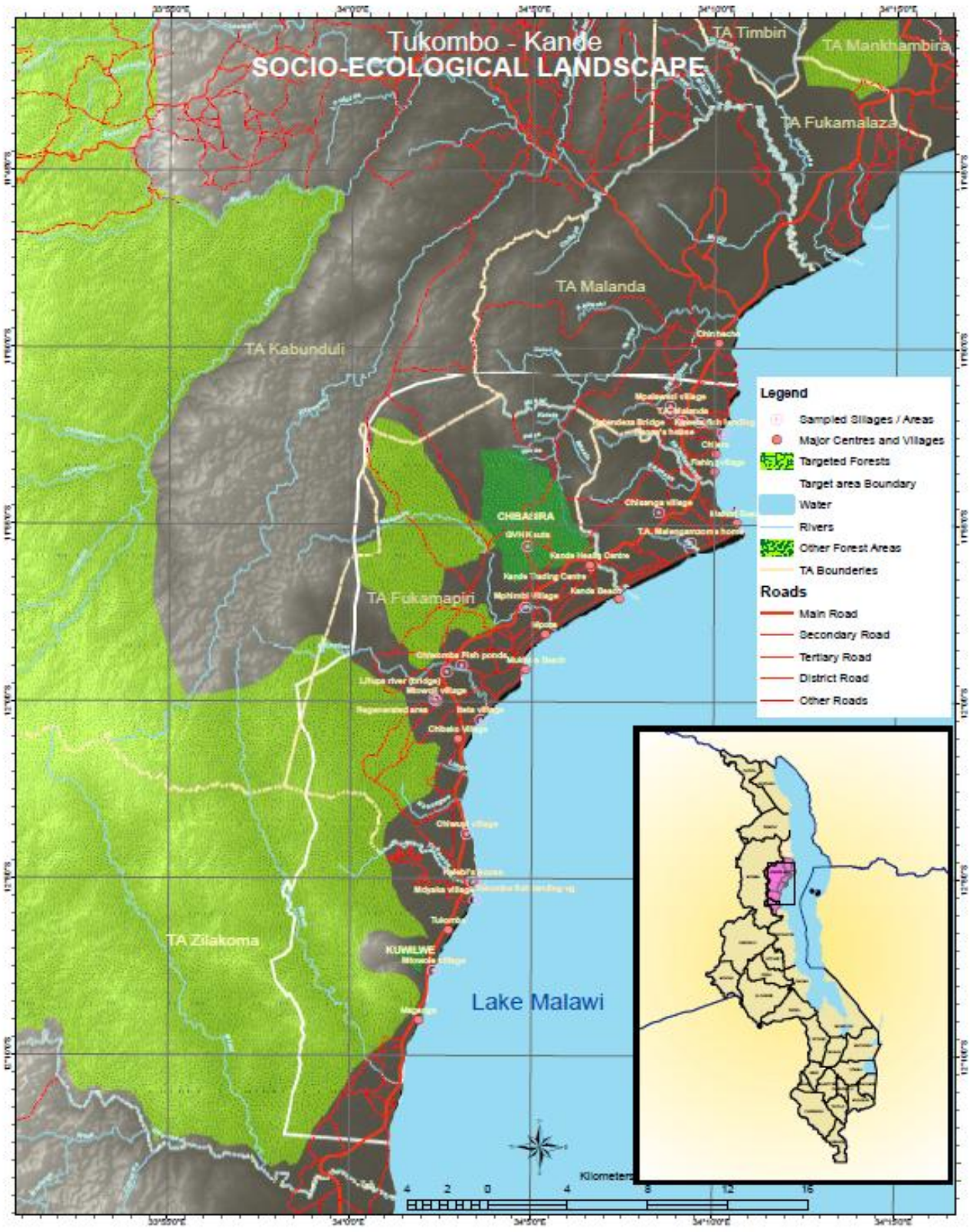

Figure 1. the Tukombo- Kande Socio-Ecological Production Landscape

1.3 Climate

The landscape has a fairly humid climate with annual rainfall ranging from 1200 to 1800 mm per annum with an average of 1400mm. Rainfall in the target area is spread out over a longer period than in other parts of the country. The average monthly temperatures range between 20^0 C and 28^0 C, with low temperatures being experienced in the months of June and July while high temperatures are experienced in the months of October to December. The temperatures are however modified by lake breezes every day and night along the lake shores. The elevation varies from the lake shore plains of 400 to 550 m above sea level to the plateau of 800 metres above sea level. Marshes and wetlands are predominant in the area.

1.4 Geology and soils

The basement complex in Tukombo-Kande region is covered by rocks of amphibolite facies and gneiss of the Pre-Mafingi group of the landscape. There is also a stretch of sedimentary and volcanic rock, but the rocks identified are predominately garnet-mica schist phyllonites and the soils are grouped as latosols dominated by leached ferrallitic and ferrisols. Poor soils, as opposed to rainfall, are main limiting factors of agricultural production in the area.

1.5 Vegetation

The upper landscape begins about 5 km from the lakeshore, and is characterized by natural *Miombo*-Brachystegia woodland. Dominant species are *Brachystegia utilis, Brachystegia manga, B. speciformis, Pericopsis angolensis, Pterocarpus angolensis, Annona senegalensis, Terminalia sericea,* and *Diplorhynchus condylocarpus*. Other tree and shrub species include *Combretum molle, Vitex doniana, Parinari curatellifolia,* and *Bridelia micrantha.* The areas that are very close to the lake shore are dominated by *Ficus sycomorus*, *Syzygium cordatum*, kamphalasa/ *mtatu* and *mgoza*. Apart from natural woodland species, fruit tree species include *Mangifera indica* and *Zizyphus mauritania*. Fruit trees including oranges and avocado pears are found on homesteads. On agroforestry land, tree species such as *Faidherbia albida, Tephrosia vogelli, Senna spectabilis and Gliricidia sepium* are observed on fields reserved for maize and other cereals.

1.6 Biodiversity

The Tukombo-Kande landscape is very heterogeneous, characterised by high mosaics of forest land, agricultural land, beautiful beaches for ecotourism, wetlands, and aquatic systems dominated by fish landing sites. Land use can be classified into five patterns; namely forest land, arable land, fallow land, grassland and homesteads. Grasslands found along the lakeshores serve as grazing land for goats. The indicators of biodiversity adopted included vegetation type and structure, richness of vascular plant species, abundance of wildlife such as animal and fish species, and presence and signs of existence of animals. The area has two very important forest reserves namely Kuwirwe and Chisasira, very close to the Kande area. There are a number of village forest areas (VFA) namely Bonongwe in Traditional Authorities Zilakoma and Chiphika. The tree and shrub species from the forest are used for firewood, medicinal uses, and construction of canoes and rafters for fish processing. The forests are habitats for different wildlife such as birds, rodents, warthogs, monkeys, hyenas, and antelopes among others. The most common birds in the landscape include the Fish eagle, Malachite king Fisher, trumpeter horn bills, and iridescent sun birds.

The rivers have different wildlife such as crocodiles, while the lake has hippopotamuses. The fish species at the twenty one fish landing sites are dominated by *Engarulicypris sadella* (*usipa*), young Usipa popularly known as 'Bonya', *Copadichromis species,* and *Tilapia karongae* (Chambo). Other fish species include *Haplochromine cichlids* (*Mbaba)*, *Bathyclarias* species *"chibomu"* and deep water small to medium sized cichlid fish species *"chisawasawa"*. These fish are caught using different fishing gears. An open water seine net is used for catching *usipa, utaka* and small *mcheni* fish, gillnets are used for catching *kampango,* and *chambo,* and hand lines are used for catching chibomu. The mesh size used for open water seine nets and gillnets depends on the species of fish being targeted. The mbuna fish group is associated with rocky substrates whereas *mtaka* (the utaka group) are known to shoal around underwater rocky protrusions called *virundu.* The topography of the substrate, the currents and the behaviour of fish as well as their resilience to exploitation are important considerations in the methods and social arrangements in fishery operations. Villagers recognize *mbunas'* sedentary behaviour

and dependence on algal growth on the rocks, and the negative impact of sedimentation and exploitation on fishery yields.

The Tukombo-Kande SEPL is currently facing enormous challenges of environmental degradation. Population increase has been a major driving force of diversity change in the landscape. The southern tip of the landscape has faced massive temporary settlements by fish mongers from Salima, Lilongwe and Kasungu districts. The middle section has migrants from Karonga cultivating rice and tobacco tenants from such districts as Thyolo, Mulanje and Phalombe. Increase in population has resulted in encroachment of forest sites, overexploitation of forest resources such as firewood, withies for fish racks, wood for canoe construction, and tobacco racks among others. Despite the ecological, cultural and economic importance of this landscape the area has not received adequate support by Government and non-governmental organizations as it is regarded to still have pristine vegetation. Despite being rich in diversity, beautiful scenery, cultural heritage, historical monuments and other ecologically attractive features (the imposing Lake Malawi), community-based ecotourism development has not been exploited in the study area. Strategies need to be developed before the landscape is highly degraded, to tackle environmental challenges through initiatives that will be implemented through community based approaches.

2.0 ASSETS OF TUKOMBO- KANDE SOCIO-ECOLOGICAL LANDSCAPE

2.1 Socioeconomic profile of the area

According to the 2007/08 enumeration, the Tukombo-Kande area has a population of 58,260 people. Over 11,200 farming families represent 27% of the total farming families present in Nkhatabay District. The major ethnic groups in the area are Tongas (64%) and Tumbukas (33%). 3% of the population is accounted for by Nkhonde, Chewa, Lomwe and Ngoni tribes. The major sources of income and livelihood support for the Tukombo-Kande area are based on agriculture, fishing and small scale businesses. The income sources are ranked as important based on their level of contribution to household resource requirements. The Tukombo-Kande landscape is unique as it has cassava as a predominant food crop. Basic social amenities are available but still very limited.

2.1.1 Agriculture

Incomes derived from crop and livestock commodities sales play an important role in supporting the farming households of the area. Based on group discussions, 40% of the total household income comes from agriculture products. The Tukombo area is suitable for the production of diverse crops and rearing of a number of livestock species such as goats, cattle and pigs. The Baseline Assessment study established that the dominant crops in terms of land allocation are cassava, maize, groundnuts, sweet potato, rice, bananas and beans. Cassava occupies 43% of total croplands, followed by maize which covers 30% of the area. Other crops such as ground nuts, sweet potato and rice cover an equal share of land estimated at 6% each. Agriculture is largely a female dominated occupation since male members consider fishing to be more commercially attractive. The production of commercial crops such as tobacco and soybean is limited to less than 1% of cropland.

The farming communities mainly rely on Agricultural Development Marketing Corporation (ADMARC) and private Agro dealers for buying and selling of high value agricultural outputs and inputs such as maize, rice or fertilizers. The bulk of low value crops e.g. cassava, sweet potato, and leafy vegetables are traded locally and not properly integrated into the urban markets. Commodity prices are extremely low at the peak of the season due to high supply, which exceeds available demand. The area has high potential for irrigation development owing to the availability of several streams. However, irrigation farming is not well developed as only small plots are irrigated using treadle pumps and tunnel irrigation system. Dambo land with potential for irrigation is estimated at 3,172 ha and 1,228 ha for Kande and Tukombo EPA respectively. Flooding in the southern part of the landscape is cited as the main recurrent hazard that destroys maize in the plain areas during February and March, though it typically does not affect the main food crop of cassava. Floods that occur earlier in the season delay the planting and harvesting of maize

2.1.2 Natural resources

The area is well endowed with natural resources such as fisheries, forests and grasslands. Tukombo and Chintheche represent 23% and 22% of total district forest

area, occupying 48000 and 45000 hectares respectively. Community members are involved in the extraction and/or selling of environmental resources, such as hand crushed quarry stone for construction, burnt bricks, handcrafts, and to a small extent firewood and edible soil. The Liuzi, Luweya and Mazembe are rivers of high economic importance in the landscape.

Natural resources are currently characterized by low fish catches, a high rate of deforestation, and increased soil erosion and siltation in water bodies due to river bank and steep slope cultivation. Furthermore, the wanton cutting down of trees and reeds has reduced the quality of the terrestrial and aquatic environment in the affected rivers. Hardwood trees are becoming less common as they are sought out for building, curio carving and canoe construction. The Forestry Department collaborated with other development partners such as RIPPLE Africa, Wild Life Environmental (WESM), and COMPASS II to rehabilitate and conserve natural resources. Activities include bee keeping, and making of energy-saving stoves among others.

2.1.3 Fishing and aquaculture development

Fishing is another major household activity, accounting for 40% of total household income. Just like agriculture, fishing is also seasonal in nature but different fish species are available at different times of the year. The value of the catch therefore varies with the seasons of the year and by day. Fishermen make up to K97,600 (US$238) per day per landing on average. The common fish species in the area are *Chambo, Utaka Usipa, Micheni,* and *Kampango*. Fishermen are currently experiencing declining catches, perceived to be due to use of ineffective vessels/gear but not necessar*i*ly attributable to reduced fish population in the habitat. Fishermen believe that reasonable fish populations are still available in deeper waters, which can be navigated using automated vessels e.g. engine propelled boats.

2.1.4 Small and medium scale business enterprise (SME)

Small scale businesses are an important supplemental source of income. Small scale business income constitutes nearly 10% of total household income. The business sector is somewhat diversified, but most of the traded products are raw or crudely processed. Small scale entrepreneurs display and sell miscellaneous products along the

roadside/shoreline makeshifts or open markets where no shelter is available. Petty trade in natural resources products, foodstuff, dried and fresh fish etc. are localized along the roadside and fish landing sites to cater to travelers, fishermen and other consumers.

2.1.5 Tourism and eco-tourism development

Nkhatabay is a very important tourism destination in Malawi. One important site is Chintheche, 15 km from the northern boundary of the Kande. There are several attractive beaches that are potential sites for tourism. However, important infrastructure such as access roads, chalets, and health amenities remain underdeveloped to fully support a tourism industry. Kande beach has been earmarked for eco-tourism. Other areas with very high potential for tourism include: Muuka Village for village community ecotourism, the Liuzi (located 5 km from Tukombo) waterfront for a lodge, and Mwaya beach (1.3 km from Kande) for a hotel, lodges and camping sites. Formal employment is rare in the region, as very few people are engaged in the tourism industry or public sector services such as schools and health facilities. Less than 1% of total household income comes from formal sector employment.

Table 1. Estimated sector contribution to household income by village

	Proportion of total household income (%)				
Livelihood source	Mngali/ Makwenda (Zilakoma)	Iteta/ Mtiti (Zilakoma)	Mazinga/ Mpalawezi (Malanda)	Mtowoli (TA Fukamapiri)	Mean
Agriculture	28	20	53	60	**40**
Fishing	51	69	30	10	**40**
SME/Petty trade	19	6	10	20	**14**
Wage labour	0	1	2	0	**1**
Others	2	4	5	10	**5**
Total	**100**	**100**	**100**	**100**	**100**

2.1.6 Religion and Cultural heritage

The Tukombo landscape was one of the centers of slave trade in the lake shore region in the late 1800s. Christian Missionaries arrived in the 1890's, and collaborated with traditional leaders to end slavery and spread Christianity. Christian Missionaries built schools and had great influence on the religious beliefs of the inhabitants. Today, 95% of the population is Christian while 1% is Muslim, and 4% believe in African Indigenous Religion or are atheists. The Christians are predominantly Presbyterian and Roman Catholics.

Both the ethnic Tongas and Tumbukas practice a patrilineal marriage system. The Tongas are known for their smartness, and practice different dances: Honala for the elderly people, *Malipenga* for men and women, *Visekese* and *Chilimika* dance for the young people. Songs and folklore related to biodiversity maintenance are used for transmission of traditional messages. Transmission of traditional knowledge from elders, parents and peers to young people has weakened because the children of current generations are not interested and prefer taking after foreign cultures. Parents used to transmit knowledge through teaching in the traditional huts *'mphala'* of boys and girls, but these systems are currently nonexistent. The Baseline Assessment also revealed that the majority of the respondents have resided in the area for over 30 years.

2.2.0 Social amenities and infrastructure development

2.2.1 Public schools and healthcare facilities

The availability of social infrastructure and the quality of services is limited to basic, sparsely located public infrastructure. The level of service delivery is perceived to be low. Even if new infrastructure units are constructed, service quality may not change or actually decline due to stock-outs of essential drugs to effectively cater to the ailing population. In such instances, members use public transport to access the nearest health facility. The community members feel that there is moderate health risk particularly due to malaria prevention campaigns and distribution of insecticide treated bed nets. The major

diseases that affect the people in the area are malaria (fever symptoms), diarrhea, colds, and skin rashes.

2.2.2 Water and sanitation

The area has limited access to clean water-- some people fetch and use untreated water from the lake, or upland residents travel long distances to find borehole water. In some cases sanitation facilities such as toilets are limited and present a high risk to public health, especially during rainy season where episodes of waterborne diseases such as diarrhea and dysentery can be high.

2.2.3 Transport and road network

Public transport is available, particularly along the M5 tarmac road, but there is a poor network across the area. New earth roads are being developed under the public works program (social cash transfer) where community members work for cash.

2.2.4 Access to credit and money lending institutions

Very few money lending institutions are available in the area (mainly localized around Nkhatabay boma) and the cost of lending is usually high. The fishing community expresses willingness to access loans for the procurement of effective fishing gear/vessels such as engine boats.

3.0 SITUATION ANALYSIS OF THE LANDSCAPE

The Government of Malawi has put in place several national instruments and guiding principles aimed at improving the livelihoods of its people, while at the same time maintaining sustainable use of resources for future generations. The goal of the Malawi Poverty Reduction Strategy Paper (MPRSP) is to achieve sustainable poverty reduction through empowerment of the poor via the four main pillars of: promoting rapid sustainable pro-poor economic growth and structural transformation; enhancing human capital development; improving the lives of the most vulnerable, and promoting good governance. The MPRSP mainstreams key cross-cutting issues of HIV/AIDS, gender, environment and science and technology.

Malawi natural resources are threatened by communities that exploit them. Efforts have been put in place to achieve poverty reduction through wise sustainable and economic use of natural resources and the environment. This is to be achieved through implementation of institutional frameworks that support sustainable management as outlined in the National Environmental Policy NEP (1996, 2004) and Environmental Management Act (1996). These policies are further supported by the National Biodiversity Strategy and Action Plan (NBSAP) of 2006. The NBSAP recognizes stakeholder participation in conservation, improving resource accessibility, and promoting fair and equitable distribution of benefits that arise from utilization of biodiversity resources and traditional knowledge.

Climate change is becoming a challenge to agricultural production because it increases risks and uncertainties for farmers. The uncertain and complex nature of climate change requires practical skills across many sectors to reflect on the adequacy of knowledge and skills required to effectively prepare and respond and build resilience in communities.

Building capacity for adapting to climate variability and long-term climate change is one of the objectives of the Malawi National Adaptation Programmes of Action (NAPA). The Malawi Government through the NBSAP and NAPA recognizes that environmental education to enhance public and political awareness and understanding of the need for sustainable environmental protection is the major remedial and preventive measure for the current environmental problems.

3.1 Landscape assessment

The COMDEKS project aims to develop sound biodiversity management and sustainable livelihood activities with local communities in socio-ecological production landscapes to maintain, rebuild, and revitalize landscapes. A baseline assessment of the performance of the Socio-Ecological Production Landscape of Tukombo-Kande was conducted from 14th to 18th October, 2012 in eight villages in four Traditional Authority areas. Key tools used included focus group discussion, key informant interviews with stakeholders from different sectors, transect walks across the landscape, and desk reviews. The stakeholders included five agricultural officers, three lead farmers, two forest officers, one fisheries officer, twelve fishermen, ten local leaders and three representatives of local

NGOs and CBOs. A set of indicators for resilience in socio-ecological production landscapes, developed by the United Nations University-Institute of Advanced Studies along with Biodiversity International as a Collaborative Activity under the International Partnership for the Satoyama Initiative (IPSI), were used during the landscape-wide baseline assessment to assess the performance of the target landscape along the four main goals of protecting and maintaining biodiversity, agricultural biodiversity, knowledge learning and innovation, and social equity and infrastructure. Scores were guided by the COMDEKS score rating of 1 to 5 where 1 denoted poor performance, and 5 best performances for resilience of the SEPL. In addition, six belt transects were systematically located at a distance of 2 km apart while plots of 100m by 100m were randomly placed along each transect running westwards, i.e. from the lakeshore to the upland in order to investigate the distribution of organisms in the target landscape. A visual sampling of the vegetation and taxonomic assessment of the vegetation was conducted covering dominant tree and shrub species, cover and distribution of plant communities. Figure 1 displays the arrangement of transects and the plots within which vegetation was sampled and qualitatively described. Transect 1 was located far southwards close to the Dwambazi River. The last transect was located far northwards, 3 km from the Kande Trading Centre.

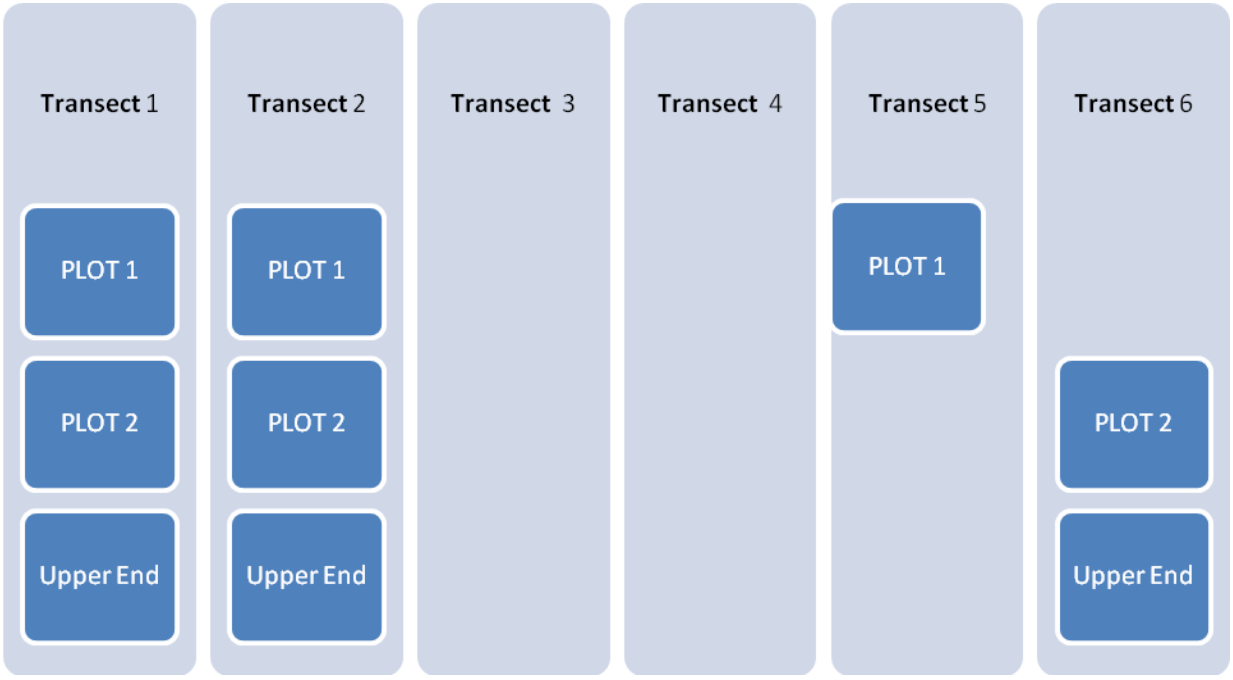

Figure2. A partial panoramic display of transects with plots located along each transect running across the study area.

3.2 Baseline findings and analyses

The landscape assessment was based on the four themes: (i) eco-systems protection, ii) agricultural biodiversity (iii) local knowledge, learning and innovation and (iv) social equity and infrastructure. The initial scores for the different indicators varied across the landscape with the upper part of the landscape scoring highly on ecosystems protection, while the sites very close to the lake were rated very low for social equity and infrastructure. The fish landing sites had inadequate social infrastructure for communication, water, education and health. Overall, the landscape has low scores for social equity and infrastructure, knowledge learning, and infrastructure (Figure 3 and Table 2 below).

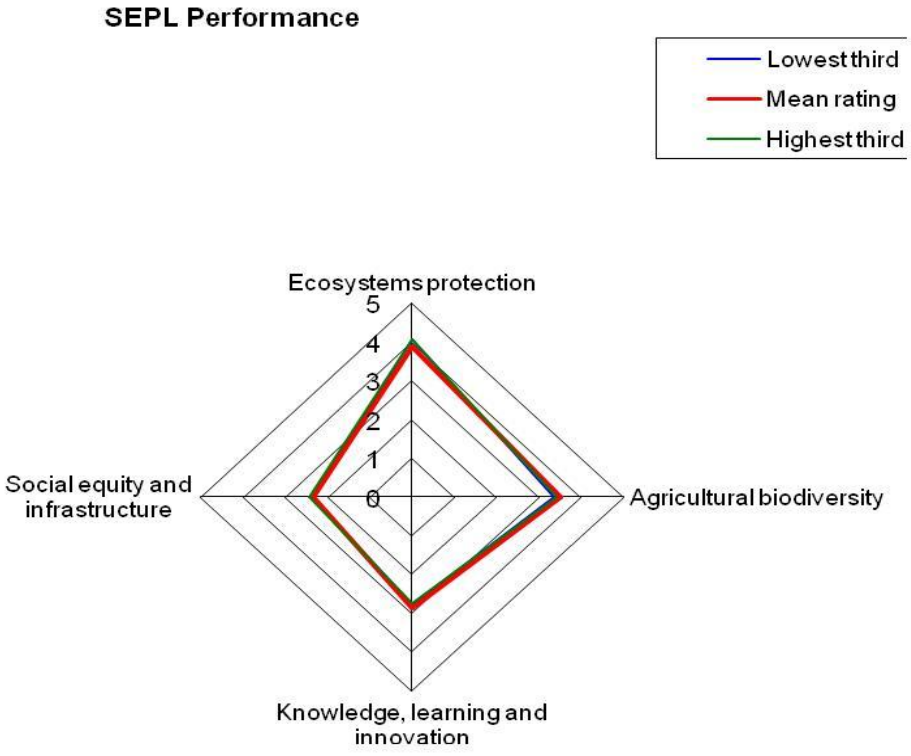

Figure 3: Overall SEPL Performance Indicators of the Tukombo- Kande landscape

Table 2. Summary of over-all rating of the Tukombo- Kande SEPL

	Ecosystems protection	Agricultural biodiversity	Knowledge, learning & innovation	Social equity & infrastructure
Lowest third	4.19	4.13	2.94	3.00
Mean rating	3.88	4.00	2.88	3.08
Highest third	4.07	4.00	2.64	3.00
Std dev.	1.047	0.739	0.908	1.165

Social equity and infrastructure underdevelopment remain a big challenge for communities living very close to fish landing sites because there are no water and sanitation facilities. Construction of pay toilets for improved sanitation along the landing sites (which requires appropriate enforcement mechanisms e.g. supportive regulation banning open defecation and urinating) should be spearheaded by the local authority. Furthermore, access to microfinance would improve social equity, for instance a potential beneficiary village or association may be required to demonstrate environmental stewardship and earn points based on some established criteria such as outstanding ecosystem conservation or construction of latrines for improved sanitation. Even though the regular GEF Small Grants Programme has not supported Microfinance initiatives, a pilot project of village saving loans would provide beneficial lessons. Concern Universal, a non-governmental organization, is implementing village saving loans in two districts in Malawi, and the initiative is bringing tremendous improvement in the livelihoods of the community including conservation of natural resources. The priority for the loan should be to support business enterprises focussing on value addition and innovation while achieving the twin objectives of consolidating environmental conservation and

diversification of livelihood strategies. Examples of value addition and innovative business ideas that the fund can finance may include: preservation and improved market access of fish products, mango processing, apiculture, rice milling and packaging.

3.3 Agricultural biodiversity

The solution to the problem of poor crop harvest is complex. A good start is to promote crop production practices that address the challenges of erratic rains and low yield. For example, irrigation development may be intensified to supplement rain-fed crop production. There is a pool of crop practices that can be adopted to achieve improved production. Climate-smart agriculture technologies such as conservation farming, agroforestry, and improved access to crop varieties (such as early maturing or drought tolerant) are some of the areas to be strengthened. Following changes in rainfall pattern, maize production is slowly becoming significant in the area despite it being more prone to water stress than cassava. Maize preference is driven by its short production cycle and cultural influence from other tribes settling in the area and it is important that only suitable varieties should be promoted. Household dependence on agriculture production is quite high in the area. There is profound need for strengthening community resilience to risks due to erratic weather patterns. The distribution of small ruminants such as goats, rabbits, sheep (using the pass-on principle) and poultry like black Australops, broiler chickens, guinea fowl and promotion of dairy production would be relevant, in terms of income generation, as well making a significant contribution towards attainment of household food security. As a necessary precursor linking farmers to relevant service providers such as small-scale livestock production and availability of extension agents for sound training is key to keeping a healthy flock and achieve high productivity.

3.4 Forest Biodiversity

The landscape contains important forest resources including the Kuwirwe Forest Reserve spanning an area of 984 hectares. The Kuwirwe Forest Reserve was gazetted in 1935 to protect *Pterocarpus angolensis,* an important timber tree species of the Miombo woodlands. The main indigenous tree species on woodland include *Brachystegia* species, *Julbernadia*, *Uapaca* species, *Colophospermum* and *Pterocarpus angolensis*. Part of the landscape is grassland of the species *Hyperrhenia rufa, H. dissolute,*

Themeda triandra, Sangulinus fulva and *Bracharia brizantha* while shrubland of about 20% is dominated by *Cynthia filiformis, Pseudolachnostylis maprouneifolia,* and *Diplorhynchus condylocarpon.* A variety of wildlife exists in the area where animals such as hyenas, Velvet monkey, Black monkey, baboons, lizards, snakes are common. Other small mammals prevalent in the Tukombo-Kande landscape include genet, civet, mongoose, bats and otters.

Encroachment for both settlements and cultivation poses a threat to the landscape's forest resources in Kuwirwe and Tchesamu customary forest. Illegal pit sawing and charcoal burning is commonly practiced in the Tchesamu forest. The major threat to sustainable forest resources management is wanton cutting down of trees for firewood. Each household has a pile load of firewood in readiness for the rainy season, as shown in the picture below:

Figure 4: Firewood storage for use in the rainy season

In addition, there is rampant shifting cultivation in the area for growing of crops such as finger millet and sorghum. Low ratings were given for aggregate ecosystem protection due to threats to the ecosystem from shifting cultivation, wildfire, opening of new gardens due to migration of people from other sites, traditional brick burning, and over exploitation

of forest resources. There is need for interventions in this thematic area to improve resilience of the socio-ecological production landscape.

3.5 Key challenges of the Tukombo- Kande Socio-Ecological Production Landscape

Nkhata-Bay is one of the few districts in Malawi where landscapes have been preserved and fairly under control from deforestation. However, the Tukombo-Kande landscape which includes forests, grassland, lake, rivers, and farm land remains under high threat because the rate of environmental degradation is high. Threats to the landscape include:

- High deforestation due to agricultural expansion, traditional brick baking, shifting cultivation, forest fires and overexploitation of tree resources for fish processing.
- Inadequate livelihood support systems that are in line with community tradition and culture.
- Reduced access to micro credit facilities for enterprise development and expansion. The Tukombo-Kande landscape is not well served by microfinance institutions such as Malawi Rural Finance Company (MRFC), MARDEF, and CUMO. However, it is imperative that the provision of microcredit scheme balances outreach (i.e. number of loan beneficiaries serviced) and loan recovery (ability to repay). There is a need for simplified collateral conditions such as group lending. For example, the grant can support the establishment of village funds or loan schemes that caters for low income groups who are willing to borrow but cannot access bank loans
- Inadequate water and sanitation amenities resulting in high incidence of waterborne diseases such as cholera and dysentery.
- Non-functional governance structures for management of natural resources, especially in the forestry and fisheries sector.
- Unsustainable farming practices that result in low soil fertility, soil erosion and high sedimentation and siltation.

- High incidence of crop pest and disease outbreaks significantly reducing yields of the two major crops of cassava and banana.
- Lack of awareness among community members on cross-cutting issues of climate change adaptation and mitigation, gender empowerment, human rights, alcohol and drug abuse, voluntary counseling and testing, and behaviour change for HIV/AIDS.
- Overfishing of the shallow water fish stocks due to human population growth. The catches of almost all fish species except for *Usipa* have been declining overtime.
- Poor market infrastructure and fishing gear for fish capture, processing and sale of fish products.
- Decreased wildlife populations due to overhunting and habitat deterioration.
- Inadequate promotion, support, and development of the eco-tourism industry.

3.6 Strength, Weakness, Opportunities and Threats (SWOT) for Landscape

The use of SWOT analysis was adopted to better understand positive points (strengths), weaknesses and external factors that would have impacts on the implementation of the strategy for the landscape.

3.6.1 Strengths

These are internal positive attributes that make the landscape conducive for project activities and contribute to the achievement of the objectives. These include:

- Availability of land and productive soils for agricultural production.
- Existence of vast tourism potential sites for promotion of ecotourism.
- Co-existence of different tribes involved in different socioeconomic activities.
- Large proportion of the youth to participate in project implementation.
- Active participation of communities in conservation issues.
- Existence of skeleton village natural resources committees that can be revamped.

3.6.2 Weaknesses

Weaknesses are negative attributes that may prevent the landscape from experiencing more positive effects during and after project implementation:

- Inadequate agricultural and natural resource management extension officers.
- Insufficient locally based non-governmental organizations, and weak governance structures to implement agricultural and natural resources management projects.
- Declining biodiversity and crop diversity
- Weak local institutional structures
- Inherent belief by members of some communities that the landscape has excess natural resources not worthy of conserving.
- The likelihood that other committed NGOs might be left out in project implementation unless a proper criteria is used in the selection process.

3.6.3 Opportunities

Opportunities represent both internal and external factors that the landscape may take advantage of to bring about positive effects. Opportunities that exist for implementation of COMDEKS in the selected area include:

- Capacity of the landscape to attract non-governmental organizations, tourists, and development organizations for project implementation.
- Abundance of water bodies, especially rivers and streams, that can be enhanced for aquaculture and irrigation agriculture.
- Availability of vast land that is amenable to crop and livestock production.
- The available market demand for fish. Fish buyers come from as far as cities of Lilongwe, Blantyre and Zomba, and from neighbouring country of Zambia.
- Goodwill and commitment from the District Assembly to support implementation of the Landscape Strategy.
- Beautiful beaches that would be enhanced for development of eco-tourism.
- High cultural heritage and diversity of tribes that are involved in different professions of fishing, rice production, curios, and cassava production.
- High productivity for such crops as cassava, mango fruits that would act as precursors for value addition and processing.
- Access to the Lake shore Road that connects the northern region and other regions of the country provides means of transport for movement of people and various products.
- Willingness of the communities to participate in agricultural and biodiversity conservation

3.6.4 Threats

Threats constitute external factors that could have negative effects on the project to achieve its objectives. For the Tukombo-Kande SEPL the following were found as threats to the project:

- Unsustainable farming practices, such as shifting cultivation that results in low soil fertility, frequent soil erosion, and high sedimentation and siltation.
- Alienation by communities of some eligible local non-governmental organizations because of active involvement in politics.
- Deforestation, encroachment, and conversion of woodlands to agricultural lands.
- Heavy reliance on natural resources for example dependence on fuelwood as the main source of energy, due to lack of alternative energy sources.
- Lack of awareness among community members on crosscutting issues of climate change, gender empowerment, human rights, alcohol and drug abuse, voluntary counseling and testing, and behaviour change for HIV/AIDS.
- Wrangles of land ownership between traditional leaders and families.
- High suspicion that the project will eventually alienate people from their land may create artificial implementation bottlenecks.

4.0 LANDSCAPE MANAGEMENT STRATEGY

The implementation of COMDEKS Country Program Landscape Strategy should adopt integrated resource management approaches in order to achieve sustainable resource use. The strategies that can be supported are those that provide alternative livelihood options to ease pressure on natural resources, especially in the forest and fisheries sectors.

4.1.1 Vision

Based on the threats, opportunities and expectations of the stakeholders in the Tukombo-Kande landscape the programme interventions should seek to promote sustainable management of land and natural resources by integrating modern agricultural technologies with traditional ecological knowledge and practices to improve resilience of socioecological landscapes. The vision for the programme is *to ensure a resilient socio-ecological production landscape, where the cultural heritage, natural resources, and agro biodiversity remain interconnected for increased agricultural production, wealth creation, and continuous provision of ecosystem services.*

The programme therefore seeks to achieve the following outcomes :

Outcome 1: Natural woodlands, Village Forest areas and other habitats such as sacred groves, watershed, and aquatic habitats are conserved

Activities under this outcome will promote conservation of biodiversity in protected areas (aquatic and terrestrial), Village Forest areas, and important habitats on customary land. The sustainable use of forest resources will also be promoted.

Indicator 1.1:Size of land (hectarage) under afforestation, tree planting and natural regeneration according to ecosystem and habitat types

Indicator 1.2:Number of people participating in conservation of biodiversity or sustainable use of forest resources in the landscape, or involved in sustainable fish farming activities

Indicator 1.3:Number of fishing grounds revitalised along Lake Malawi in the landscape

Indicator 1.4:Number of Environmental and Social Impact Assessment (ESIA) plans developed and implemented for the landscape.

Outcome 2: Sustainable agricultural practices implemented through adoption of agroforestry, crop diversification, conservation agriculture, value addition and processing of produce

Indicator 2.1: Number of hectares where sustainable land use practices are implemented by type, namely: crop diversification, agroforestry, irrigated agriculture, conservation farming, and climate smart agriculture

Indicator 2.2: Number of farm groups/communities and farmers participating in adoption of appropriate technologies and systems including crop diversification, agroforestry, irrigated agriculture, conservation farming, energy saving stoves, mixed farming-livestock systems, etc.

Indicator 2.3: Number of enterprises and infrastructure set up for value addition of produce such as mangoes, cassava and fish.

Outcome 3: Community-based ecotourism developed to broaden household income base and complement agriculture in contributing to long-term food security and landscape conservation

Indicator 3.1: Number of people engaged in ecotourism as a viable and alternative income-generating enterprise

Indicator 3.3: Number of tourist guides trained in hospitality management.

Outcome 4: Community-based institutional governance structures in place for effective integration of conservation and production in the targeted landscape

Indicator 4.1:Number of community based institutions created or strengthened for integrated socio-ecological landscape management, for instance number of village natural resources management committees (VNRMC), farmer clubs,

Civil Protection Committees, health-based community based organizations, etc.

Indicator 4.2: Number of governance structures that are approved by the District Executive Committee

Indicator 4.3: Number of community mechanisms established to enable access to knowledge on SEPL as well as relevant crossing-cutting issues of human rights, gender, HIV/AIDS, and Climate change

Indicator 4.4: Number of COMDEKS lessons learned and best practices captured at the programme level.

Outcome 5: **Diversified livelihood resources for enhanced landscape resilience through improved access to microcredit schemes for enterprise development and expansion**

Indicator 5.1:Number of village saving loan and saving associations formed and functional.

Indicator 5.2: Increase in group deposits/savings and welfare improvements

Indicator 5.3: Clear loan application, appraisal, disbursement and recovery procedures

Indicator 5.4: Number of community groups, artisanal fishers and farm clubs that are linked to lending institutions and able to secure loans.

4. 2 Criteria for Project Selection

The COMDEKS country strategy for Malawi will pay dividends only if appropriate projects are implemented by qualified and committed eligible Non-Governmental Organizations, Community Based Organizations, and tertiary academic institutions that may partner with local institutions. The following is a set of selected criteria for the potential projects:

- Contribution to the realization of the vision of Satoyama Initiative, which is enhancing resilience of the production landscape to ensure communities live in harmony with nature. Projects should address at least one of the identified outcomes in the COMDEKS Malawi Programme Landscape Strategy.

- Addressing issues of resource conservation including value addition, indigenous knowledge and culture transfer, participation of different stakeholders, contribution to socioeconomic market access, and development of community based products (One village one product - OVOP)

- Enhancement of biodiversity of protected areas, communal lands and aquatic life to increase resilience of the ecosystem

- Build and enhance capacity of communities to respond to multiple challenges of land degradation, climate change and variability, and desertification among others.

- Institution building – the potential project should enhance the local governance structures for different resources such as forestry, fisheries, health, agriculture, and microfinance.

- Infrastructure development-project that aims at promotion of community based ecotourism, water and sanitation, infrastructure development, irrigation facility development and moderate farm mechanization.

- The potential beneficiaries that include local NGOs and Community Based Organizations must be registered with the District assembly and must have recognized representatives, and well defined members with recognition of gender equity in decision making positions.

- Acceptance of potential projects by the local stakeholders and communities where the project shall be implemented.

4.3 Potential community based projects for funding

The possible eligible projects will include those that:

i. Promote initiatives for crop diversification, livestock production, bee keeping, and agroforestry systems- crop livestock integration.

ii. Improve shelf life of an agricultural produce, and increase crop-value addition and processing of such crops as rice, cassava, mango fruits and fish species.

iii. Promote restoration of riparian areas, restoration and protection of wetlands and watersheds, restoration of indigenous forests and use of soil and water-saving technologies.

iv. Promote use of alternative materials (plastic or metals) for making of fish racks, shades, mats to save tree resources from excessive extraction.

v. Promote rearing of fish in ponds through identification of suitable sites with adequate water supply for aquaculture development and capacity-building for fish farmers in aquaculture.

vi. Establish and promote adoption of soil, water and energy technologies-: soil conservation, conservation agriculture, irrigated agriculture, water harvesting, energy saving technology for cooking e.g. cooking stoves.

vii. Establish and build capacity of institutions (governance structures) in leadership skills, group dynamics and management of CBOs, VNRMCs, water management associations, fisheries associations, seed sharing networks and cooperatives.

viii. Improve access to credit and market through development of appropriate business plans

ix. Enhance water and sanitation of communities to improve the livelihood of the local people

x. Establish seed banks for developing disease free planting material for important crops of the landscape (banana- bunch top virus; cassava- cassava mosaic virus).

5.0 MONITORING AND EVALUATION SYSTEM

Small Grants Programme- Malawi: The SGP in Malawi will provide quarterly reports to the global COMDEKS project management unit on the progress of the implementation of the formulated strategy based on the approved GEF-SGP project monitoring format. The reports will focus on achievements of the projects, lessons learned, opportunities and best practices that can be scaled out.

Country Programme landscape Level Indicators: The Socio-ecological Production Landscape indicators that were measured during the baseline assessment will be monitored annually while the final assessment shall take place at a workshop financed by a grant.

Project level Indicators: Each funded project will identify the specific landscape strategy outcome to which it is contributing and will monitor the corresponding indicators. The progress towards meeting the outcome will be updated using the grantee's progress reports. Additionally the individual project will have an indicator system that is aligned with the COMDEKS Country Programme Landscape indicators.

5.1 Individual Grant Monitoring and Evaluation

The following minimum standards have been set for monitoring and evaluation of individual grants.

1) ***Ex-ante visits:*** The project management team shall undertake ex-ante visits on a regular basis to grant-requesting organizations upon grant approval by the SGP National Steering Committee and prior to the approval of the Memorandum of Agreement (MOA) between the implementing partner and grantee.

2) ***Field Monitoring Visits-*** Every approved project should be visited at least two times in its life time, upon receipt of the first progress report from the implementing institution and during the following year. The National Committee may be

accompanied by members of the NSC with relevant expertise in the project being monitored.

3) ***Progress Reports:*** Project grantees should submit half- yearly technical and financial progress reports to the SGP National Coordinator. A Forecast of resources required in the upcoming period should also be submitted as a requirement for disbursement of next tranche of funds.

4) **Independent Evaluation-** A grant should be given to the relevant Non-Governmental Organization, Research Centre or academic institution to conduct monitoring and analysis of all projects, Evaluation will be followed by an evaluation workshop. Independent evaluation will assist in the systematic documentation of best practices, and recommended case studies for dissemination.

5) **Final project evaluation report:** Beneficiary organizations shall submit a final report that will summarize global benefits, achievement of goals and objectives, outputs produced, and lessons learned. The final report should include a final financial statement.

6.0 KNOWLEDGE MANAGEMENT PLAN

Knowledge generation, learning and information sharing constitute a major component of the COMDEKS Project. Each grantee is expected to contribute to the generation and documentation of best practices and lessons learned. It is therefore required that each project allocate a portion of its budget to produce specific knowledge products that will be summarised as the lessons learned and best practices. Where appropriate, the SGP may advise the grantees to seek support of research expertise in the relevant area for knowledge management and dissemination. The type of knowledge products that will be directly developed by the grantee and by the SGP country office with support from the COMDEKS Project Coordinators will include:

- Project brochures and posters
- Booklets on best practices and case studies

- Policy papers/ briefs
- Audio or video documentaries on overall progress
- Newsletters that may highlight study tours, achievements
- Training manuals on specific area
- Technical publications in peer reviewed journals

Where appropriate, most promising technologies at the community level should be shared with other communities during Farmer field visits to promote learning and information sharing. The authors should acknowledge financial support provided by the COMDEKS Project.

7.0 REFERENCES

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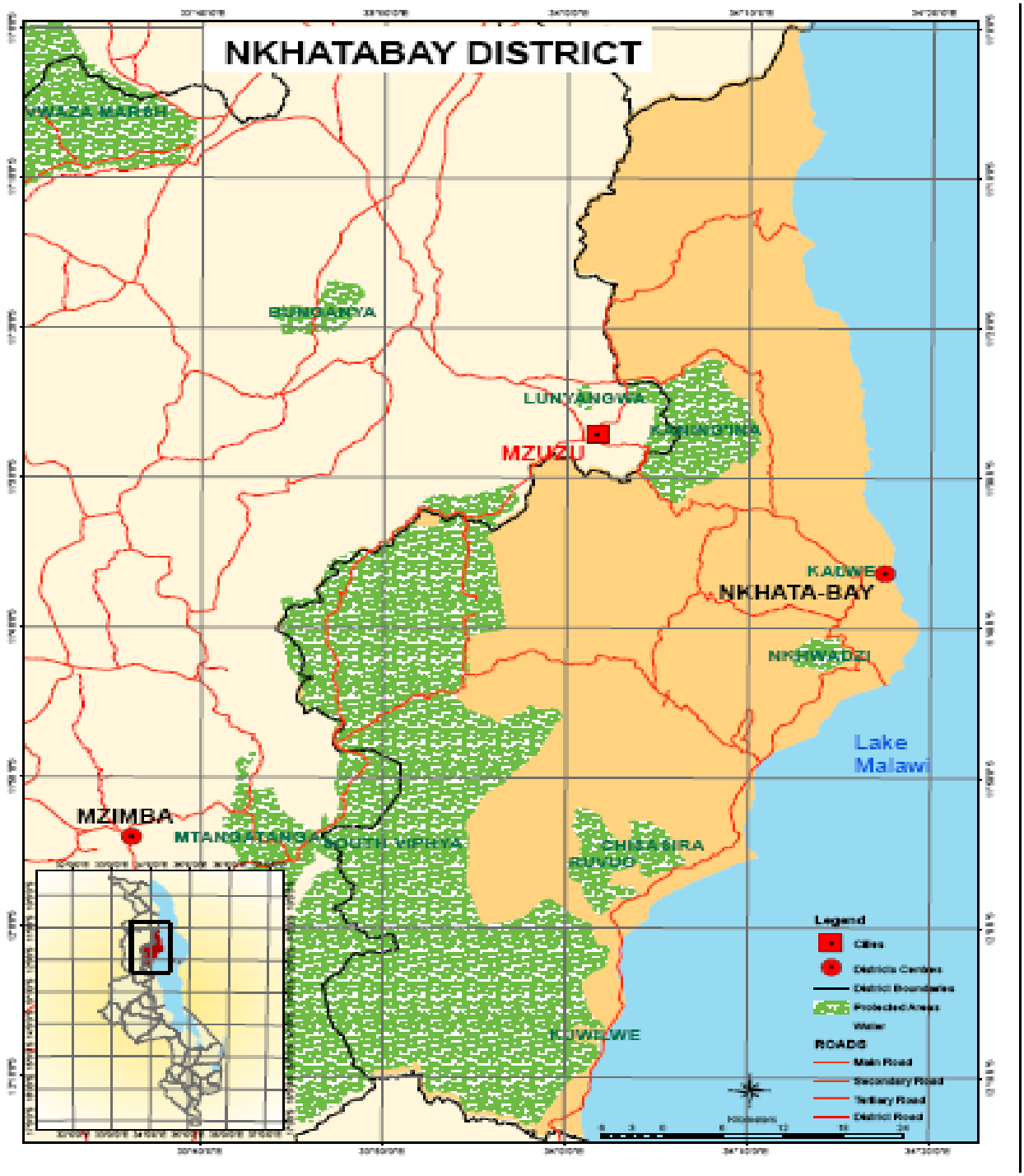
ANNEX 1. MAP OF NKHATABAY DISTRICT- FOR COMDEKS PROGRAMME SITE



APPENDIX 2: PROJECT PLANNING MATRIX FOR TUKOMBO-KANDE SEPL

Hierarchy Objectives	Key performance Indicators	Means of verification	Critical assumptions
Overall Goal: To enhance the socio-ecological production landscape resilience to environmental and human induced threats for improved livelihood of community	No of households with improved livelihoods & participate in agrobiodiversity management No of household adopting appropriate technologies in agricultural & environmental management	Baseline Midterm report Socio-economic survey reports	No more adverse climatic conditions Commitment of Government extension officers Effective collaboration Fuel availability improves
Programme Objective: To promote conservation of diverse ecosystem for sustainable production of aquatic, agricultural & forestry produce including for enhancement of livelihood of all social groups in the landscape	Ha of natural & Village Forest areas conserved No of sustainable enterprises adopted No of communities with access to water & sanitation facilities	Progress reports Field reports COMDEKS Report Independent reports	Commitment by beneficiaries DEC, NGOs supportive of projects
Outcome 1: Natural woodlands, Village Forest areas and other habitats such as sacred groves, watershed, and aquatic habitats are revitalised and conserved	Hectarage under afforestation/ regeneration No of nurseries, VFA, woodlots established Percent of seedlings surviving No of groups involved in fish farming No of fishing grounds rehabilitated/ revitalised	Progress reports Field Reports Records of planting	Communities willingness to participate Season conducive to seedlings survival

Outcome 2: Sustainable agricultural practices implemented through adoption of agroforestry, crop diversification, conservation agriculture, value addition and processing of produce	No of hectares under sustainable land use No of farm groups participating in crop diversification, agroforestry, irrigated agriculture	Field Reports Records of planting GIS Reports	Farmers willing to adopt technologies Environmental factors are conducive to technology advancement
Outcome 3: Community-based ecotourism developed to broaden household income base	No of people engaged in ecotourism as viable IGA No of community-based tourist attraction centers constructed No of tourists visiting the community based tourist centers	Progress reports District Socioeconomic profile Tourist registers	Economy is conducive to development of eco-tourism enterprise District assembly supportive of initiative
Outcome 4: Community base institutional governance structures in place for effective integration of conservation and production in the targeted landscape	No of CBOs created for integrated conservation. No of governance structures with existing by laws No of ESIA and Forest management plans developed No of COMDEKS lessons learned and best practices	Progress reports Minutes of meetings Booklets on best practices and case studies	Local Leaders & communities supportive of committee formation
Outcome 5: Diversified livelihood resources & improved welfare of the landscape	No. of village loan & saving groups No of group deposits/savings Loan agreement forms	Bank deposit slips Annual reports	Willingness of Microfinance Institutions to support communities Groups willingness to repay loans