

LCBCCAP INTEGRATED HOTSPOTS MANAGEMENT PLAN

**CLIMATE CHANGE RELATED ISSUES IN THE LAKE CHILWA BASIN - A TECHNICAL ANALYSIS OF ISSUES,
CAUSES AND EFFECTS**

LEAD Southern & Eastern Africa, WorldFish Center and Forestry Research Institute of Malawi, Zomba, Malawi

(July, 2011)

Executive Summary

Lake Chilwa Basin, comprising the Lake Chilwa and the surrounding three districts of Machinga, Zomba and Phalombe are the impact area for the Lake Chilwa Basin Climate Change Adaptation Programme, which is implemented by the LEAD Southern and Eastern Africa, WorldFish Centre and Forestry Research Institute of Malawi. The Programme is for five years (Jan 2010 – Dec 2014) and is being funded by the Norwegian Government through the Norwegian Embassy to Malawi.

This report presents four key climate change related issues namely: deforestation, fish depletion, low agricultural production and low adaptive capacity to climate change. Each of these issues has been analysed to identify the underlying causes and resultant effects on the social and ecological systems in the basin. The analysis involved rigorous consultations with local communities and experts within and outside the basin. They are presented here and in this format to act as a guide to communities and development partners that are committed to addressing the underlying causes of vulnerability associated with degradation of the environment and natural resources in the basin. Improvements to this draft framework are most welcome.

ISSUE No. 1: Deforestation

CAUSES ¹	EFFECTS	PROPOSED ACTIONS/PROJECTS	LOCATION (Hotspot)	RESPONSIBLE (SECTOR)
<ul style="list-style-type: none"> - Wanton cutting down of trees (firewood, agricultural purposes, fisheries purposes (fish smoking, canoes, drying racks) - Uncontrolled bush fires; 	<ul style="list-style-type: none"> - Loss of soil fertility - Poor harvest - Floods <ul style="list-style-type: none"> o Disease Outbreaks (Malaria, diarrhoea, Schistosomiasis) - Siltation - Depletion and degradation of water sources (water quality and quantity) - Destruction of fish breeding grounds - Loss of biodiversity - Gullies <ul style="list-style-type: none"> o Degradation of aquatic habitats 	<ul style="list-style-type: none"> - Afforestation <ul style="list-style-type: none"> o Tree planting; - Natural regeneration; - Horticulture - Strengthen legal and institutional framework <ul style="list-style-type: none"> o Law Enforcement o Facilitate formulation and training of CBNRMCs o Facilitate formulation and enforcement of regulations - Fire Management initiatives - Increase cover for carbon sequestration - Energy-saving technologies (Alternatives) <ul style="list-style-type: none"> o Solar Driers o Briquettes 	<p>-All Hotspots</p> <p>Priority Areas:</p> <p>Tree Planting</p> <ul style="list-style-type: none"> - Malosa Mountain FR - Zilindo and Namadidi Settlements <p>Natural Regeneration</p> <ul style="list-style-type: none"> - Malosa FR <p>Legal and Institutional Frameworks</p> <ul style="list-style-type: none"> - Zilindo and Namadidi Settlements <p>Fire Management</p> <ul style="list-style-type: none"> - Zomba – Malosa FR - All Community Forests and Plantations 	<p>Forestry</p> <ul style="list-style-type: none"> - FRIM - Forestry Department - Agriculture (Land Resources Dept) - Fisheries Dept - Health

Issue 2: Fish Depletion

¹ There are several causes for deforestation (Please consult Programme Document)

CAUSES	EFFECTS	PROPOSED ACTIONS/PROJECTS	LOCATION (Hotspot)	RESPONSIBLE (SECTOR)
Poor Fishing Techniques <ul style="list-style-type: none"> - Too many fishers² - Illegal fishing gear - Illegal fishing (closed- season fishing) - Use of poison in the rivers 	<ul style="list-style-type: none"> - Reduced fish catch - Conflicts between law enforcers and fishing communities; - Increased fishing effort with low output (Reduced efficiency) - Beach over-crowding <ul style="list-style-type: none"> o Poor sanitation o Disease outbreaks (Water-borne)Cholera - Increased damages 	Improved Fishing Practices	All Hotspots Priority Areas <ul style="list-style-type: none"> - Chisi Island, Kachulu and Mchenga Beaches - 	Fisheries <ul style="list-style-type: none"> - WorldFish - Health
Poor Management of Catch <ul style="list-style-type: none"> - Post harvest losses 		Effective Management of Catch <ul style="list-style-type: none"> - Add value of fish caught - Encourage Savings 		

Issue 3: Low Agricultural Production

CAUSES	EFFECTS	PROPOSED ACTIONS/PROJECTS	LOCATION (Hotspot)	RESPONSIBLE (SECTOR)
Erratic rainfall	<ul style="list-style-type: none"> - Loss of livelihoods <ul style="list-style-type: none"> o Food and nutrition insecurity o Low income levels 	Improve Soil and Water Conservation <ul style="list-style-type: none"> - Conservation Agriculture; Enhance Value Addition <ul style="list-style-type: none"> - Value Chains Promote Early	All Hotspots Priority Areas <ul style="list-style-type: none"> - Ngweleru EPA - Malosa 	

² The number of fishers is rapidly increasing on the beaches

CAUSES	EFFECTS	PROPOSED ACTIONS/PROJECTS	LOCATION (Hotspot)	RESPONSIBLE (SECTOR)
		Maturing and Drought Tolerant Varieties		
Poor land husbandry - Bush burning for land preparation (clearing) - Low adoption of appropriate soil and water conservation practices ³		Improve Soil Fertility -		
Inadequate alternative irrigation technologies	River Bank Cultivation	Promote Alternative Irrigation - Drip Irrigation -		

Issue 4: Low Adaptive Capacity to the Impacts of Climate Change

CAUSES	EFFECTS	PROPOSED ACTIONS/PROJECTS	LOCATION (Hotspot)	RESPONSIBLE (SECTOR)
Cross Cutting issues - Inadequate capacity (Knowledge, skill and resources)	Inadequate integration of climate change in policies and development activities - DDPS - Sector policies, Plans, Programmes and	Capacity Building - Training - Awareness raising (all stakeholders) - Provide resources Promote Upstream – Downstream Linkages	All Hotspots Prioritise: - District Council and Local Government structures - Supported	LEAD - WorldFish - FRIM - District Councils

³ The technologies propagated include contour ridging, box ridges; check dams, vetiver planting, manure application and conservation agriculture. There is need to understand the root cause for low adoption.

CAUSES	EFFECTS	PROPOSED ACTIONS/PROJECTS	LOCATION (Hotspot)	RESPONSIBLE (SECTOR)
	<ul style="list-style-type: none"> - Projects - Constituency plans - NGOs and development partners 	<ul style="list-style-type: none"> and Interventions - Community exchange and dialogue - Improve general knowledge on ecosystem interactions - Improve knowledge on marketing and value chains and cross-sectoral interactions 	<ul style="list-style-type: none"> - groups - Southern Region Water Board and Domasi water waters Association 	

ISSUE 5: Water Borne Diseases (Birharzia, Cholera) and Black flies⁴

CAUSES	EFFECTS	PROPOSED ACTIONS/PROJECTS	LOCATION (Hotspot)	RESPONSIBLE (SECTOR)
<ul style="list-style-type: none"> - Drought - Floods - Routine daily contact - Poor sanitation - Deforestation <ul style="list-style-type: none"> o Forest Fires 	<ul style="list-style-type: none"> - Poor Health - Increased vulnerability to impacts of climate change 	<ul style="list-style-type: none"> - Awareness - Birharzia monitoring and Management Kit - Improved collaboration and responsibility sharing with key stakeholders 	<ul style="list-style-type: none"> All Hotspots Priority Areas <ul style="list-style-type: none"> - All Beaches along Lake Chilwa - Irrigation development areas 	<ul style="list-style-type: none"> LEAD - District Health Offices - District Councils

Note: M & E is a cross-cutting activity and shall form part of the Management Plan

⁴ There is need to develop baseline for monitoring of these in the basin