MALAWI: NAPA PROJECT PROFILE

MALAWI

NAPA PRIORITY PROJECT 1

MALAWI NAPA PROJECT (a)

IMPROVING COMMUNITY RESILIENCE TO CLIMATE CHANGE THROUGH THE DEVELOPMENT OF SUSTAINABLE RURAL LIVELIHOODS

RATIONALE

Poverty in Malawi is widespread and deep, with 65% of the population living below poverty. Over 85% of Malawians live in rural areas, with the majority depending on subsistence rain-fed agriculture, and relying on a single maize harvest for their livelihoods. As such, they are very vulnerable to climate-related natural calamities and disasters, such as floods and droughts, which directly affect agricultural productivity. For example, the 1991/1992 drought and the 2001/2002 floods had devastating effects on crops, livestock, wild animals, vegetation and the environment, which adversely affected many Malawians, especially those living in the Rift Valley areas, such as the Shire Valley, Salima and Karonga. Combined with the impacts of HIV/AIDS, which is killing the productive age groups, orphaned children and the aged are the most vulnerable groups. The poorer segments of the population are affected the most since they have little or no means to cope and adapt in times of disaster or need.

The integrated sustainable livelihood project would enhance people's capacity to cope with and adapt to these natural calamities in vulnerable areas. The major sustainable livelihood interventions for coping with these natural calamities include the promotion of the following: (i) water management, purification and utilization, (ii) crop and livestock production, (iii) growing a diversity of crop varieties and fruit trees and rearing of animal breeds that are drought tolerant; (iv) domestication of indigenous fruit trees, and small animals, such as rabbits and guinea fowls; (v) using agroforestry practices; (vi) fish farming and processing; (vi) agro-processing; (vii) market access; and (viii) cross cutting issues: HIV/AIDS, gender and the environment.

Information and knowledge sharing are necessary for enabling various stakeholders make informed choices and decisions. The stakeholders include policy makers, vulnerable groups, research and extension workers, civil society and the mass media. The implementation of these sustainable livelihood strategies will complement existing programme and projects which the Government of Malawi/UNDP and NGOs, such as Concern Universal, World Vision International and the Miombo Network are doing in some districts of the country. The projects will improve the livelihoods of rural communities, save lives, minimize economic losses, ensure food security, reduce poverty, increase choices and reduce the vulnerability of the rural communities.

This is a project that will require a multi-sectoral approach. The key sectors include agriculture, water, fisheries, wildlife and human health, and private sector organizations, including civil society, non-governmental organizations (NGOs) and community based organizations (CBOs).

DESCRIPTION

Objective

The main objective of this project is to develop and promote user-friendly sustainable livelihood strategies to target communities in areas that are vulnerable to climate change, such as the Shire Valley in southern Malawi.

Activities

The main activities to be conducted include:

- Conducting baseline and resource mapping surveys;
- Using participatory approaches and joint planning activities with rural communities to identify sustainable livelihoods;
- Developing and implementing strategies using a sectoral approach;

- Implementation of project activities through:
    - Demonstrations and technology marketing
    - Capacity building
        - Technical skills
        - Equipment
        - Resources;
- Executing the project in collaboration with rural communities;
- Mounting monitoring and evaluation exercises;
- Reporting;
- Applying the lessons to other areas.

Inputs

The project will require human, financial and physical resources, which will be detailed out in the final project proposal.

Short-term outputs

Sustainable livelihood strategies developed, communities' capacity enhanced, interventions adopted and utilized by rural communities that will enable them adapt and cope with climate-related natural calamities and disasters.
Potential long-term outcomes
Improved quality of life of the peoples, reduced economic losses, and improved access to food and water, increased number of alternative livelihoods (in addition to farming) and enhanced protection of natural resources and the environment.

IMPLEMENTATION

Institutional arrangements

The lead implementing agency will be the Ministry of Agriculture and Food Security. The key stakeholders include: Ministry of Local Government, Ministry, of Lands, Physical Planning and Surveys, Department of Relief and Disaster Preparedness, Ministry of Health and Population Ministry of Water Development, Fisheries Department, academic and research institutions, Department of Meteorological Services, donor agencies, District Assemblies and NGOs.

Risks and barriers

The major risks and barriers include:

- Viability of the developed sustainable livelihood strategies,
- Willingness of local community based organizations (CBOs), NGOs and other institutions to support the initiatives,
- Willingness of the communities to adopt the developed technologies, and
- Local beliefs in implementing the developed technologies.

Monitoring and evaluation

There will be a continuous monitoring exercise by the Ministry of Agriculture and other implementing agencies, while the evaluation exercise will be done by the EAD. Both mid-term and the final monitoring and evaluation reports will be produced.

Log frame for improving community resilience to climate change through the development of sustainable rural livelihoods

	Narrative of the Intervention Logic	**Objectively Verifiable Indicators (OVIs) of Achievement** **Source and Means of Verification (SMV)**
Overall objective	Enabling communities to cope with climate change to ensure food security, reduce poverty and ensure proper utilization of natural resources through the development and implementation of sustainable livelihood strategies	Alternative sustainable livelihood strategies available to rural communities
Project purpose	To develop and promote user-friendly and sustainable livelihood strategies by growing crop varieties and rearing animal breeds that are drought and disease tolerant, domestication of indigenous fruit trees and animals, agro-processing, market access, flood control management and the proper utilization of residual soil moisture in dambos, wetlands and low lying river valleys, as well as mainstreaming cross cutting issues of HIV/AIDS, gender and environment.	• Number and quantity of new crop varieties in use; • Number and quantity of animal breeds in use; • Number and availability of indigenous fruit trees; • Number of people growing "winter" crops, i.e., during the dry season using residual soil moisture; • Number of fish farms established; • Range and number of processed products available; • Number/ age/ gender of beneficiaries trained; • Types and number of skills attained; • Number of enterprises developed; • Number of new markets established.
Expected results	Awareness of targeted communities on: • Growing crop varieties that are drought and disease tolerant; • Rearing animal breeds that are drought and disease tolerant; • Domesticating indigenous fruit trees; • Controlling and managing rainwater and floods; • Managing residual soil moisture; • Utilizing residual soil moisture in an effective and efficient manner.	• Increased adoption and utilization of new and improved crop varieties and animal breeds; • Increased utilization of dambos for crop production; • Improved nutrition through the eating of indigenous fruits, meat, milk and their products; • Reduced flooding and proper use of conserved rain-water for irrigation and domestic purposes; • Increased availability of irrigated crop varieties.
Activities	• Conducting surveys to establish baseline data; • Developing and/or enhancing appropriate sustainable livelihood strategies in collaboration with rural communities using PRA approaches; • Developing and transferring new/improved technologies; • Popularizing new and improved technologies through field days, demonstrations, mass and print media, and the training of rural communities and field extension staff.	Detailed budget (USD 4.5 million) compared with expenditure reports, and project reports (monthly, quarterly and annual).

Project duration

Three years

COST

Estimated at USD 4.5 million

Budget Breakdown

	Year 1	**Year 2**	**Year 3**
Baseline and resource mapping survey	300 000		
Participatory planning for sustainable livelihood	320 000		
Development of implementation strategies (based on sectors)	200 000		
Project implementation			
• Demonstration/technology marketing	600 000	600 000	600 000
• Capacity building			
o Technical skills	150 000	150 000	150 000
o Equipment (windmills)	600 000	600 000	600 000
o Resources (dams)	200 000	200 000	200 000
• Implementation	150 000	150 000	150 000
• Monitoring and evaluation	100 000	100 000	150 000
General project management			
• Operational expenses	100 000	100 000	100 000
• Equipment	75 000	75 000	75 000
• Reporting	25 000	25 000	25 000
• Stakeholder consultations/workshops	100 000	100 000	100 000
• Public awareness/disseminations of findings for replication and application	50 000	100 000	100 000
Total Cost of the Project	**1 800 000**	**1 350 000**	**1 350 000**

MALAWI

NAPA PRIORITY PROJECT 2

MALAWI NAPA PROJECT (b)

RESTORING FORESTS IN THE SHIRE RIVER BASIN TO REDUCE SILTATION AND THE ASSOCIATED WATER FLOW PROBLEMS

RATIONALE

The Shire River, which derives its source from Lake Malawi, is probably the river that has the greatest economic significance to Malawi. Apart from being a source of water and livelihoods to the communities living along its long stretch as it winds to the Indian Ocean, it also provides over 285 megawatts of the 304 total installed capacities of hydroelectric power, and provides water for irrigating sugar cane fields at Nchalo in Chikwawa. The Upper and Middle Shire Valleys catchments, and the riverbanks, are an important source of forests products (timber, poles and firewood) for the rural communities for home use and for sale in adjacent urban centres of Blantyre and other towns. Recently, the Upper and Middle Shire Valleys have been heavily deforested, resulting in heavy siltation and trash accumulation at the water intake dam at the hydro electric power (HEP) plant on the Shire River. Frequent power outages are a burden to the electricity supplier, industry and households. Power outages are also seen as major concern of, and a barrier to, foreign investors.

DESCRIPTION

Objectives

The objectives of the project are to reduce siltation and enhance water flows through the re-afforestation of the Upper, Middle and Lower Shire Valleys catchments by adopting co-management strategies at community level. In addition, this would provide the much sought after firewood.

Activities

The activities to be conducted will include the following:

- Conducting baseline surveys and mapping;
- Carrying out surveys to demarcate areas that will be under tree plantation;
- Training communities and other stakeholders in nursery establishment and management;
- Developing nurseries among rural communities;
- Re-afforesting affected areas;
- Imparting hands-on knowledge and skills on rural communities on how to establish and manage seedlings;
- Monitoring the levels of siltation and trash accumulation at the water intake point of the HEP generators on the Shire River;
- Bee-keeping;
- Sales of fruits and derived fruit products such as juices.

Inputs

The inputs will include Forest Inventory Kit; various farm tools and implements, and training materials, among many others.

Short-term outputs

- Increased ground cover;
- Reduced run-off and soil erosion;

- Increased human resource with technical know-how and improved skills on tree establishment and management;
- Increased supply of trees that can be sustainably harvested for firewood, poles, timber and other construction materials;
- Reduced siltation and trash loads at HEP intake, hence more reliable supply of electricity for industrial, institutional and household use;
- Steady water flow rates in the Shire River, including dry months.

Potential long-term outcomes

- Increased availability of wood and wood products for local use and for sale,
- Increased ground cover and enhanced CO_2 sinks,
- Increased revenue from the sale of forest and forest products,
- Long-term flooding in Lower Shire reduced, and
- Steady water flow rates in the Shire River.

IMPLEMENTATION

Institutional arrangements

The project will be executed by the Department of Forestry as the lead agency in collaboration with vulnerable rural communities. The other stakeholders will include: Department of Meteorological Services, Electricity Supply Corporation of Malawi (ESCOM), Wood Industries Corporation, Non-Governmental Organizations, Community-Based Organizations, Bunda College of Agriculture, University of Mzuzu, Japanese International Cooperation Agency (JICA), SANYU and Wildlife and Environmental Society in Malawi (WESM).

Risks and barriers

- Little participation by communities, as tree planting may not be their number one priority,
- Participation of other institutions and CBOs may not be guaranteed,
- Rains may not be sufficient in some years, so that the establishment of community woodlots, and the plantations themselves, would be adversely affected, and
- Lack of capacity on woodlot management by rural communities.
- Customery land tenure lacking ownership.

Monitoring and evaluation

Monitoring and evaluation will be done by the Department of Forestry, whereas evaluation of activities will be done by EAD. Evaluation will be through monthly, quarterly and annual reports.

Log frame for restoring forests in the Upper, Middle and Lower Shire Valleys catchments to reduce siltation and the associated water flow problems

	Narrative of the Intervention Logic	**OVI of Achievement; and Source and Means of Verification**
Overall objective	The objectives of this project are to reduce siltation and to enhance water flows through re-afforestation of the Upper, Middle and Lower Shire Valleys catchments by adopting co-management strategies.	Availability of alternative sources of attaining and achieving sustainable rural livelihoods.
Project purpose	• To impart knowledge and skills to rural communities on woodlot establishment and management; • To re-afforest Shire Valley catchments; • To train communities and forestry extension staff in the management of forestry plantations, including fire breaks.	• Number, age and gender of people trained; • Number of seedlings planted and area covered; • Number of woodlots established and properly managed; • Number of rural communities and extension staff trained; • Levels of siltation attained; • Levels of trash accumulated; • Flow rates on the Shire determined; • Frequency of power outages and water shortages determined.
Expected results	• Increased supply of firewood and forest products; • Improved skills in fire and forestry management by forestry staff and rural communities; • Increased skills and knowledge in the management of nurseries and woodlots by rural communities.	• Resource maps produced; • Monthly and quarterly reports on firewood and on forestry products used by rural communities; • Number of staff trained; • Number of household trained in woodlot management.
Activities	• Conducting baseline surveys and mapping; • Surveying and demarcating areas to be planted with trees; • Training communities and other stakeholders in nursery establishment and management; • Developing nurseries in rural communities; • Re-afforesting selected areas; • Imparting hands-on knowledge and skills on woodlot, establishment and management; • Monitoring the levels of siltation and trash accumulation at water intake point of HEP generators on the Shire River.	• Detailed budget (USD 2,000 million) versus expenditure reports; • monthly, quarterly and annual reports.

COST

The project is estimated to a cost of USD 2.0 million

Budget breakdown

	Year 1	Year 2	Year 3
Baseline surveys and mapping	100 000		
Train communities and other stakeholders in nursery establishment and management	125 000	50 000	50 000
Develop nurseries in the communities	50 000	50 000	50 000
Re-afforest the selected the affected areas	100 000	100 000	100 000
impart hands-on knowledge and skills on woodlot establishment and management	125 000	50 000	50 000
Monitor levels of siltation and trash at water intake point of HEP generators	150 000	150 000	150 000
Project management Operations Equipment Other resources	200 000	175 000	175 000
Total Cost of the Project	**850 000**	**575 000**	**575 000**

MALAWI

NAPA PRIORITY PROJECT 3

MALAWI NAPA PROJECT (c)

IMPROVING AGRICULTURAL PRODUCTION UNDER ERRATIC RAINS AND CHANGING CLIMATIC CONDITIONS

RATIONALE

The agriculture sector is the driver of Malawi's economy. It contributes 35 to 40% of Gross Domestic Product (GDP), provides employment to 85% of the workforce, and contributes 85 to 90% of foreign exchange earnings and 60 to 70% of raw materials for the manufacturing sector. Any adverse event that affects agricultural production impacts directly on the life of every Malawian. Over 85% of Malawians live in the rural areas deriving their livelihoods from rain-fed subsistence agriculture. Rain-fed agriculture is vulnerable to climate-related natural calamities and disasters, especially extensive dry spells and droughts.

Malawi has experienced changing rainfall patterns in recent years, including changes in the on-set of rains, irregular and uneven rainfall distribution, dry spells, and torrential rains. Some areas, such as Karonga, have sometimes experienced prolonged dry spells and torrential rains resulting in droughts and floods in the same season. The extreme weather events often result in total loss or marked reduction in crop and livestock production. This situation has been worsened by the fact that there are a few initiatives that are specifically targeted at promoting crop and livestock diversification, or the growing of crop varieties or rearing livestock species, that are tolerant to the erratic rainfall and drought.

In the past, the general policy had been to promote maize as the main staple food crop for the whole country, despite the fact that people in some communities, eat sorghum, cassava or bananas as their main staples, and not maize. This approach perpetuated the problem of food insecurity. To improve food security, the government is currently promoting crop diversification, as well as the eating of a wide the range of different foods, such as cassava, sorghum, millets, sweet potatoes, small stock (goats, pigs and sheep), with the overall objective of improving agricultural productivity to ensure food security, improved nutrition, and increased incomes.

DESCRIPTION

Objective

The main objective is to improve agricultural productivity in areas characterized by erratic rainfall so as to improve the living standards and sustainable livelihoods of vulnerable rural communities.

Activities

- Mapping out vulnerable areas and identifying drought tolerant crops such as cassava, millet, sweet potatoes and animals;
- Multiplying and distributing appropriate crop and animal varieties;
- Training farmers and field extension staff on agricultural husbandry practices;
- Disseminating extension messages on the crops and animal varieties;
- Irrigation Farming;
- Training farmers on storage, utilization and value-adding to their crops and animals products;
- Monitoring and evaluation of the programmes.

Inputs

The inputs include equipment, human, physical and financial resource.

Short-term outputs

- Communities in target areas will be growing crops and rearing livestock that are drought tolerant;
- Reduced malnutrition among children and vulnerable groups;
- Increased production of crops and livestock for home use and market sale;
- Communities in target areas will be processing their produce to add value.

Potential long-term outputs

In the long-term, the living standards of rural communities will be improved through the use and sale of excess crops, meat, milk and other processed products.

IMPLEMENTATION

Institutional arrangements

The project will be implemented by the Ministry of Agriculture in collaboration with rural communities, and civil society, including NGOs and CBOs, Bunda College of Agriculture, and other relevant stakeholders.

Risks and barriers

- Destruction of crops, such as cassava, by livestock and wild animals;
- Accelerated erosion due to overgrazing and poor crop and livestock husbandry practices;
- Potential for further disease and insect pest outbreaks if appropriate control measures are not put in place;
- Inadequate land for grazing, due to more land being put to crops, and many animals.

Monitoring and evaluation.

This will be done through the following:

- Monthly and quarterly narrative reports;
- Financial reports;
- Feedback from the communities implementing projects.

MoA will conduct the monitoring exercise on a continuous basis, whereas EAD will coordinate all evaluation activities.

Log frame for Improving agricultural production under erratic rains and changing climatic conditions

	Narrative of the Intervention Logic	OVIs of Achievement; and Sources and Means of Verification
Overall objective	The main objective of this project is to improve agricultural productivity in areas of erratic rainfall, thereby enhancing the living standards of rural communities	Availability of reliable sources of food and cash/income from crops and animals and/or their products
Project purpose	• To introduce improved drought tolerant crop varieties and animal breeds; • To multiply and distribute improved crop varieties and animal breeds; • To train farmers on improved crop and animal husbandry practices; • To train farmers on value adding initiatives.	• Number of improved crop varieties and animal breeds with the communities; • Availability of seed and animal multiplication programmes in the communities; • Number of trained extension staff and rural communities in the management of improved crop and animal husbandry practices; • Number of animals sold or slaughtered for meat; • Amount of milk produced by the communities; • Types and amount of other processed products produced,
Expected results	• Communities in targeted areas are growing drought tolerant crops and rearing small stock (goats and sheep); • Reduced malnutrition among children and vulnerable groups; • Communities are producing excess produce for sale; • Communities are processing produce for sale.	• Number of people in the community growing or rearing improved crop varieties or improved animal breeds; • Number of malnourished children and vulnerable groups; • Number of available crop and animal products; • Number of trained people in proper management of improved crop and animal husbandry practices.
Activities	• Mapping out vulnerable areas and identifying suitable crops and animals for the areas; • Multiplying and distributing appropriate crop varieties and animal breeds; • Training farmers on appropriate crop and animal husbandry practices; • Disseminating extension messages on crop varieties and animal breeds; • Training farmers on storage, utilization and value-adding of the outputs from crops and animals; • Monitoring and evaluate	• Detailed budget (USD 3.00 million) versus expenditure report; • project reports (monthly, quarterly and annual.

COST

Estimated at USD 3 million.

Budget breakdown

	Year 1	Year 2	Year 3
Baseline surveys and zoning areas/crops	400 000		
Seed multiplication	170 000	170 000	170 000
Capacity building • Crop and animal husbandry • Agro-processing/ value adding • Equipment	275 000 300 000	275 000 300 000	275 000 300 000
Extension services	105 000	105 000	105 000
Project management & M&E Operations Equipment Consultative workshop	350 000	300 000	300 000
Total Cost of the Project	1 600 000	1 150 000	1 150 000

MALAWI

NAPA PRIORITY PROJECT 4

MALAWI NAPA PROJECT (d)

IMPROVING MALAWI'S PREPAREDNESS TO COPE WITH DROUGHTS AND FLOODS

RATIONALE

Malawi receives an average of 850 mm of rainfall per year. This amount is adequate for rain-fed crop production, and for recharging underground aquifers. However, the distribution and consistency of the rainfall is very erratic and uneven, so that the whole of Malawi is prone to hydrological droughts. The worst affected areas are central-southern Karonga, the Bwanje Valley and the Shire Valley.

Droughts result in reduced river flow rates, and the complete drying up of rivers. The water table also recedes, thereby affecting boreholes and wells which are major sources of potable water in rural areas. Thus, alternative ways of ensuring adequate water supply for rural communities need to be explored and implemented.

The interventions are likely to be site-specific, depending on terrain, soil type, and methods of water extraction and delivery, among many others. Some of the potential interventions include the construction of medium to large scale dams, and small rainfall harvesting structures, such as water troughs, small dams and infiltration gullies. In addition, deep wells can also be constructed for the provision of water for domestic purposes, irrigation, as well as for animal use.

Floods in Malawi have been associated with heavy upstream rainfall resulting in too much water down stream that leads to the breaking-up of river banks. For example, this is a common feature on the North Rukuru in Karonga, Likangala in Zomba, and the Ruo/Shire Rivers in Chikwawa/Nsanje. An interesting phenomenon around the Ruo/Shire confluence is that the intense flow from the Ruo River tends to block the Shire River, which results in the Shire River swelling up stream. Malawi has also experienced flush floods due to prolonged torrential rains, such as the Phalombe flush floods in 1991 that killed over 1,000 people, and wiped out villages, crops, livestock and property.

Potential interventions include flood protection structures such as levees, dykes, canals, dams, and in the case of Ruo River, diverting the river to meet the Shire at an angle downstream.

DESCRIPTION

Objective

The main objective of the project is to enhance the country's preparedness in swiftly responding to emergencies caused by floods and/or droughts so as to reduce the negative impacts on vulnerable communities.

Activities

The activities will include the following:

- Conducting rapid assessment of drought and flood risks, resulting in flood delineation and zoning maps;
- Establishing flood forecasting and warning systems;
- Developing and implementing flood mitigation measures;
- Establishing drought forecasting and warning systems;
- Developing and implementing drought mitigation measures;
- Capacity building for rapid response to extreme climate change events.

Inputs

The inputs include small equipment, human, physical and financial resources, including vehicles, computers and accessories.

Short-term outputs

These will include the following:

- Flood delineation and zoning maps produced;
- Flood control works established;
- Staff trained to operate and maintain advanced FEW system in place;
- Drought mitigation works established and commissioned;
- Forecasting and early warning systems put in place.

Potential long-term outputs

These will include the following*:*

- Appropriate legal framework on climate change and potential disasters developed;
- Flood and drought preparedness plans developed;
- Multipurpose dams along the Shire River to control flood, conserve water and HEP generation, constructed.

IMPLEMENTATION

Institutional arrangements

The lead institution in the implementation of this project will be the Department of Meteorology in collaboration with the Ministry of Water Development, Ministry of Agriculture, NGOs, CBOs, local communities and The Malawi Polytechnic (Civil Engineering Department).

Risks and barriers

The main risks include the security of structures against vandalism, and the possibility of lack of interest to participate by the targeted rural communities.

Monitoring and evaluation

Monitoring will be done by the Department of Meteorology, whereas EAD will coordinate the evaluation exercise on quarterly basis based on various types of reports. Monitoring will be done monthly through inspection, meetings and expenditure returns.

Log frame for Improving Malawi's preparedness to cope with droughts and floods

	Narrative of the Intervention Logic	OVIs of Achievement; and Sources and Means of Verification
Overall objective	The main objective is to enhance the country's preparedness to respond to the emergencies of floods and/or droughts so as to reduce the negative impacts on vulnerable rural communities.	Capacity to quickly and urgently respond to disasters from floods and/or droughts
Project purpose	• To identify and map vulnerable areas; • To develop forecasting and early warning systems; • To build and install adaptation measures for floods and droughts.	• Numbers of FEWS monitoring stations installed; • Number flood mitigation structures constructed; • Number of members of staff trained and the types of skills; • Number of drought mitigation structures constructed; • Volume of water stored; • Number of dykes or canals (and their lengths) constructed; • Number of rural households trained in the management of water supply structures/systems; • Number of people benefiting/ served.
Expected outputs	• Flood zoning maps delineated; • Flood control works developed; • Staff to operate and maintain advanced FEW systems trained; • Drought adaptation and mitigation works developed; • Forecasting and early warning systems put in place.	• Reports giving details on the number of structures constructed, and the number of people involved and/or affected; • Report on the number of household members; • Number of FEWS monitoring stations that are in operations.
Activities	• Conducting rapid assessment of drought and flood risks, and delineating zoning maps; • Establishing flood forecasting and warning systems; • Developing and implementing flood mitigation measures; • Establishing drought forecasting and warning systems; • Developing and implementing drought mitigation measures.	Detailed budgeted (USD 8.00 million), and project reports (monthly, quarterly and annual).

COST

Funds for the project are estimated at USD 8.00 million.

Budget breakdown

	Year 1	Year 2	Year 3
Rapid assessment and zoning	450 000		
Forecasting and Early Warning system	1 000 000	1 000 000	1 000 000
Capacity building Train staff to man the systems	70 000	70 000	70 000
Flood Mitigation works	800 000	800 000	800 000
Drought mitigation works	400 000	400 000	400 000
Project management & M&E Operations Equipment Consultative workshop	250 000	245 000	245 000
Total Cost of the Project	**2 970 000**	**2 515 000**	**2 515 000**

MALAWI

NAPA PRIORITY PROJECT 5

MALAWI NAPA PROJECT (e)

IMPROVING CLIMATE MONITORING TO ENHANCE MALAWI'S EARLY WARNING CAPABILITY AND DECISION MAKING AND SUSTAINABLE UTILIZATION OF LAKE MALAWI AND LAKESHORE AREAS RESOURCES

RATIONALE

Lake Malawi is one of the world's most important fresh water bodies because of its unique and endemic flora and fauna. Lake Malawi has an estimated 700 to 1000 fish species. It is the largest source of fresh water fish, which constitute about 60-70% of animal protein intake in Malawi, and provides employment to over 300,000 people as fishermen, processors and in primary and secondary marketing and distribution activities. The fisheries sector contributes 4% of the GDP. The lake is the source of Shire River, which produces about 95% of hydroelectric power, and a major source of potable water for the cities of Blantyre and neighbouring towns, such as Chiradzulu. Lake transport is also becoming an increasingly important and cost effective way of linking lakeshore town centres and townships across the border with Mozambique and Tanzania.

The fisheries sector has been experiencing a number of vulnerabilities such as floods and droughts that have led to loss of habitats. These factors have contributed to the decline in fish catches from 60,000 tonnes in the 1980s, to about 40,000 tonnes per year currently. The disappearance of some species, such as Mbuna, whose habitats are threatened by declining water levels and other environmental factors, is a real threat to the fishing industry in Malawi. If the current trends are not reversed, the loss of biodiversity will be inevitable and irreversible. In addition, the short-term fluctuations in wind pattern that have become more variable in recent times due to climate change pose a challenge to fishers; the noted increased temperature may have likely contributed to the decline in fish production as has occurred in Lake Tanganyika. A monitoring and observation system could provide for an early warning system in conjunction with other national and regional systems. This will promote pre-disaster preparedness and formulation of mitigation strategies while adaptation measures are urgently needed to respond to the declined fish catches.

The water levels in Lake Malawi and the Shire River affect water flow rates downstream. For example, the droughts of 1991/92-crop season reduced the hydro-electric power (HEP) generation from 240 megawatts (MW) down to 80 MW. The worst-case scenario occurred between 1915 and 1937 when there was no water outflow from the lake due to lowered lake level, so that during this period the Shire River stopped flowing. There is, therefore, need to monitor the weather, and lake levels on Lake Malawi, so as to develop systems for weather forecasting and for advising stakeholders on possible steps to be taken in the event that droughts and floods strike.

DESCRIPTION

Objectives

The main objective of the project is to establish a climate monitoring and early warning system on Lake Malawi and lakeshore areas for timely provision of accurate information for pre-disaster preparedness to rural fishing and farming communities and to promote short and long-term adaptation livelihood skills to riparian communities in the face of dwindling fish catches.

Activities

The activities to be conducted will include the following:

- Identifying potential sites to install early warning systems in collaboration with the local fishing communities and other stakeholders;

- Procuring, installing and commissioning of equipment;
- Training local staff in the operation and maintenance of the system;
- Collecting, processing, storing, updating, packaging and/or disseminating data and information to various stakeholders;
- Establishing a website for information dissemination and sharing;
- Undertaking research to assess the productivity of fish under erratic rainfall and changing climatic conditions;
- Undertaking mitigation measures based on the above findings;
- Establishing a fish gene bank to maintain genetic diversity of the freshwater fish resources;
- Establishing fish breeding and fish farming sites for restocking, food security and income generation.

Inputs

The project will require human, financial and physical resources, which will be detailed out in the final project proposal.

Short-term outputs

These will include:

- Improved climate monitoring on Lake Malawi and lakeshore areas to improve decision making and provide early warning systems for the fisheries, transport, tourism, water and HEP energy sectors;
- Climate database on Lake Malawi and its shores developed and disseminated;
- Fish breeding and fish farming to safeguard fisheries and to conserve biodiversity developed;
- Fish breeding facilities on Lake Malawi to help restock the fish in the lake and rivers established;
- Fish farming enterprises established.

IMPLEMENTATION

Institutional arrangements

The Project will be executed by the Meteorological Services and Fisheries Departments as lead institutions, in collaboration with the local fishing and farming communities living along the lakeshore districts. Other stakeholders will include ESCOM, Department of Marine Engineering, Department of Tourism, NGOs, CBOs, Mzuzu University and Bunda College. Ministry of Agriculture and Food Security, Department of Parks and Wildlife.

Risks and barriers

Some of the pertinent barriers include:

- Low participation by local fishing and farming communities,
- Resources to undertake the planned activities may not be inadequate, and
- Lack of cooperation from other stakeholders.

Monitoring and evaluation

Monitoring will be done by the Meteorological and Fisheries Departments. The EAD will coordinate the evaluation exercises to assess the impact of the project.

Log frame for improving climate monitoring to enhance Malawi's early warning capability and decision making and the sustainable utilization of Lake Malawi and lakeshore areas resources

	Narrative of the Intervention Logic	OVIs of Achievement; and Sources and Means of Verification
Overall objective	To establish a climate monitoring and early warning system in order to provide timely and accurate information for the sustainable utilization of the Lake Malawi and lakeshore resources.	Availability of decision support systems in support of communities living along lakeshore areas
Project purpose	• To install a climate monitoring and early warning system for Lake Malawi and lakeshore areas; • To process, package and disseminate timely data to all stakeholders; • To promote conservation and fish biodiversity; • To promote fish farming along the Lake Shore areas.	• Number of monitoring stations; • Number of stakeholder connected; • Number or variety of species in the fish gene bank; • Number of fish farming sites along the lakeshore.
Expected outputs	• Improved climate monitoring for Lake Malawi and lakeshore areas to improve decision making for the fisheries, transport, tourism, water and HEP energy sectors; • Climate database for Lake Malawi and its shores developed; • Fish breeding and fish farming programmes to safeguard fisheries and to conserve biodiversity established; • Fish breeding facilities on the Lake Malawi to help restock fish into the lake and rivers established; • Fish farming enterprises established.	• Number of climate-monitoring stations established; • Number of sectors or stakeholders benefiting; • Database and network connectivity established; • Number of enterprises established; • Number, age and gender of entrepreneurs involved; • Number of breeding sites established; • Number of fish farming enterprises established; • Number of rivers restocked with fish.
Activities	• Identifying potential sites to install early warning systems in collaboration with local communities and other stakeholders; • Procuring, installing and commissioning equipment; • Training local staff on how to operate and maintain the system; • Training of local staff on predictive capability and modelling; • Collecting, processing, storing, updating, packaging and/or disseminating data to various stakeholders; • Establishing a website for information sharing and dissemination; • Undertaking research to assess the productivity of fish under changing climatic conditions; • Undertaking mitigation works based on the findings above; • Establishing a fish gene bank to maintain the genetic diversity of fish.	Detailed budgeted (USD 5.43 million) versus expenditure report, and project reports (monthly, quarterly and annual).

COST

The project is estimated to a cost of USD 5.43 million

Budget breakdown

	Year 1	**Year 2**	**Year 3**
Site identification	180 000	50 000	50 000
Procure equipment	1 500 000	100 000	100 000
Train staff	75 000	75 000	75 000
Install and commission equipment	100 000	100 000	100 000
Fisheries research	500 000	350 000	300 000
Fisheries gene bank	275 000	250 000	250 000
Project management	350 000	300 000	300 000
Total Cost of the Project	**2 980 000**	**1 225 000**	**1 225 000**