



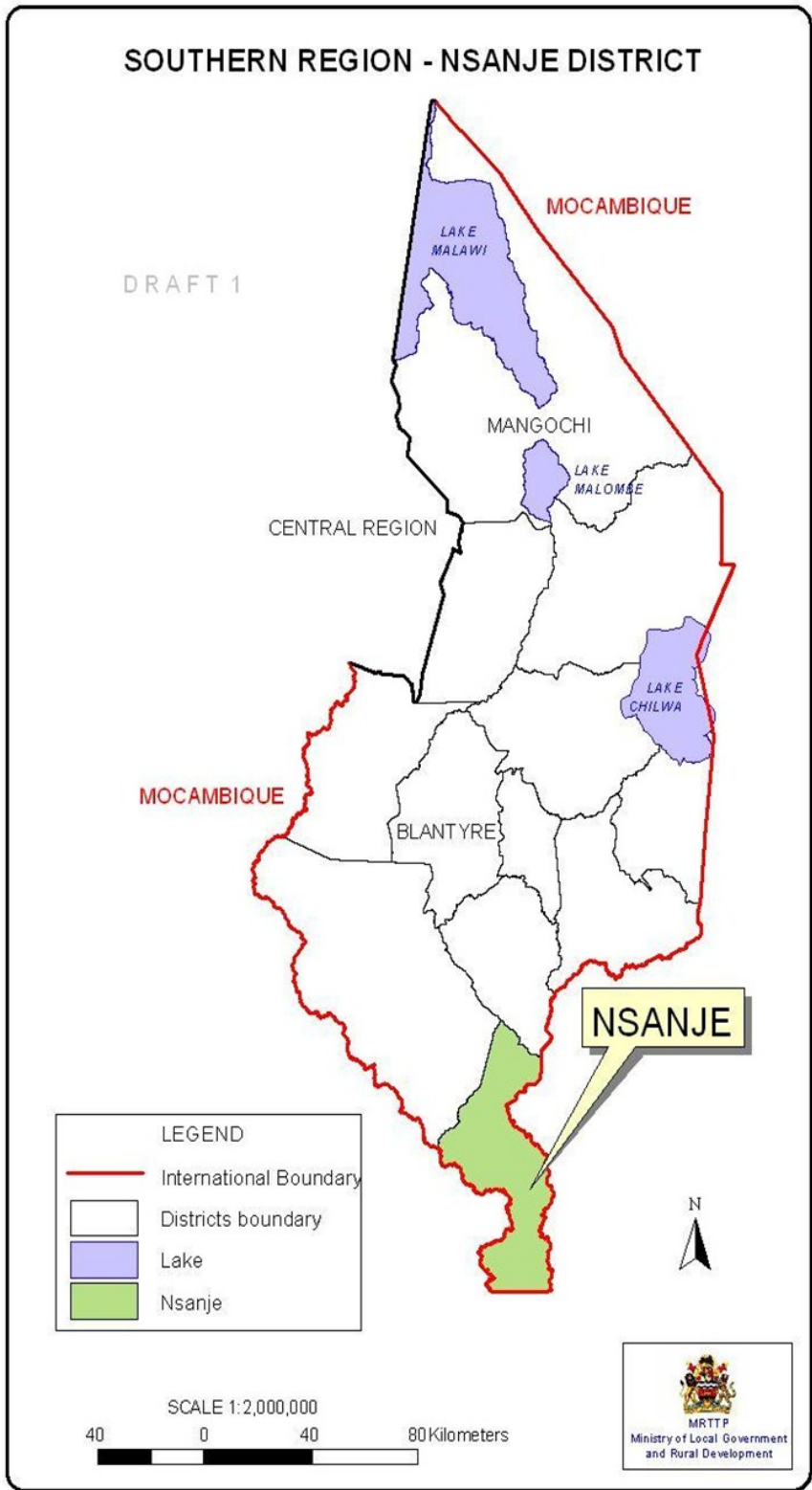
# Nsanje District Floods 2012

## Disaster Impact Assessment & Transitional Recovery Framework



**Recovery as a Means to Resilience**







**Nsanje District Floods, 2012**  
*Disaster Impact Assessment*  
*and*  
*Transitional Recovery Framework*

A report prepared by the Government of Malawi  
with support from  
the World Bank Global Facility for Disaster Reduction and Recovery  
and United Nations Development Programme

**August, 2012**



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## FOREWORD

We are pleased to present the findings of the Disaster Impact Assessment and Transitional Recovery Framework, a joint product of the collaboration between the Government of Malawi and its development partners. This exercise was conducted in Nsanje District to assess the impact and needs for recovery, reconstruction and disaster risk reduction in light of the January 2012 floods.

The World Bank supported the training of national stakeholders in the PDNA methodology in March 2012. As a follow up to the March, 2012 training, this hands-on PDNA training exercise, has not only provided an opportunity for the officers who were trained to put into practice the theory learnt during the training but has also helped identify key recovery, reconstruction and disaster risk reduction recommendations towards finding a long term solution to the recurrent floods in the area.

The aim of this assessment has been to estimate the overall impact of the 2012 floods on the socio-economic development of the country in the affected areas; to formulate a recovery and reconstruction framework and to ensure that strategies for recovery incorporate the need for long-term resilience building measures.

We are delighted that the recommendations of the assessment will feed into resilience building programs such as the Integrated Flood Risk Management Plan for the Shire Basin.

This report highlights the foundations laid towards establishing a Transitional Recovery and Reconstruction Framework – an action plan including institutional arrangements, implementation, coordination and M&E mechanism for longer term recovery and reconstruction from this disaster.

We would like to acknowledge the technical and financial support received from the World Bank Global Facility for Disaster Reduction and Recovery as well as the participation of other partners such as UNDP, Malawi Red Cross Society, and Total Land Care in successfully completing this exercise.

The Government of Malawi is fully committed to taking forward the recommendations of the report and we believe that the work accomplished here will allow us to continue to build long-term resilience in the Lower Shire Basin.

**Jeffrey L.C. Kanyinji**

**SECRETARY AND COMMISSIONER FOR DISASTER MANAGEMENT AFFAIRS**

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Over 50 experts from 14 government ministries and departments came together to complete this assessment including the following: Department of Disaster Management Affairs, Ministry of Agriculture and Food Security, Roads Authority, Ministry of Health, Environment Affairs Department, Ministry of Water Development and Irrigation, Energy Department, Ministry of Information, Mines Department, Department of Physical Planning, Department of Housing, National Statistics Office, Office of the President and Cabinet, and Ministry of Economic Planning and Development. Other partners such as Malawi Red Cross Society and Total Land Care also participated in the assessment.

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## Acronyms

BBB	Build Back Better
BOP	Balance of Payments
DaLA	Damage and Loss Assessment
CSO	Civil Society Organization
DCPC	District Civil Protection Committee
DEM	District Education Manager
DoDMA	Department of Disaster Management Affairs
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
ECLAC	Economic Commission for Latin America and the Caribbean
EPA	Extension Panning Area
GDP	Gross Domestic Product
GFDRR	Global Facility for Disaster Reduction and Recovery
GoM	Government of Malawi
GVH	Group Village Headmen
HRNA	Human Recovery Needs Assessment
M&E	Monitoring and Evaluation
IHS3	Third Integrated Household Survey
MGDS	Malawi Growth and Development Strategy
MDF	Malawi Defense Force
MK	Malawi Kwacha
PDNA	Post Disaster Needs Assessment
NGO	Non-Governmental Organization
PWP	Public Works Program
TA	Traditional Authority
UNDP	United Nations Development Program
UPE	Universal Primary Education
WASH	Water, Sanitation and Hygiene
WATSAN	Water and Sanitation
WB	World Bank
WFP	World Food Programme

# Executive Summary



## Quick Facts

- 10,376 people affected
- Cost of damages and losses about \$3million
- Most affected sectors: housing, water and sanitation, and agriculture
- Recovery and reconstruction needs estimated at \$7.3million
- Disaster Risk Reduction needs are estimated at US\$ 1.5 million
- The total recovery needs is estimated to US\$ 0.665 the bulk of which is concentrated in the agriculture

## Flood Occurrence and People Affected

In January 2012, the area of TA Mlolo in Nsanje District was hit by two floods caused by the swelling of Ruo and Shire Rivers due to heavy rains. The major brunt of the disaster (71%) was felt by the private sector which represents individuals and communities (see Figure i.) The floods affected 2,887 households translating to 10,376 people, which is 4% of the population of Nsanje District. Out of these affected people 6,159 were displaced because their houses were damaged.

## Response Operations

The Nsanje District Council coordinated the provision of immediate relief assistance to the affected people through the District Commissioner, assisted by the Assistant District Disaster Risk Management Officer and members of the District Civil Protection Committee. (DCPC) At national level, the response operations were coordinated by the Government's Department of Disaster Management Affairs (DoDMA).

The second flooding affected a larger area and trapped several people who were not able to evacuate from the affected areas on their own. The Malawi Defense Force (MDF) assisted in evacuating the trapped people at the request of DoDMA. The Malawi Police Service also assisted in the rescue and evacuation operation. Relief camps for the evacuees were located at Osiyana,

Mchacha James and Makhanga in TA Mlolo; and Bangula and Kadyamba in TA Mbenje.

The Government, through DoDMA, non-governmental organizations (NGOs), civil society organizations (CSOs), the private sector and development partners provided different forms of relief assistance for distribution to the affected people. The donated items included food, non- food items, medical supplies and farm inputs to be used for recovery interventions.

Once the emergency needs were met, the World Bank supported the training of national stakeholders in the Post Disaster Needs Assessment (PDNA) methodology in March 2012 in response to a request from the Government (DoDMA). This assessment provided an opportunity to the officers to put into practice the theory learnt during the training by undertaking an assessment for the January 2012 floods in TA Mlolo.

## Summary of Damages and Losses

Overall, the combined monetary costs of the damages and losses as a result of the floods, has been estimated at MK 810.3 million (US\$ 2.9 million.) This can be broken down into MK 385.4 million (US\$ 1.4 million) in damages to assets and MK 424.9 million (US\$ 1.5 million) in losses to the economy. (See Table 1)

Disaster Effects by Ownership

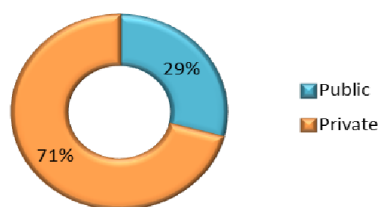


Fig 1: Disaster Effects by Ownership

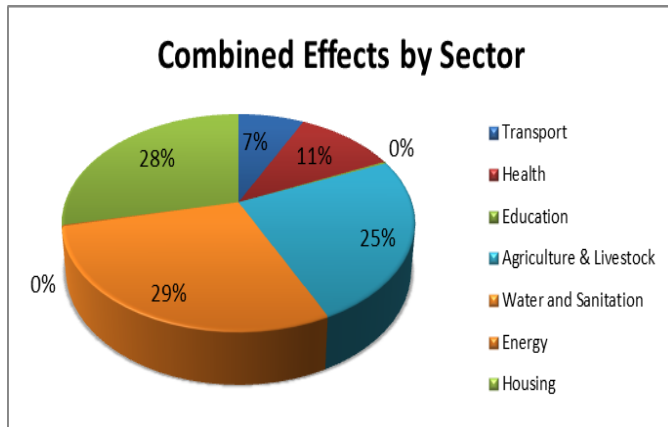


Fig 2: Combined Effects by Sector

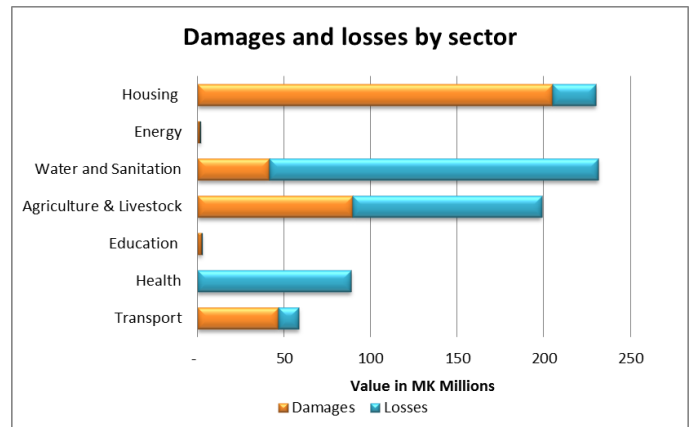


Fig 3: Damages and Losses by Sector

### Effects of the disaster on each sector

From a monetary standpoint, the most affected sectors are housing (28%), water and sanitation (29%) and agriculture (25%) whose combined effects constitute over 80% of the total disaster effects. While the housing sector suffered the highest amount of damages (MK 204.5 million or US\$ 743,817), the water and sanitation sector suffered the highest losses (MK 190 million or US\$ 690,978). The majority of the effects on the transport sector were in the form of losses. While no damages were reported in the health sector, the sector suffered effects solely in the form of losses. (See Fig 2 & Fig 3.)

### Recovery and Reconstruction Needs

The overall recovery and reconstruction needs for this disaster are estimated at MK 2 billion (US\$ 7.3 million). The various sector teams have additionally identified disaster risk reduction interventions that are over and above the other needs identified and which are indicative in nature. These indicative DRR needs are estimated at MK 418.1 million (US\$ 1.5 million) and are elaborated upon in the respective chapter. Table 1 below provides an overview of recovery, reconstruction and indicative DRR needs.

Table 1: Overall Effects of the Disaster

Overall Effects of the Disaster						
Sector	Damages		Losses		Total	
	MK, Million	US, \$	MK, Million	US, \$	MK, Million	US, \$
Transport	46.7	169,673	11.8	42,764	58.4	212,436
Health	-	-	88.7	322,505	88.7	322,505
Education	2.2	8,116	0.0	7	2.2	8,124
Agriculture & Livestock	89.5	325,407	109.1	396,766	198.6	722,173
Water and Sanitation	41.2	149,938	190.0	690,978	231.3	840,916
Energy	1.2	4,480	0.0	37	1.2	4,517
Housing	204.5	743,817	25.3	91,898	229.8	835,715
<b>Total</b>	<b>385.4</b>	<b>1,401,431</b>	<b>424.9</b>	<b>1,544,955</b>	<b>810.3</b>	<b>2,946,386</b>

Table 2: Overview of Disaster Needs

Sector	Needs (MK, Million)			
	Recovery	Reconstruction	Total	Indicative DRR Needs
Transport	-	46.7	46.7	1.3
Health	27.5	-	27.5	98.5
Education	0.3	0.3	0.6	72.0
Agriculture & Livestock	130.1	88.9	219.0	4.0
Water and Sanitation	24.0	194.2	218.2	219.0
Energy	1.2	17.7	18.9	2.5
Housing	2.6	1,501.2	1,503.8	20.9
<b>Total</b>	<b>185.8</b>	<b>1,849.0</b>	<b>2,034.8</b>	<b>418.1</b>

The total recovery needs identified amount to MK 185.8 million, the bulk of which is concentrated in the agriculture sector in the form of food for households and agricultural inputs such as seed, fertilizer, and pesticides.

The total reconstruction needs identified for the floods amount to MK 1,849 million. Beyond rebuilding destroyed assets, reconstruction needs incorporate a “build back better” factor to ensure resilience of the intervention. Reconstruction needs are highest in the housing, and water and sanitation sectors, rehabilitation and maintenance of safe water points (boreholes) and the construction of water supply systems in new settlements (see Table 1). A total of 2887 houses which were either partially or fully damaged by the floods need to be built in an area free of floods.

In light of the recurrent disasters in the region, it is important that longer term disaster risk reduction measures are undertaken in each sector and these needs may separate from the recovery and reconstruction needs. PDNA teams have undertaken the first step in analyzing disaster

risk reduction needs in their respective sectors though the identification of key projects and programs with indicative costing. This is neither intended to be exhaustive nor final however, they could form the basis of dialogue going forward. The total DRR needs have been estimated at MK 418.1 million.

DRR interventions cover a broad range of activities across sectors. Examples of such interventions include capacity building of extension staff and the construction of flood control structures along Thangadzi and Ruo Rivers. Note that not all interventions may be cost-estimated here since some interventions, especially larger structural ones, may require detailed feasibility studies. The PDNA sector teams clearly identify the need for DRR highlighting the benefits (in terms of avoided losses) that these investments bring. Thus, it would be critical for the recommendations of this report to be viewed in light of DRR initiatives such as the Shire Flood Risk Management Action Plan for detailed practical planning, synergy building and implementation of such initiatives

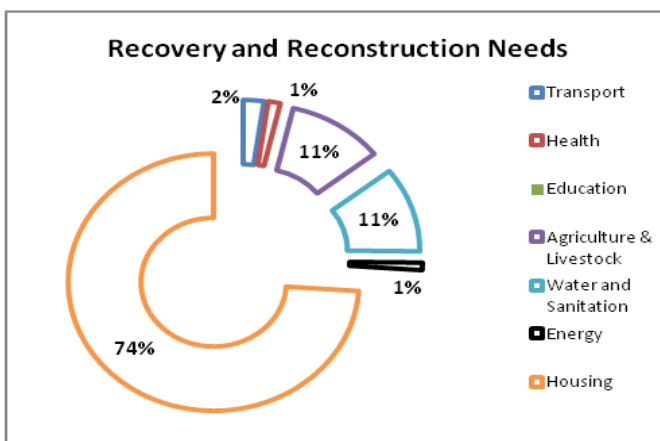


Fig 4: Recovery and Reconstruction needs by sector



## Quick View of Way Forward

As a way forward, this assessment recommends the

-Appointment of a PDNA Steering Committee;

-Undertaking a detailed capacity assessment for recovery and reconstruction;

-Review of the recovery framework against existing and planned sector allocations; and

--Establishing an M&E system to track implementation of the recommendations of the report.

Based on this PDNA exercise, the team proposed a Transitional Recovery and Reconstruction Framework, recommended actions to take the PDNA process forward, and how to institutionalise and improve the PDNA process in Malawi.

### Transitional Recovery and Reconstruction Framework

The framework lays the foundation for recovery and reconstruction planning for a resilient recovery which is an important part of DRM continuum, bridging the gap between response, ex ante disaster risk reduction and development. It provides a high level overview of the needs identified by the assessment without going into the project level details of each need. The framework is a living document since more information will be available when specific project level planning and implementation are underway.

Prioritization was first done within each sector before compiling the sectoral recovery frameworks into one at the cross sector level. This allows the assessment to present a synthesis of the sectoral and thematic recovery and reconstruction needs in a three-tiered priority list that is sequenced. The needs under Priority 1 could be implemented immediately regardless of whether they are of a short or long term nature. The framework is compiled based on sector team inputs which in turn have been guided by recovery strategies already in place (e.g. the governments' decision to move households to higher lands) and those recommended or envisaged by sector teams.

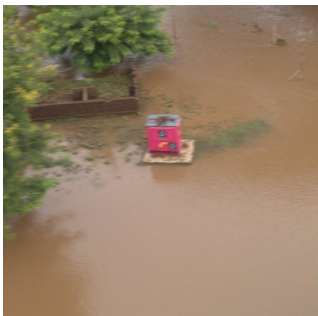
**Guiding principles** used for the transitional recovery and reconstruction framework are outlined in the report and these include strategizing for long term disaster management, learning from past experiences, aligning with key disaster risk management policies, and inclusion and use of local knowledge and skills. The report also discusses the institutional, implementation and monitoring and evaluation arrangements.

### Actions to take the PDNA process forward

The PDNA can be considered to be both a product as well as a process. While the product is the PDNA report - the findings and recommendations of the assessment - the momentum gained in the process of bringing together several government departments and development partners towards a joint assessment must be maintained, strengthened and leveraged. As a follow up to the exercise, the findings of the assessment should be widely disseminated within the government and amongst development partners.

This assessment recommends the following action items to take the PDNA process forward:

1. *Appointment of a Post-PDNA Steering Committee* to take forward the recommendations of the assessment, to implement its Recovery Framework and to own the results agenda for recovery, reconstruction and longer term DRR.



### Quick View: Institutionalizing the PDN Process in Malawi

- |   |   |
|---|---|
| 1. Improve availability of baseline data            | 5. Customized guidance notes for Malawi |
| 2. Availability of sector expertise                 | 6. Development of rapid PDNA model      |
| 3. Coordination across government sectors and level | 7. Refine data validation techniques    |
| 4. Establish policy parameters                      | 8. Institutionalize PDNA process        |

2. *Undertake a Detailed Capacity Assessment for Recovery and Reconstruction:* to address gaps and strengthen long term recovery, reconstruction and DRR capacity for future disasters.
3. *Undertake a Programming Review of the Recovery Framework* against existing and envisioned sector budget allocations, projects, and programs for recovery, reconstruction and DRR.
4. *Monitoring and Evaluation System.* An M&E system must be developed to track the progress of implementation of the recommendations of the report and the recovery itself, with regular reporting to stakeholders.

#### Recommendations to improve and institutionalize the PDNA process in Malawi

This hands-on training exercise helped to bring out several practical strengths and weaknesses of the PDNA process and capacity in the country, which will be useful towards its strengthening going forward. The following are recommendations and lessons learnt towards improving and institutionalizing the PDNA process in Malawi:

1. **Baseline data preparedness.** Strengthen the collection and ready availability of baseline data at all sectors of the economy and levels of government. A central repository for ready access to this data must be created, complete with an awareness mechanism.
2. **Availability of sector expertise across teams and levels of government.** Each sector should have an assessment team that is well trained in the assessment methodology.
3. **The need for coordination across sectors and levels of government.** While assessments should take place as soon as possible after the disaster, it is also necessary to ensure that there is adequate coordination and information flows between the various sectors and levels of government in order to ensure that findings of such are comprehensive.
4. **Establish policy parameters, budgets and strategic options for recovery and reconstruction.** Future assessment teams should include senior officials from the Ministry of Finance and Economic Planning, especially during Recovery Framework planning. This

would ensure that the policy, budgetary and other strategic implications would be understood at the time of designing the Recovery Framework so as to sequence, prioritize and optimize recovery and reconstruction planning in light of the constraints.

5. **Development of customized guidance notes and data templates for the Malawian context.** These templates would take into account specific aspects such as alignment with the national system of accounts, disaster types, amount of disaggregation available (e.g. EPA for agriculture, while GVH for schools) and the like.
6. **Development of a rapid PDNA model.** The current exercise has helped to develop a standard spreadsheets that can be periodically updated with baseline information and linked to produce a rapid model into which preliminary impact data for subsequent disasters can be plugged in to produce rapid estimates upon which early decisions can be based while the detailed assessments can follow suit with detailed findings and recommendations.
7. **Refinement of data validation techniques:** The current analyses validated information gathered by spot checks of the affected areas to corroborate reports and by reviewing disaggregated findings. However, technology advancements currently allow for validation and corroboration of disaster effects (e.g. damage values using satellite imagery) using different techniques. The PDNA team could explore and fine tune such techniques in future assessments.
8. **Institutionalization of the PDNA process and methodology.** The current capacity developed could be utilized further by creating a plan to use elements of the PDNA methodology into disaster assessments that are currently undertaken by the government. A review of existing methodologies could be undertaken to ascertain how they could be complemented or supplemented. Knowledge exchange visits to countries which are in the process of institutionalizing the methodology is also recommended. Development of Standard Operating Procedures (SOPs) or an Operational Manual for PDNA execution and institutionalization would also be useful.



# I. Nsanje Post Disaster Needs Assessment (PDNA): Context and Methodology



## A. CONTEXT

### The 2012 floods in Nsanje district

Nsanje district is one of the thirteen districts in the Southern Region of Malawi. It is situated at the southern tip of the country within the Lower Shire valley. The district is bordered by Chikhwawa to the northeast, Thyolo to the north and the Republic of Mozambique to the east, south and west. The total land area of the district is 1,942 sq. km. The district has eight Traditional Authorities (TAs), namely Chimombo, Malemia, Makoko, Mbenje, Mlolo, Ndamera, Ngabu, Nyachikadza, and Tengani. All TAs are prone to floods, except Makoko.

Nsanje district is one of the districts that are susceptible to floods in the country. In January 2012, TA Mlolo in the district experienced floods which were caused by the swelling

of Ruo and Shire Rivers due to heavy rains. The first floods occurred on 7<sup>th</sup> January, 2012 and affected five Group Village Headmen (GVH), namely Osiyana, Mchacha James, Chitseko, Karonga and Sambani. This flooding affected 1,359 households. The second flooding occurred on 22<sup>nd</sup> January 2012 and displaced 6,159 people. Most of these people were the ones that were affected during the first flooding. The total number of households that were affected by the floods in TA Mlolo was 2,887 translating to 10,376 people (4% of the population of Nsanje).

### Impacts of the floods

Out of the 10,376 people affected, 6,159 were displaced because their houses were damaged. Flood waters took two weeks before starting to subside. The floods also damaged people's property in the houses, livestock, crops in the gardens and infrastructure such as roads. Table 3 shows a summary of the impact of the floods:

Table 3: Summary of floods impacts in TA Mlolo

Total number of households affected	2,887
Total number of people displaced	6,159
Child-headed households affected	16
Elderly-headed households affected	210
Total number of people affected	10,376
Houses completely destroyed	1,384
Toilets destroyed	2,649
Hectares of maize affected	2,011
Hectares of sorghum affected	153
Hectares of millet affected	249
Hectares of cotton affected	1,161
Boreholes affected	32
Shallow wells affected	22



## The immediate response



The Nsanje District Council coordinated the provision of immediate relief assistance to the affected people through the District Commissioner who was assisted by the Assistant District Disaster Risk Management Officer and members of the District Civil Protection Committee. At national level, the response operations were coordinated by the Department of Disaster Management Affairs (DoDMA). The second flooding on 22<sup>nd</sup> January affected a bigger area and trapped several people who were not able to evacuate from the affected areas on their own. The DoDMA requested the Malawi Defense Force (MDF) to assist in evacuating people who were trapped by the floods.

On 23<sup>rd</sup> January the MDF deployed a helicopter and a team from their Marine Department with boats to assist in the evacuation of affected people. The Malawi Police Service also

assisted in the rescue and evacuation operation using a boat from the District Council. Five camps were established to provide temporary shelter for the 6,159 people who were displaced. These were located at Osiyana, Mchacha James and Makhanga in TA Mlolo and Bangula and Kadyamba in TA Mbenje.

Government provides funds for disaster response to the DoDMA annually. During the 2011/12 financial year, MK 105 million was provided. Since other districts were also affected by other disasters such as stormy rains, strong winds and floods, the funds for disaster response were not adequate to provide relief assistance to all the affected in Nsanje. As a result, DoDMA engaged stakeholders in-country to assist in the provision of relief assistance to the Nsanje floods.

The Government, through the DoDMA, non-governmental organizations (NGOs), civil society organizations (CSOs), the private sector and development partners provided different forms of relief assistance for distribution to the affected people. The donated items included food, non-food items, medical supplies and farm inputs to be used for recovery interventions. Table 4 shows the different organizations that provided relief assistance to people affected by floods in Nsanje. In total, the response to the Nsanje floods costed MK 156,124,958.

The MDF helicopter was used during the first two weeks after the floods to deliver relief supplies to the affected people who were in the camps since most of the roads were inaccessible. Tables 2 is the summary of Relief Assistance Provided to Flood Victims in TA Mlolo.

Table 4: Summary of Relief Assistance provided to flood victims in TA Mlolo

Organization	Items / Services	Quantity	Cost
State House - OPC	Household Tents	100	13,200,000
Department Of Disaster Management Affairs	50kg bags of Maize	2007	6,021,000
	Bales of dried fish	8	60,000
	20kg bags of cream maize	700	1,512,000
	50kg bags of beans	136	1,224,000
	Blankets	2718	2,582,100
	Plastic pails with taps	1359	693,090
	Plastic cups	6795	197,530
	Rolls of plastic sheets	137	2,022,195
	20kg bags of salt	68	74,800
	Rectangular tents (24m <sup>2</sup> )	6	940,500
	Operational costs for transportation of relief items and monitoring		1,361,200
Nsanje District Council	Operational costs to facilitate provision of relief assistance to affected people		2,563,300
Malawi Defense Force	Operational costs for Air Wing, Marine and Headquarters teams		9,607,275
Sisters of Divine Province	5kgs bags cream of maize	323	387,600
UNICEF	Spoon	60	1,380
	Big basins	12	9,900
	Small basins	12	3,960
	Water mug	12	1,980
	Emergency survival kits	1500	17,325,000
The former first lady, Madam C Mutharika	Vita meal	385	1,397,550
	Small chairs	30	60,000
	Blankets	50	47,500
	Plastic basin	6	4,950
	Assorted infants board games	53	43,725
Medecins Sans Frontieres (MSF)	Constructed toilets and bathing shelters		240,000
Goal Malawi	Constructed toilets and bathing shelters		240,000
	Survival kits	550	6,352,500

Organization	Items / Services	Quantity	Cost
Malawi Red Cross Society	Tarpaulins 4mx6m	800	3,960,000
	Borehole	1	2,000,000
	Shelter kits	1300	10,010,000
	Collapsible Jerry cans	2600	3,575,000
	Mosquito nets	2600	3,575,000
	Blankets	2600	3,575,000
	Cooking sets	1300	7,865,000
Salvation Army	Household tents	100	825,000
	50kg bag of maize	200	600,000
	50kg bag of beans	50	450,000
Plan Malawi	Assorted school items	25 boxes of chalk, 2000 lead pencils, 2000 exercise books	1,098,741
	20kg cream of Maize	700	9,220,000
	20kg Pigeon peas	1500	
	20kg fortified Likuni Phala	750	
	20 liters plastic buckets	1000	1,967,184
	Plastic cups and plates	15000 of each	
	Plastic sheets	116	2,574,650
	Mosquito nets	470	900,000
Operational costs		2,206,735	
Population Services International (PSI)	Water Guard powder	417 cartoons	250,200
	Plastic pails	86	35,260
Act Alliance (CARD)	20kg maize flour	3 distributions for 1309 under-fives and 1000 households	14,928,153
	5kg Likuni phala for under five children		
	Beans		
Illovo sugar company	5kg cream of maize	5500	6,600,000
Total Land Care (WALA)	15 kg bag Soya flour	850	10,234,000
	Cooking oil	850	
	Sweet potato vines	359	
	Treadle pumps	20	
	Plastic pails	850	
	6 Laundry and 6 luxury soap	850	
Malawi Revenue Authority	2kg packets Likuni Phala	750	1,500,000
	Bottles of water guard	2000	
	Plastic pails and plates	250 of each	
	Bread rolls and Pine apples	1250	
<b>Total</b>	<b>US\$949,212</b>	<b>@165Mk/US\$</b>	<b>156, 124,958</b>

## B. METHODOLOGY

### Undertaking the PDNA

This PDNA is a Government of Malawi led exercise, supported technically and financially by development partners. This assessment of Nsanje floods was carried out as a practical training exercise, to build on the theoretical training conducted in March, 2012. At the same time the practical training offered an opportunity to identify longer term solutions to the recurrent floods in the region.

This assessment employed the PDNA methodology, which is a government led assessment based on the national system of accounts. This methodology combines two distinct and complementary strands of assessing disaster effects, impacts, and needs. First is the time-proven damage, loss and needs assessment (DaLA) methodology – originally developed by the United Nations Economic Commission for Latin America and the Caribbean (UNECLAC) in the 1970s and further updated and expanded by the World Bank's Global Facility for Disaster Reduction and Recovery (GFDRR). Second is the Human Recovery Needs Assessment (HRNA) methodology that has been developed by the United Nations for assessing recovery needs at community level.

The PDNA conceptual model attempts to assess the overall impact of the disaster on the country's socio-economic development, develop strategies for immediate recovery at community level, and assist the Government in improving its risk and disaster management strategies. The GFDRR website ([www.gfdr.org](http://www.gfdr.org)) provides resources material for reference

### Damage and Losses

Under the DaLA methodology conceptual framework, the following disaster effects are measured during the assessment:

- **Damage** is the value of physical, durable assets that may be destroyed due to the action of the natural hazard that caused the disaster, expressed in terms of the replacement value of the assets assuming the same characteristics that they had prior to the disaster; and,
- **Losses** or changes in the normal flows of the economy that may arise in all sectors of economic and social activity due to the external shocks brought about by the disaster, until full economic recovery and reconstruction has been achieved, and are expressed in current values.

The following **disaster impacts** are also estimated as part of the assessment:

- Possible macro-economic impacts due to losses inflicted by the disaster, including possible slowdown of gross domestic production, deterioration of the balance of payments and of fiscal sector position, as well as increase in inflation.
- Decline in personal or household living conditions, livelihoods and income, possible increase in costs of living, as well as poverty aggravation arising from the resulting losses caused by the disaster. *Due to data limitations, a detailed poverty and income impact assessment has not been undertaken in this assessment and the report recommends that such assessment be undertaken in future PDNAs.*

### Needs

- **Recovery needs** are estimated on the basis of the financial resources required for immediate reactivation of personal or household income, rehabilitation of basic services, and reactivation of productive activities;
- **Reconstruction needs** are estimated as the requirements for financing that will make it possible to repair, reconstruct or replace the physical assets that were destroyed or damaged by the disaster. These figures include a build back better factor to consider quality improvements

The estimate of financial needs for recovery and reconstruction therefore uses quantitative information from the systematic estimate of the value of destroyed assets (damages) and of changes in economic flows (losses) of this assessment.

### Disaster Risk Reduction

- **Disaster risk reduction needs** are additional needs identified above and beyond the ones in recovery and reconstruction aimed at building longer-term resilience through systematic efforts to “analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.” (Using the UNISDR definition from <http://www.unisdr.org/we/inform/terminology#letter-d>)
- PDNA teams have undertaken the first step in this process – identification of key projects and programs required for risk reduction in their respective sectors. The

result is a preliminary list with indicative costing which has been included in the assessment. This is neither intended to be exhaustive nor finalized. However; this could form the basis of dialogue, evaluation, and prioritization which is necessary to ascertain the suitability of the interventions.

### Human Recovery Needs Assessment (HRNA)

The HRNA has been defined as: "Assessments that determine the requirements for the full resilient recovery of human development for affected populations, including the restoration of governance systems". (*United Nations Development Program, Bureau for Crisis Prevention & Recovery - Bangkok, Thailand -November 2010*)

The HRNA methodology used in this report focuses on the social impact of disasters, analyzing how disasters affect local patterns of life, social structures and institutions and is founded on assessing the perceptions of people and communities in the wake of a disaster. These perceptions can then be used to inform the recovery and reconstruction process. The information captured through this assessment gives an insight into how the recovery and reconstruction process can be best implemented, based on the needs, demands and opinions of communities affected by the disaster. In this way, the findings of the damage and loss assessment are complemented by local level opinions which support the creation of an enabling environment for recovery and rehabilitation.

The methodology underpins and provides a basis for, through its detailed analysis of communities' short and medium term needs, the development of an early recovery plan to be implemented in the short term. Priorities are defined in the immediate recovery activities in order to best respond to

the communities' most pressing needs. The early recovery plan shall be linked directly to MGDS II Themes, Key Priority Areas and the Hyogo Framework for Action 2005-2015.

It should be noted that these methodologies complement each other and provide a complete view of the human and economic needs to achieve recovery and reconstruction.

In such assessments, sectors of economic and social activity that are included in the system of national accounts of the affected country, which may sustain either destruction of physical, durable assets and/or modifications to the normal flows of the economy caused by the floods, are analyzed.

### Assessment Process

As a first step, a theoretical training was delivered in March 2012 and the team was provided a refresher course focusing on the practical aspects and the field data collection and analyses aspects of the assessment on July 26 and 27, 2012.

The scope of the assessment was to analyze the impact of the floods that occurred in January, 2012 in TA Mlolo in Nsanje district. In view of limitations in time and resources, it was not feasible to include additional geographical areas and thematic focus areas to the scope of the assessment.

Templates for baseline data collection were circulated so that teams could send out the forms to their counterparts in the field to be prepared with the required data. Field visits were then carried out by a team of approximately 40 experts for the purpose of quantitative data collection in district offices and visits to the affected areas for interviews with strategic informants. After completing data collection, the teams assembled in Blantyre and Lilongwe for detailed analyses of the data and compilation of the report.



## II. Macro-economic and Human Recovery Analysis



### 1. MACRO-ECONOMIC ANALYSIS

Malawi is a small landlocked agrarian economy, which is poorly integrated into the region, both in terms of trade and physical infrastructure. Its economy is highly undiversified, with a high concentration on few primary commodities, which renders it vulnerable to weather and terms of trade shocks. The country's export trade is dominated by few primary commodity exports (mainly semi-processed tobacco, tea, and sugar). The country is also highly donor dependent. In recent years, the large agricultural sector has been contributing no more than 28% to total GDP, compared with 33% for services and 10 percent for a largely underdeveloped manufacturing sector. Mineral exploration has been intensified and the mining sector has registered an average growth of 30% per annum since 2009 with its contribution to GDP expected to increase from 0.2 of GDP in 2009 to an average of about 3.8 GDP by 2016.

Between 2007 and 2010, macroeconomic indicators (Table 5) point to an economy that was performing well with mod-

erate inflation, manageable current account deficit and sustainable levels of domestic debt. These indicators, however, also depict an economy that was excessively dependent upon external grants to meet its current deficits on both fiscal and external accounts and where levels of external reserves have been generally low. Both of these latter two factors made Malawi economy susceptible to external shocks. The 2010 Country Economic Memorandum (CEM) identified lack of economic diversification, inadequate power supply, weak human capital, lack of trade facilitation, and weak financial intermediation as key economic constraints of the country.

Macroeconomic imbalances started to build up after 2008 in the context of the global crisis, the 2009 Presidential elections, and deteriorating relations with donors. The IMF Extended Credit Facility (ECF)-supported program for Malawi went off track shortly after completion of the first review in December 2010, leading to the suspension of budget support grants by CABS DPs. With no adjustments in the 2011/12 budget and in the absence of budget support

Table 5: Malawi Key Macroeconomic Indicators, 2007—2011

	2007	2008	2009	2010 <sup>§</sup>	2011 <sup>§</sup>
GDP Growth (%)	9.5	8.3	9.0	6.5	4.3
Inflation (%) average	7.9	8.7	8.4	7.4	7.6
Growth in M2 (%)	20.0	20.0	23.9	33.9	35.7
Exchange rate (average US/MWK)	140.0	140.6	141.2	150.8	157
Current account balance including transfers (% of GDP)	-1.0	-9.7	-4.8	-1.3	-5.9
Fiscal balance, excluding grants (% of GDP)	-13.9	-11.2	-17.3	-10.3	-10.5
Fiscal balance, including grants (% of GDP)	-1.2	-0.6	-5.7	0.1	-2.9
External Debt, Public Sector (% of GDP)	15.0	16.8	15.9	16.0	16.2
NPV of public sector debt (% of average exports)	30.3	42.6	57.1	44.6	47.8
Domestic Debt, Central Government (% of GDP)	12.2	19.9	22.0	15.3	16
Gross reserves in months of import cover	1.3	1.5	0.7	1.5	1.0
Average interest rate (91days T-Bill Rate)	11.0	10.5	10.5	6.2	6.8

Sources: Malawi Authorities, IMF and World Bank staff estimate—Note: (§) These figures are preliminary estimates.

grants, the authorities resorted to central bank financing. The country was further hit by multiple shocks in 2011, including the adverse terms of trade, significantly reduced tobacco proceeds and donor inflows, which were compounded by inappropriate policy responses, which triggered a severe foreign exchange shortage. These events led to fiscal and external imbalances that required adjustment by containing domestic demand. Even as the external deficit was growing, Government of Malawi (GoM) maintained a policy of fixed exchange rate. Malawi's economy slowed down as firms could not access foreign exchange to secure inputs for production, and fuel supply shortages intensified.

The authorities project the economy will grow by 4.3% in 2012. However, the consequence (if any) of the floods on real GDP growth in 2012 is negligible. This is a reflection of the economic output of the affected area rather than the impact of the scale of the disaster on livelihoods. Macroeconomic aggregates like government expenditure, consumption, exports and imports are not expected to be affected by the loss

Since economic activity in the nation is concentrated mostly in the non-flooded areas, the flood had a near negligible impact on the overall macro-economic aggregates. The most developed agricultural, tourism, mining, and manufacturing industries are located in the northern, central, and southern region highlands

### Description of Nsanje's economy and its contribution to the national economy

The profile of economic activity in the Nsanje District and all affected areas is mainly subsistence farming, with small-scale commercial agriculture mostly limited to cotton and cattle breeding; as such economic impact of the floods was localized.

### Impact of the floods on Nsanje's economy and overall national macro-economic aggregates

The floods mostly affected an area whose output in 2011/12 was concentrated in agriculture, including livestock. The total value of damages in this sector amounts to MK 89.5 million. Losses in this sector were estimated at MK 109.1 million compared to the entire value of losses of MK 424.8 million. At a national level this loss of output is not significant considering that nominal GDP in 2011/12 was estimated at MK 1,068 billion.

Table 6: Summary of damages and losses by sector

Disaster Effects			
Sector	Damages	Losses	Total
	MK, Million	MK, Million	MK, Million
Transport	46.7	11.8	58.4
Health	0.0	88.7	88.7
Education	2.2	0.0	2.2
Agriculture & Livestock	89.5	109.1	198.6
Water and Sanitation	41.2	190.0	231.3
Energy	1.2	0.0	1.2
Housing	204.5	25.3	229.8
<b>Total</b>	<b>385.4</b>	<b>424.9</b>	<b>810.3</b>

of output from the flooded area. To this end, real GDP growth projection for 2012 stands at the same level of 4.3% in 2011.

### Impact on national economic growth

The authorities project the economy will grow by 1.6% in 2012. However, the consequence (if any) of the floods on real GDP growth in 2012 is negligible. This is a reflection of the economic output of the affected area rather than the impact of the scale of the disaster on livelihoods. Macroeconomic aggregates like government expenditure, consumption, exports and imports are not expected to be affected by the loss of output from the flooded area. Malawi's real GDP growth projection for 2012 has been revised downwards from 4.3% to 1.6% , but not on account of the Nsanje floods.

The floods mostly affected an area whose output in 2011/12 was concentrated in agriculture, including livestock. The total value of damages in these sectors amounts to MK 89.5 million. Losses in this sector were estimated at MK 109.1 million compared to the entire value of losses of MK 424.8 million. At a national level this loss of output is not significant considering that nominal GDP in 2011/12 was estimated at MK 1,068 billion.

The economic impact is therefore expected to be localized due to the loss in locally traded commodities including millet, sorghum, rice, maize and livestock. Whereas cotton was



being produced for subsistence, this loss of output has not significantly affected national production aggregate which has almost doubled between 2010/11 and 2011/12 on account of a government subsidy towards seeds and pesticides in the sector.

#### *Impact on the balance of payments and on exports*

The impact of the floods on the balance of payments is not significant given the negligible contribution of the flooded area to the current account.

Main exports are not produced in the affected area. Damages in the area have been mainly concentrated to cotton, and green maize, which are goods mostly traded at the local level, or used for household subsistence. Consequently the floods did not affect exports; rather export levels continued to follow trend in line with global demand (e.g. in tobacco, sugar sectors).

#### *Impact on the fiscal sector*

The current forecast of the impact on the fiscal sector includes losses in tax revenue that could result from decline in economic activity, and the corresponding increase in expenditure due to rehabilitation activity.

#### *Impact on tax revenues*

Most of the trading activity in TA Mlolo area takes place in informal markets where taxes are not applied by government; in addition there are no taxes levied on agricultural products produced and sold locally in Malawi. In this regard, there is no potential loss in revenue. The revenue impact of the floods is therefore nil.

#### *The impact on Government expenditure*

Expenditures on disaster response were within the budget framework. In the 2011/12 national budget, MK 826 million was earmarked under the vote *unforeseen expenditures* for disaster relief at national level. The Government spent about MK 25 million towards the disaster response effort in TA Mlolo, out of a total effort costing MK 156 million which came from Development Partners, NGOs, and other sources. As this report was being finalized, government had not scheduled or cost estimated any special rehabilitation plan for the affected area in its 2012/13 national budget. As such the budget framework in 2011/12 and 2012/13 managed to absorb the impact of the disaster. While the cost of the disaster response was absorbed by the 2011/12 budget, ques-

tions remain on the adequacy of public response to the disaster and also on the financing towards the recovery effort.

## 2. HUMAN RECOVERY ANALYSIS

### Incidence of Poverty in Malawi and Nsanje District

Malawi remains one of the least developed countries ranked 171<sup>st</sup> out of 187 countries surveyed on the United Nations Human Development Index of 2011. Despite strong economic performance registered during 2005-2010, poverty remains widespread and concentrated in rural areas. According to the recently published report of the Third Integrated Household Survey (IHS3 2010/11), the incidence of poverty as measured through the headcount index has declined only slightly from 52.4% (IHS2 2004/05) to 50.7%.

The poverty levels for urban areas declined from 25.4% in 2005 to 17.3% in 2011, whereas they picked up slightly in rural areas from 55.9% to 56.6% during the same period. Income also remains unevenly distributed as evidenced by the deterioration in the income distribution, as measured by the gini-coefficient, from 0.39 in 2005 to 0.45, reflecting inequities in the access to assets, services and opportunities across the population. Within rural areas, the same index rose from 0.34 to 0.38, while within urban areas stayed roughly constant at about 0.49.

The poorest geographical region among the three regions in Malawi was the Southern Region with a poverty rate of



63.3%, with Nsanje District being the poorest district among the entire 28 districts in the country. The poverty rate for Nsanje was estimated as 81.2% and the ultra-poverty rate stood at 56%. Nsanje also has the highest poverty gap in the country at 40.4% implying that the poor people in Nsanje survive on MK 14,948.80/year below the poverty line of MK 37,002.00/year.

### Impacts on human recovery

The findings of the assessment highlight some of the human impacts of the floods since a significant proportion of the damage, losses and needs are human-centric. For example 74% of the combined effects of the disaster are directly felt on the private sector. In the case of this assessment, the private sector primarily constitutes individuals and communities. Furthermore, the most affected sectors and the ones with the highest amounts of needs are housing, agriculture, and water and sanitation – all of which are closely linked to human recovery.

The following are excerpts from some of the key human recovery and cross cutting issues from the various sectors assessed:

- **Agriculture, livelihoods and environment**

Studies in Malawi show that the majority of smallholder farmers are women. Since the floods occurred in a rural setting where the major livelihood is food cultivation, it is envisaged that the population that suffered most were women, children and the elderly.

Further, the lack of alternative sources of income is one of the major drivers for overexploitation of natural resources in TA Mlolo and the catchment areas of the major rivers. Communities engage in the production of charcoal due to the lack of an alternative source of income. This further causes environmental degradation and soil erosion, leading to the vicious cycle of flooding due to siltation of rivers from the uplands.

- **Education**

School drop outs and lower primary school completion rates were some of the concerns raised by education authorities at the district level. The suspension of classes following flooding leaves the pupils at a disadvantage compared to their counterparts in other non affected areas. This in turn might affect the quality of education, and hence the quality of human capital. Education contributes to economic development and drop outs and low completion rates rob the country of quality human capital that could otherwise have contributed to the de-

velopment of the country. In addition, pupils who drop out end up in early marriages which in turn have far reaching consequences in terms of pressure exerted on basic social services.

- **Gender**

Girls are at a particular risk of exploitation and abuse during displacement due to floods. Inadequate lighting and bathing facilities in temporary shelters make girls and women vulnerable and fearful of sexual abuses as well as harassment. Officials explained that many girls dropout in the district either because of early marriage due to poverty or to look after their siblings due to the deaths of their parents. The decrease in the number of girls in upper classes is higher, especially from standard 5 up to standard 8.

- **Temporary spike in prices and shortage of household items**

The socio-economic impact of the floods was significant because of the dependency of other sectors to the transport sector. For example, the cost of transportation was felt in increases in prices of various commodities. The increase in transportation fares from TA Mlolo to Thabwa in Chikhwawa resulted in shop owners' increasing the price of groceries. Shops ran out of groceries and other essentials. Households paid more for the same items after the disaster. This implies households were affected greatly and had to adjust their expenditure patterns to suit the price adjustments.

- **Housing**

The disaster rendered most affected people homeless, especially child headed households, the elderly and other vulnerable groups. There were 16 child headed and 210 elderly headed households who had to be provided with tents and other household goods. Construction of temporary shelter mainly uses locally found materials such as grass and trees which is negatively affecting the environment.



### III. Transitional Recovery and Reconstruction Framework



#### Introduction

The recovery and reconstruction process is an opportunity to build longer term resilience. The objective of the transitional recovery and reconstruction framework is to provide a sequenced, prioritized, programmatic, yet flexible (living) overall action plan to guide the recovery and reconstruction process.

This section answers the following questions pertaining to the recovery:

- What are the needs in order to recover from this disaster and to build longer term resilience?
- Who could do it institutionally and how could it be implemented?
- What are the monitoring and evaluation arrangements to know if we are successful in the recovery?

The section may not provide answers to the following questions pertaining to the recovery:

- How will the recovery and reconstruction be financed?
- What are the various project level details for each intervention identified?
- What is the existing institutional capacity for recovery and reconstruction?

The framework lays the foundation for recovery and reconstruction planning for a resilient recovery which is an important part of the DRM continuum, bridging the gap between response, ex ante disaster risk reduction and development. It provides a high level overview of the needs identified by the assessment without going into the project level

details of each need.

The framework is a living document since more information will be available when specific project level planning and implementation are underway. Prioritization was first done within each sector before compiling the sectoral recovery frameworks into one at the cross sector level. This allows the assessment to present a synthesis of the sectoral and thematic recovery and reconstruction needs in a three-tiered priority list that is sequenced.

The needs under Priority 1 could be implemented immediately regardless of whether they are of a short or long term nature. The framework is compiled based on sector team inputs which in turn have been guided by recovery strategies already in place (e.g. the recent governments' decision to move households to higher lands) and those recommended or envisaged by sector teams.

It is important to note that the financing (who will finance each need) of the framework is not discussed here but this framework could serve as a starting point for such a dialogue.

This chapter consists of the sectoral and thematic recovery and reconstruction needs followed by the guiding principles used for the transitional recovery and reconstruction framework. Finally the institutional, implementation and monitoring and evaluation arrangements are discussed.

Table 7: Sectoral and thematic recovery and reconstruction needs and priorities

Transitional Recovery and Reconstruction Framework						
PRIORITY 1						
Sector	Need	Activities	Estimated Cost (in Million MWK)	Responsible	Existing Initiatives and Partners to be leveraged	Indicative Timeframe
Housing	Immediate recovery	Provision of temporary shelter for child, elderly and other needy headed households	2.6	Ministry of Lands and Housing, Ministry of Local Government and DoDMA		Short term
	Awareness & education on risks regarding settlement in flood prone areas & better house construction guidelines	Mobilize financial resources and conduct awareness campaigns; conduct training of trainers (ToT)	3.3	MoLH, Ministry of Local Government and DoDMA	National Initiative for Civic Education, Malawi Red Cross Society	2012-2013
	Site planning for relocation of affected people to safer site	Mobilize financial resources and conduct the planning exercise	1.1	MoLH, Ministry of Local Government and DoDMA	World Bank, UN-Habitat, Christian Aid	2012-2013
Transport	Repair to erosion damage and installation of new culvert pipes, construction of erosion protection works such as gabion baskets	Generate more money by raising fuel levy rate and carry out repair works	47.9	Roads Authority	Ministry of Transport & Public Works, Road Fund Administration	July-Dec 12
Education	Disaster Preparedness and planning should be incorporated in Education planning	Awareness and training	3.6	DoDMA, MoEST, MICE	MOEST in collaboration with DoDMA should carry out awareness campaigns	2012-2014
Health	To assess the extent of nutritional status of <5 children	a. Conduct a Nutritional Survey	15.0	Ministry of Health & NSO	UNICEF, UNDP, JICA, GIZ, Hunger Project etc	Short term
	To conduct flood related awareness campaigns on health & nutrition	a. Recruit, train & deploy CHWs according to staffing norms	2.5	Ministry of Health	UNICEF, UNDP, JICA, GIZ, Hunger Project etc	Short – to- long term
		b. Procure & distribute bicycles to all CHWs	1,5			
	To strengthen integrated nutrition management	a. Rejuvenate existing coordination & collaboration structures at all levels b. b. Conduct regular stakeholders' coordination & collaboration meetings	5,,0	Ministry of Health	UNICEF, OPC	Long term

Transitional Recovery and Reconstruction Framework						
PRIORITY 1						
Sector	Need	Activities	Estimated Cost (in Million MWK)	Responsible	Existing Initiatives and Partners to be leveraged	Indicative Timeframe
WASH	Rehabilitate and maintain safe water points (boreholes)	A. Identification of target households to supply facilities	0.7	MoWDI	e.g. Red Cross and WALA	Nov. 2012 to March 2013
		B. Procurement and distribution of Afridev pump spare parts				
		C. Follow up (e.g. pest control, M&E) to be done up until time of harvest				
		D. Assessment of condition of the hand pump				
	Construction of water supply systems in new settlements for the households	A. Geophysical surveys of borehole drilling sites	193.5	MoWDI, Ministry of Local Government, Ministry of Health	National Water Development (WASH Component)	Jan 2013 to February 2013
		Preliminary surveys of socioeconomic and topography of the area				
		B. Community mobilization and sensitization				
		C. Borehole drilling				
	Construction of flood control structures - dykes along Thangadzi East River	C. Construction of water supply reticulation system powered by solar	219.0	MoWDI, Ministry of Local Government,	Shire River Basin Development Project	Dec. 2012 to April 2013
		A. Feasibility studies				
B. Creation of access roads						
Agriculture, Livestock, Irrigation, Food Security	Food Security	Food for households that do not have it	22.8			Short term
	Kick start agricultural production	Inputs (seed, fertilizer, pesticides, drugs)	104.6			Short term
		Repair of drainage and irrigation systems	60.4			
Energy	All people resettled in the area are trained in construction and efficient use of Energy Saving Stoves.	Training of villagers on construction of energy saving stoves and their use and benefits	2.5	Dept. of Energy Affairs	Total Land Care Promotion of Energy Saving Stoves Project	Sept 2012 to Feb 2013
	All households in the area own and use energy saving stoves	Training of villagers on construction of energy saving stoves and their use and benefits	-	Dept. of Energy Affairs	Total Land Care Promotion of Energy Saving Stoves Project	Sept 2012 to Feb 2013
<b>Total Needs for Priority 1</b>		<b>MK</b>	<b>685.9</b>	<b>US\$</b>	<b>\$ 2,494,157</b>	

## Transitional Recovery and Reconstruction Framework

### PRIORITY 2

Sector	Need	Activities	Estimated Cost (in Million MWK)	Responsible	Existing Initiatives and Partners to be leveraged	Indicative Timeframe
WASH	Promote suitable sanitation technologies	A. Assessment of existing technologies	12.0	MoWDI, Ministry of Local Government, Ministry of Health	NWDP (WASH Project)	Nov. 2012
		B. Selection of existing technologies that suit the area				
		C. KAPs Survey				
	Promote safe hygiene practices	A. Baseline study	12.0	MoWDI, Ministry of Local Government, Ministry of Health	NWDP (WASH Project)	Nov. 2012
Housing	Construction of disaster risk resilient houses.	Train local artisans in safer and better house construction	2.9	MoLH, Ministry of Local Government	World Bank, UN-HABITAT, DoDMA, Malawi Red Cross Society, TEVETA	2012-2013
		Construct one safe haven at TA level and 7 demonstration house in each of the seven GVHS	12.6	MoLH, Ministry of Local Government and DoDMA	World Bank, UN-HABITAT, DoDMA, Malawi Red Cross Society, TEVETA, Habitat for Humanity	2012-2014
		Support construction of better and safer houses for 2887 affected households	1,501.0	MoLH, Ministry of Local Government		Medium term
	Ensure mapping of all flood prone areas	Training of personnel in mapping at all levels	4.0	MoLH, Ministry of Local Government	UN-Habitat, CCODE, Christian Aid	2012-2014
		Develop project proposal for external funding and conduct mapping exercise	0.7	MoLH, Ministry of Local Government	UN-Habitat, CCODE, Christian Aid	2012-2014
	Agriculture, Livestock, Irrigation, Food Security	Restore livelihoods and incomes	Replacement of animals	0.4		
Purchase of land			2.3			Medium to long term
Safeguard water source		Lining of shallow wells	8.3			Short term
Maintenance of treadle pumps		Maintenance of treadle pumps	20.0			Short term
DRR in Agriculture sector		Capacity building of extension staff	4.4			Medium term

## Transitional Recovery and Reconstruction Framework

PRIORITY 2						
Sector	Need	Activities	Estimated Cost (in million MWK)	Responsible	Existing Initiatives and Partners to be leveraged	Indicative Timeframe
Transport	Raising of the road embankment, and provision of adequate drainage structures	Generate more money by raising fuel levy rate and carry out repair works	Detailed design study required	Roads Authority	Ministry of Transport & Public Works, Road Fund Administration, donors	January 2013-December 2015
Health	To reduce Malaria incidence in TA Mlolo	a. Conduct rigorous awareness campaigns on ITN use	12.0	Ministry of Health	UNICEF, Red Cross, PSI	Medium to-Long term
	To implement Indoor Residual Spray (IRS) campaign in TA Mlolo	b. Recruit, train and deploy IRS operators	5.0			
Education	Education materials and skirting of classroom blocks		0.5		Ministry of Health	Medium term
	Ensure teaching and learning materials are safe from flood waters	Construct raised storage facilities for teaching and learning materials		0.1	Public Works, DoDMA, MoEST	UNICEF donated some textbooks, pens, etc;
Energy	Relocation area is electrified	Construction of power lines to the area	17.7	Dept. of Energy Affairs and ES-COM Ltd	Dept. of Energy Affairs Rural Electrification Programme	2013 to 2014
<b>Total Needs for Priority 2</b>			<b>MK 1,612.1</b>	<b>US\$ 5,862,871</b>		

## Transitional Recovery and Reconstruction Framework

### PRIORITY 3

Sector	Need	Activities	Estimated Cost (in million of MWK)	Responsible	Existing Initiatives and Partners to be leveraged	Indicative Timeframe
Transport	Sensitization of the government and various stakeholders, including donors on the need for provision of adequate budget	Conduct awareness campaigns with stakeholders including donors		Roads Authority	Ministry of Transport & Public Works, Road Fund Administration, Ministry of Finance, donor community	January 2013-December 2014
Education	Relocation of Chikonje P. School	Provide water and health facility in relocation site	66.0	MoEST, DoDMA, MoLH, Public Works	Relocation of the whole community	2012-2014
	Mitigation works at Namiyala School	Construction of Mitigation Structures	2.5	Public Works, DoDMA, MoEST	Ministry of Education should construct reliable drainage systems in all schools	2012-2013
Health	To have an Integrated Disease Surveillance & Response System (IDSR)	a. Conduct awareness campaigns on OFRDs	2.5	Ministry of Health	WHO, UNICEF, PSI	Medium to- Long term
		b. Strengthening IDSR through capacity building; infrastructure development etc	75.0			
		c. Conduct mass treatment campaigns	7.5			
WASH	Construction of flood control structures on Ruo River - Multi - purpose dams	A. Feasibility studies	Subject to feasibility studies	MoWDI, MoECCM, DO-MA	Shire River Basin Development Project	Oct. 2014
		B. ESIA				
		C. Procurement of contractors				
		D. Construction works				
	Construction of flood control structures on Ruo River - Offshore storage	A. Feasibility studies	Subject to feasibility studies	MoWDI, MoEC- CMs, DODMA	Shire River Basin Development Project	Oct.2014
		B. ESIA				
		C. Procurement of contractors				
		D. Construction works				
<b>Total Needs for Priority 3</b>			<b>MK 153.5</b>	<b>US\$ 558,182</b>		



## Guiding Principles



The following guiding principles were used for this PDNA exercise which could also potentially be referred to in future PDNAs in Malawi. Please note that a detailed planning exercise was not conducted due to the timing of the exercise (long after some activities had already started).

### Strategizing



1. **Moving from response to long term resilience.** It may not be viable for the government and its partners to continue to respond to all future disasters. It is imperative that a long term solution focusing on disaster risk reduction is found for the recurrent floods in the area and to address long-term vulnerability and risks.



2. **Prioritizing and sequencing needs in the Recovery Framework.** The prioritizing and sequencing of needs across sectors must be done after internal prioritizing is complete within each sector. This must then be done at a cross-sector level through a consultative process which includes representatives from all sectors, ensuring that the needs of every sector is given due priority. Furthermore, a distinction must be made between what is urgent (must be done immediately) versus what is important (must be done regardless of time).



3. **Building on lessons of past experiences in flood risk management.** Planning and prioritization for flood recovery should be based on sound lessons of experience and practices in Malawi while leveraging good practices in the region and worldwide.



4. **Alignment with key disaster risk management policies.** There is a need for alignment and integration of recommendations with the National DRM policy which is being finalized and the Second Malawi Growth Development Strategy (MGDS II 2011-2016).

5. **Community inclusion and use of local knowledge and skills.** This ensures the optimal use of local initiatives, resources and capacities. Planning and execution is based on local knowledge, skills, materials and methods, and enterprises, taking into account the

need for affordable solutions. This principle further promotes community participation in all aspects of the recovery process and partner with local institutions. It encourages decision-making concerning planning, design and implementation at the lowest level possible, to ensure community ownership and empowerment, and to ensure solutions are locally appropriate.

6. **Focus on the most vulnerable and socially disadvantaged groups such as children, women, and the disabled.** Disasters increase the vulnerability of all, but especially of those who are already disadvantaged. Recovery programming should give priority to the most vulnerable groups, including female-headed households, children and orphans, and the poor, and take into account those with special needs, to avoid their being overlooked.

7. **Secure development gains – while differentiating between regular development and disaster recovery.** Recovery planning must attempt to re-establish and secure previous development gains, and areas not affected by the disaster should not lose out due to increased allocation of public resources to the disaster-affected areas. It must however be noted that while disaster recovery provides opportunities for improving the disaster resilience of affected infrastructure and assets, it should not include improvements or enhancements that fall under the purview of regular development. Sector strategies proposed in this report are essentially based on this dual principle of building upon existing development gains but not through recovery interventions that overlap with already planned or proposed development activities. Sector damage estimates and strategies must also, if possible, take into account any major setbacks in pre-disaster progress achieved towards the respective sector MDGs, and propose measures for bridging such gaps in the course of regular development.

8. **Building Back Better and longer term disaster risk management.** While avoiding radical redesigning and restructuring, there is a need to ensure that realistic building back bet-



ter measures are considered in the design of infrastructure to be rebuilt. This report attempts to propose building back better measures in each sector, while being cognizant of possible resource shortfalls for the recovery process. Accordingly, longer term and potentially costlier disaster risk management interventions are included but accounted for separately in each of the sector needs assessments.

9. **Strengthening capacities to manage the recovery process.** The capacity of local public administration, including infrastructure, must be strengthened. Along with local and national institutions, encourage and empower all levels of civil society to participate in and manage the recovery process. In this regard, the role of local governments needs to be given priority. It would also be important to mobilize private investment – both human and financial, by ensuring that the local private sector has incentives and technology to participate fully in reconstruction.
10. **Further strengthen institutions and their ability to manage risks.** Recovery efforts in the district should strive to strengthen existing institutional structures and build long-term capacity to manage disasters, particularly floods, drought and food crises.
11. **Comprehensive, sustainable, broader approaches.** While it is important to focus on the most affected areas, there is a clear need to provide support that can leverage catalytic changes for the Lower Shire Basin as a whole.
12. **Recognize the cyclical nature of the disaster and tackle it holistically.** There is a critical need to sustain the momentum for recovery with constant monitoring particularly due to the chronic nature of floods in the basin and which are followed by droughts or when one part of the basin is affected by floods and other parts experience drought as this may exacerbate the current disaster for communities who are still in the process of recovering. Please refer to Integrated Flood Risk Management Plan for the Shire Basin.

### Implementation

1. **Prioritizing service delivery support to**

**local governments in the affected areas directly in the short-term and a program of capacity building over the long-term.**

Even prior to the current disaster, affected districts had limited capacity to implement development programs. The disaster has only impacted this further and there is a need to assess and prioritize capacity development in these areas.

2. **Maintaining realistic recovery programming while exploring innovative and ambitious approaches for implementation.** Planning strategically and conservatively to ensure that there is sufficient capacity to undertake recovery tasks while developing innovative efficiency mechanisms.
3. **Institutionalizing urgency.** Assessing current institutional arrangements including processes and procedures for recovery interventions and if necessary, review and streamline them or develop special dispensation for key recovery processes.

### Governance, Monitoring & Evaluation

1. **Developing a strong monitoring and evaluation (M&E) system** to ensure that the course of recovery, reconstruction, and DRR activities get completed in a timely way. An M&E mechanism must be used as a tool that brings together all the recovery, reconstruction, and disaster risk reduction initiatives that have been envisaged towards delivering results as a coherent whole. The users and target audience of the performance management tools should be the managers of these programs and the projects that make up the recovery programs going forward.
2. **Employing a dedicated body within the Government of Malawi** to own and implement the results agenda for recovery, reconstruction, and disaster risk reduction with adequate resources for its successful functioning.
3. **Leveraging existing capacities.** The capacity of existing M&E systems must be first assessed and any existing capacities and resources must be leveraged. Further, the capacities and resources of development partners' M&E must be assessed in order to en-

sure a harmonized M&E framework for recovery and to leverage synergies.

4. **Maximize credibility through independent oversight mechanisms**, third party monitoring and community-based grievance redress mechanisms.

### Coordination

**Need for a coordinated effort.** In order to be able to create lasting impact for the affected communities, it is imperative that all actors work in concert to put in place and successfully execute interventions that are geared toward building long-term resilience. It will be important to ensure harmonization between all stakeholders involved in needs planning and execution. The government shall be at the helm in coordinating and prioritizing fund flows. There is a critical need to bridge relief, recovery, reconstruction, and disaster risk reduction efforts.

### Institution, implementation, and monitoring & evaluation arrangement

The institutional, implementation, and M&E arrangements for the transitional recovery framework are based on the principle of leveraging existing arrangements wherever possible instead of creating new ones.

While recovery and reconstruction and building resilience may be relatively new concepts, the arrangements for response have been tried and tested in Malawi and thus it was recommended to use this existing arrangement, albeit with a few changes. Please note that a detailed capacity assessment for recovery has not been undertaken under this PDNA and it is strongly recommended that such an assessment be undertaken. Following such an assessment, it is also important that necessary, capacity (legal, resources etc.) be augmented where lacking.

Although several institutional arrangements and strategic approaches for DRM exist in Malawi, there are several constraints and challenges, especially with respect to longer term recovery and reconstruction that have been revealed in light of recurrent disasters in the recent past. Several DRM actors are undertaking different pro-

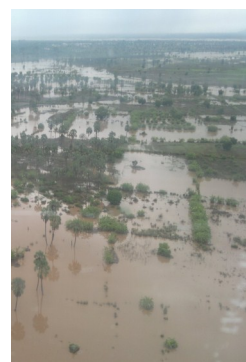
grammes to address some of these challenges but there are many disparate initiatives that are undertaken simultaneously.

The way forward involves the development and implementation of a 'transitional recovery and reconstruction framework' through a consultative process that involves all key stakeholders, including various levels of government and international development partners. This framework will attempt to bring together the efforts of all recovery actors towards planning and implementing the recovery in concert. **The framework is based on:**

1. The clear articulation of priority needs in each sector
2. Sequencing and cross prioritization of needs across sectors, has been undertaken based on the above guiding principles. Needs have been prioritized into 3 categories across sectors taking into consideration needs that are both urgent and important and categorizing them accordingly;
3. Providing an indicative timeline for the implementation of priority interventions, and;
4. The development of key indicators for measuring physical progress and M&E of the performance and effectiveness of the proposed recovery interventions.

Once this is established, the following institutional arrangement for oversight, implementation, and monitoring and evaluation is proposed.

- Ownership and institutional oversight of the planning and implementation of the transitional recovery and reconstruction framework and its results could be undertaken through the National Disaster Preparedness and Relief Committee and the National Disaster Preparedness and Relief Technical Committee, which will in turn report on progress to the Cabinet. These committees will meet periodically to finalize the findings of the post disaster needs assessments and recovery strategies, inform the Cabinet regarding resource allocation and review the implementation of the recovery framework.
- The implementation of the recovery framework will be undertaken by the technical sub-committees in collaboration with DoDMA,

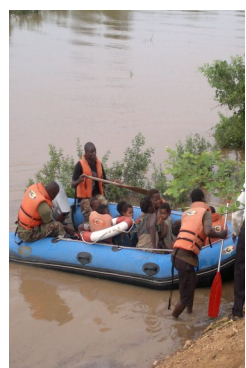
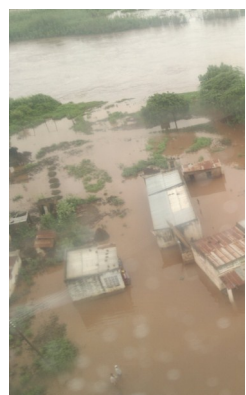


who will be responsible for coordinating and monitoring the implementation of the recovery plan for all sectors. The recovery framework for each sector will be implemented by the relevant ministries and their offices at the district level. Sector ministries will be responsible for planning, monitoring, providing technical assistance, training, and liaison with donors at a program and project level, while the actual implementation, which includes planning, procurement, implementing, supervising and project level M&E, may need to be carried out by district departments.

- DoDMA is best positioned to undertake coordination, capacity building and overall M&E of the recovery framework. This will be done in close harmonization with the sectoral ministries that implement the recovery framework.
- It also becomes imperative that the response phase is closely coordinated with the recovery phase because of the dependencies involved. Districts and communities should be involved in the planning and implementation of the recovery framework. Further, appropriate procurement, safeguards and financial management systems must be applied, including with regards to financial reporting, arrangement of audit, and accounting procedures.
- There can be different sources of funding for the recovery, including government budget, development partner's funds, private sector and community resources. Different development partners may finance different sectors or geographical areas of the recovery framework either by leveraging ongoing projects or new ones. Through these instruments, development partners may provide support directly to the sector ministries or districts. Meanwhile, based on request from sector ministries, and districts the Cabinet will allocate resources accordingly.
- Developing a central system for monitoring and evaluating recovery performance will allow the government and development partners to react in real-time to fast-changing post-disaster settings. This will enable mid-course corrections in program design and implementation, and help reassess develop-

ment outcomes as well the processes underlying them. Such a central oversight mechanism could be hosted by DoDMA, through a dedicated recovery oversight unit that is linked to similar units at the district level. Such a cell could also provide policy advice and guidance to sector line ministries that could relay similar guidance to their district counterparts.

- Central to the above approach would be the development and operationalization of an overarching results framework that strategically harmonizes and integrates all areas of a recovery and reconstruction program. The results framework will help establish a more streamlined results chain by focusing on key outcomes and by measuring intermediate outcomes instead of outputs. Intermediate outcomes would be designed in this system to capture and track the intended changes as they begin to unfold or otherwise, and provide the tools not only for monitoring and evaluation, but importantly for controlling the process and pace of progress in achieving the desired results.
- A central Results Framework or M&E system could be flexibly designed to simultaneously exist at the program, sector and project levels, but effective and efficient M&E would require focusing on what needs to be essentially measured. M&E systems for recovery and reconstruction programs can exist at many levels, and it is important to differentiate between them. These can be at the level of the overall recovery and reconstruction program (which is by definition multi-sector and thus broad-based). At one level below, this can be done also at the sector level, encompassing all projects by all agencies covering one particular sector. Further down, an M&E system can also exist at the project level, covering individual projects. It is important to recognize that, at this level, not all projects need to be evaluated for impact, as it is often unfeasible to do so. Finally, M&E can be done at the level of beneficiary households, often by conducting household surveys. It is here that social impact assessment and participatory monitoring tools such as community scorecards can be utilized.



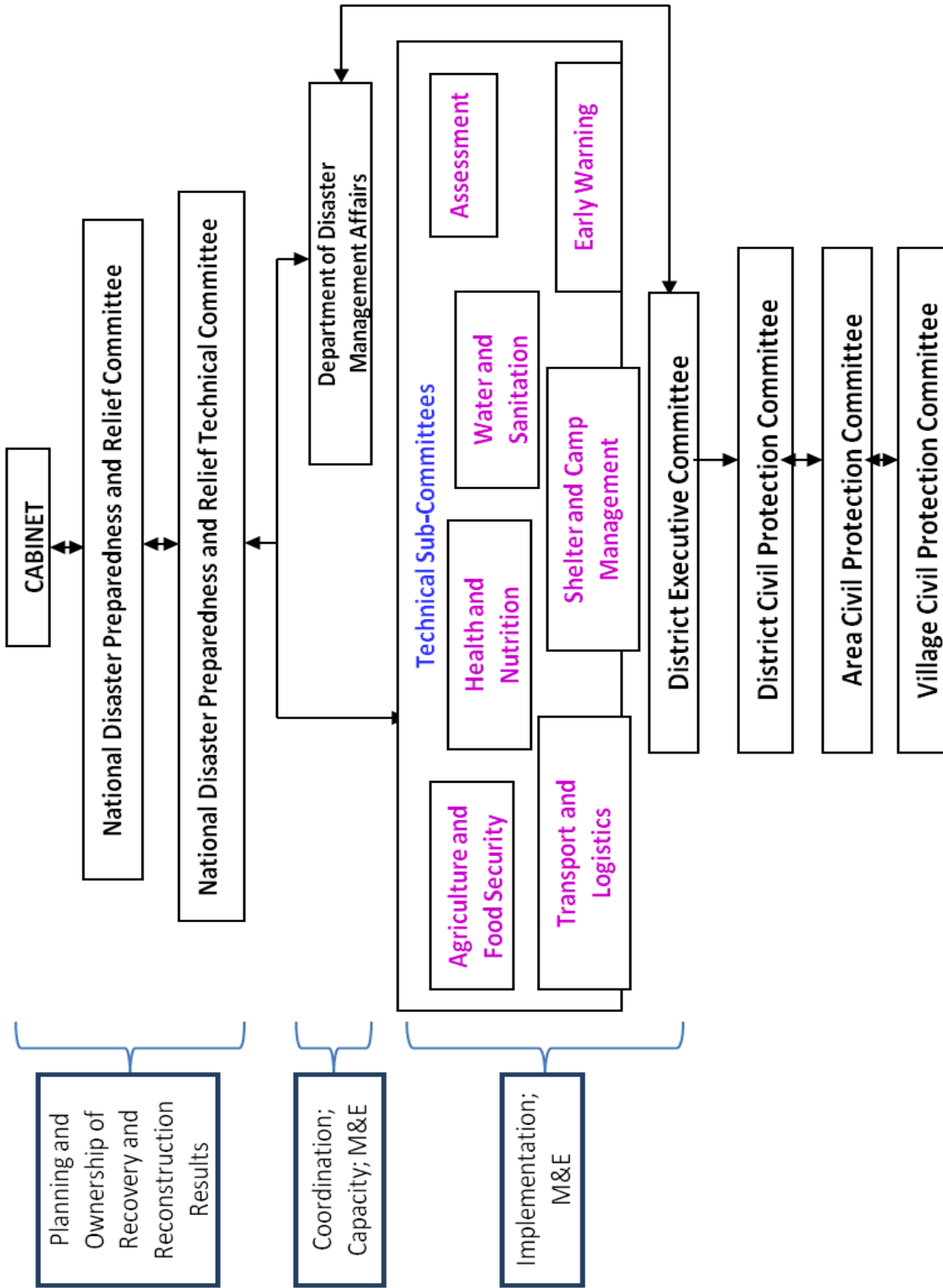


Fig. 5: Institutional, Implementation and M&E Arrangements for Recovery and Reconstruction

## IV. Moving the PDNA Process Forward



### Next steps

The PDNA can be considered to be both a product as well as a process. While the product is the PDNA report - the findings and recommendations of the assessment – the momentum gained in the process of bringing together several government departments and development partners towards a joint assessment must be maintained, strengthened and leveraged.

As a follow up to the exercise, the findings of the assessment should be disseminated within the government and amongst development partners.

This assessment recommends the following action items to take the PDNA process forward:

1. **Appointment of a Post-PDNA Steering Committee:** It will be important to appoint a Steering Committee - a coordinating consultative group, consisting of senior member's across ministries. This body would be responsible to take forward the recommendations of this and future assessments, to implement its Recovery Framework and to own the results agenda for recovery, reconstruction and longer term DRR.
2. **Undertake a Detailed Capacity Assessment for Recovery and Reconstruction:** This assessment mentions the institutional, implementation and M&E aspects of recovery while programming needs in the Recovery Framework for this disaster. However, it is important that a detailed capacity assessment of the institutional, implementation and M&E aspects of recovery and reconstruction be undertaken towards addressing gaps and strengthening long term recovery, reconstruction and DRR capacity for future disasters.

3. **Undertake a Programming Review of the Recovery Framework.** The Recovery Framework presented here represents a sequenced, prioritized set of needs from all sectors. This should be reviewed against existing and envisioned sector budget allocations, projects, and programs for recovery, reconstruction and DRR. It must be noted that some of the indicative DRR needs may be of a longer term and larger scale nature and these should ideally be programmed and mainstreamed into ongoing and envisioned development following detailed feasibility studies. Furthermore, given time and resource constraints, the impacts of droughts in neighboring TAs were not included in the scope of this assessment. It would be useful to strengthen capacity on the definition and quantification of the impacts of droughts in order to be prepared for any future drought impact assessment and include such recommendations into the Recovery Framework.
4. **Monitoring and Evaluation System.** An M&E system must be developed to track the progress of implementation of the recommendations of the report and the recovery itself, with regular reporting to stakeholders.

### Recommendations to improve and institutionalize the PDNA process in Malawi

This hands-on training exercise helped to bring out several practical strengths and weaknesses of the PDNA process and capacity in the country, which will be useful towards its strengthening going forward.

The following are recommendations and lessons learnt towards improving and institutionalizing the PDNA process in Malawi:

1. **Baseline data preparedness.** Given the recurrent na-

ture of disasters in the region, there is an urgent need to strengthen the collection and ready availability of baseline data at all sectors and levels of government. This data must be available at disaggregated levels for all sectors of the economy and a central repository for ready access to this data must be created. Furthermore, there must be a mechanism to ensure awareness and coordination of this data across sectors and to maintain and periodically update the data. Such preparedness would not only allow for better informed decision making, but would significantly increase the speed, accuracy and reliability of similar assessments in the future. This could also be synchronized with open data initiatives currently undertaken by the government and should align itself with the national system of accounts at all levels across the country.

2. **Availability of sector expertise across teams and levels of government.** The level of sectoral capacity and expertise varies significantly between the assessment teams. While some teams had experts that were trained in the assessment methodology, several teams had to depend on experts from other teams. This was a shortcoming also identified during the field assessment as several teams reported that the reason accurate data and recommendations were not available from the original assessments conducted immediately after the floods was because the assessments were not conducted by sector experts. Thus, there is a need to identify and train specific sector experts on the assessment methodology within each team and to have backup options if certain team members are not available for future assessments. It would also be important to re-assess the existing com-

position and fill in gaps in specific subgroups to strengthen these sector groups such as macro-economy, agriculture, education, environment etc. The number of sector experts from government and development partners should also be increased since a disaster of a larger scale may require a significant increase in the number of members in each sector team. This team of experts should not only be available in Lilongwe, but also in other parts of the country such as the various district offices. A training of trainers could be conducted to bolster capacity created and to ensure that future trainings are undertaken within the government. Finally, a system needs to be created to maintain and further strengthen PDNA experts for future disasters.

3. **The need for coordination across sectors and levels of government.** As part of the capacity building initiatives, it will also be necessary to ensure that there is adequate coordination and information flows between the various sectors and levels of government in order to ensure that findings of such are comprehensive. The assessments must also take place as soon as possible after the disaster has occurred in order to accurately capture and isolate impacts and recommendations for the particular disaster.
4. **Establish policy parameters, budgets and strategic options for recovery and reconstruction.** Going forward, it would be useful for assessment teams to include senior officials from the Ministry of Finance and Economic Planning, especially during Recovery Framework planning. This would ensure that the policy, budgetary and other strategic implications would be understood at



the time of designing the Recovery Framework so as to sequence, prioritize and optimize recovery and reconstruction planning in light of the constraints.

5. **Development of customized guidance notes and data templates for the Malawian context.** As a follow up exercise, given that the teams have identified the specific data requirements and templates for each sector, it would be useful to produce sector specific guidance notes and data templates that are tailored to the country context. These templates would take into account specific aspects such as alignment with the national system of accounts, disaster types, amount of disaggregation available (e.g. EPA for agriculture, while GVH for schools) and the like. Furthermore, there is also a need to strengthen certain aspects of the assessment such as availability of templates and questionnaires for human recovery aspects.
6. **Development of a rapid PDNA model.** The current exercise has helped to develop a standard spreadsheets that can be periodically updated with baseline line information and linked to produce a rapid model into which preliminary impact data for subsequent disasters can be plugged in to produce rapid estimates upon which early decisions can be based while the detailed assessments can follow suit with detailed findings and recommendations.
7. **Refinement of data validation techniques:** The current

analyses validated information gathered by spot checks of the affected areas to corroborate reports and by reviewing disaggregated findings. However, technology advancements currently allow for validation and corroboration of disaster effects (e.g. damage values using satellite imagery) using different techniques. The PDNA team could explore and fine tune such techniques in future assessments.

8. **Institutionalization of the PDNA process and methodology.** The current capacity developed could be utilized further by creating a plan to use elements of the PDNA methodology into disaster assessments that are currently undertaken by the government. A review of existing methodologies could be undertaken to ascertain how they could be complemented or supplemented. Moreover, as a bottom-up approach, the findings of the PDNA exercise could be plugged into other top-down studies to corroborate findings. Knowledge exchange visits to countries which are in the process of institutionalizing the methodology is also recommended. Development of Standard Operating Procedures (SOPs) or an Operational Manual for PDNA execution and institutionalization would also be useful. A schematic example for an SOP that leads to the activation of the PDNA process, culminating in a recovery framework and its implementation is shown in figure below.





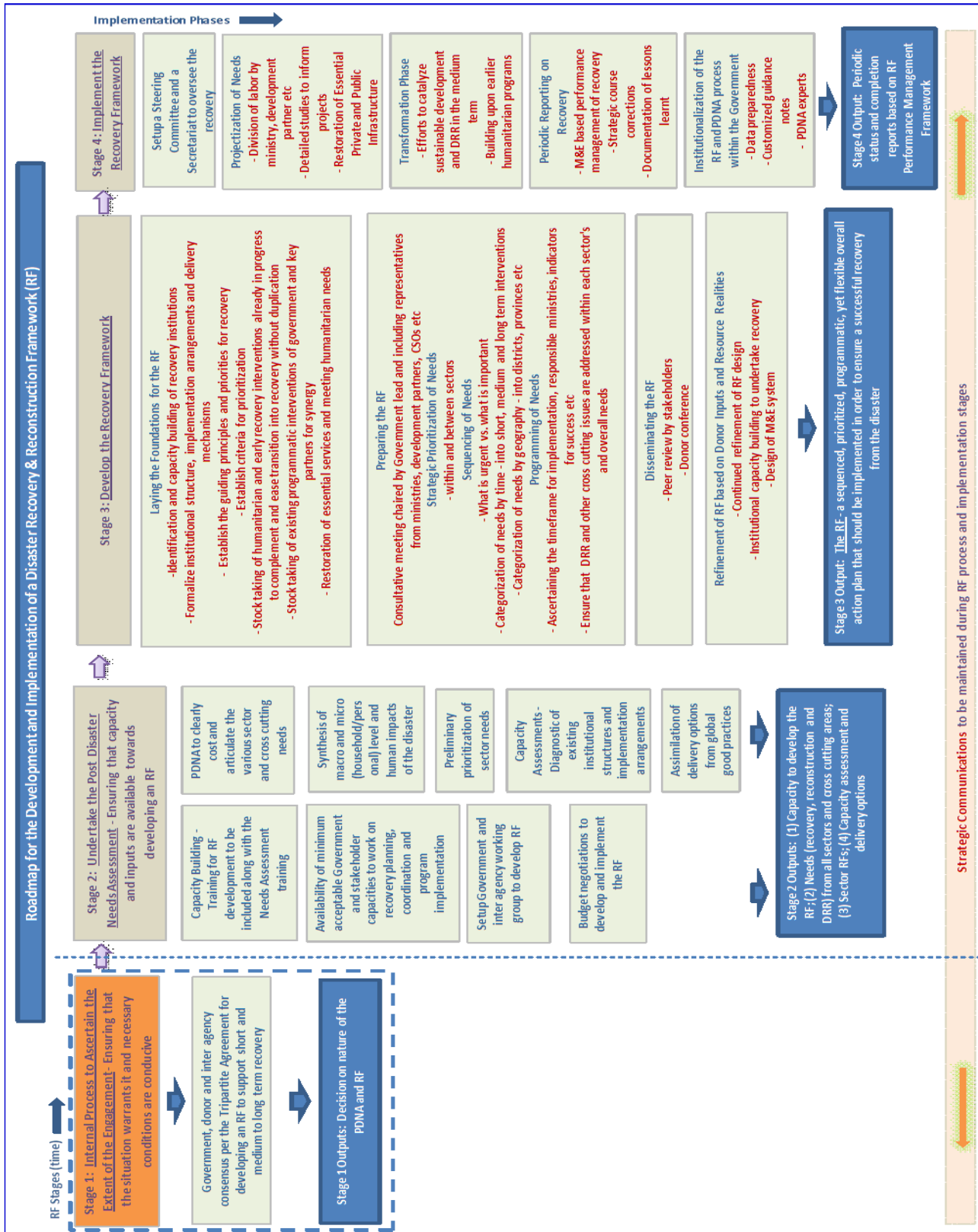


Fig 6: Roadmap for the Development and Implementation of a Disaster Recovery and Reconstruction Framework

# **V. Sector Chapters**

# Agriculture, Livestock, Food Security



## Executive summary

In TA Mlolo, the agriculture sector is comprised of crops, livestock, and fisheries. Agriculture production in the area is rain fed and supported by irrigation. The main staple food crop is maize; while cotton is the main cash crop along with sorghum, millets, rice and sesame. The area is highly susceptible to flooding and drought as well as theft of livestock (mostly goats and chickens) so the farmers have to be constantly on alert in order to mitigate the effects of these multiple risks.

The total value of the damage and losses for the agriculture sector from the floods has been estimated around MK199 million. The highest value of damages were on irrigation and drainage systems (MK84 million), while the main losses were production losses (MK158 million) from crops that were affected by floods.

The recovery needs of the sector include provision of food to households with less food entitlements, provision of agricultural input like seed and ferti-

lizer for irrigation production, replacement of the livestock and purchase of land estimated at MK130.1M. The reconstruction needs entail repairing of the irrigation systems infrastructure, lining of shallow wells and repairing of damaged treadle pumps and this is estimated at MK88.9M. The DRR intervention entails improving the capacity of agriculture extension staff to enable them to mainstream DRR issues in their daily operations. The DRR interventions are estimated at MK4.0M.

Table 8: Agriculture Sector Summary of Damages and Losses (all figures in Million Kwacha)

Damages		Losses		Total	Recovery	Recon- struction	DRR	Total
Public	Private	Public	Private					
61.3	28.2	0.0	109.1	198.6	130.1	88.9	4.0	223

## Background of sector

The agriculture sector has several sub-sectors (including crops, livestock, fisheries and private sectors) which contribute to the smooth implementation of agricultural activities in the country.

In TA Mlolo, most of the agricultural land is under smallholder crop cultivation, with land holding sizes of not

more than 0.4 ha. The crops grown are mostly sorghum, millets, maize, cotton, rice and sesame, the latter three of which are sold for cash. Maize is a staple crop, but its yield is usually affected by droughts or floods so that the area is not yet an exporter of maize. Proceeds from the other crops are used to buy maize and other household items. Livestock species kept in the area are mainly goats and

chickens, both of which are kept within people's dwelling houses due to high incidences of theft.

## Damages

Most of the damage and losses in the agriculture sector were in the silting of land and irrigation infrastructure and immersion of crops in water for long periods. There was also a loss of

Table 9: Agricultural crop land (ha) affected by the floods

Affected GVHs	Affected crop land				
	Maize	Sorghum	Millet	Cotton	Total
Osiyana	460	0	240	800	1500
Mchacha James	278	110	0	170	558
Kalonga	451	0	9	117	577
Sambani	174	35	0	60	269
Namanya	113	0	0	0	113
Chitseko	18	0	0	0	18
Gooke	93	0	0	0	93
Gatoma	131	0	0	0	131
Chiponden	132	0	0	4	136
Chapinga	161	8	0	10	179
Total	2011	153	249	1161	3574
Complete loss of crop (hectares)	1363	145	249	1147	2904
Partial loss of crop (hectares)	648	8	0	14	670

a few goats and some chickens as well as agricultural and farm equipment. Table 9 shows the scope of the affected crop lands as reported by group village headmen.

The total value of the damage and losses for the agriculture sector from the floods has been estimated at about MK199 million (pre-

devaluation of the Malawi kwacha), which was equivalent to \$1.2 million. At the current exchange rate (about \$1 to MK280), the damage and loss is equivalent to about MK337 Million. The highest value of damages were on irrigation and drainage systems (MK84 million), while the main losses were production losses (MK158 mil-

lion) from crops that were affected by floods. Damage to livestock was minimal, but the assessment team felt that there might much have been more livestock damages than the available data suggests had there been a fully functional system for data collection and record keeping.

About 5% (23 ha) of the land that had

Table 10: An overview of the land affected by the floods by area type

Area Description	Value (ha)
EPA	36082
Arable land	21500
Cultivated	8494
Area under Marshes	1200
Masenjere Forestry Reserve	1100

Table 11: Damage to agricultural equipment

Equipment	Details	Quantity (number)
Hoes		1143
Axes		547
Panga knives		103
Treadle pumps	Delivery pipes	409
	Suction pipe	109
	Other parts mostly wooden parts	325

maize (460 ha) in GVH Osiyana was covered by silt. Muona, Chitsukwa, Makombe A and Makombe B irrigation schemes were heavily silted, but sections of Mouna scheme canals were also damaged (Figure 3).

About 409 treadle pumps were damaged but not beyond repair. 24 goats and 316 chickens were reported dead or missing. Because these livestock are kept in people's dwelling houses,



Fig 7: A section of damaged irrigation canal in Muona Irrigation Scheme

## Socio-economic impact

### Food security

The area affected by floods from TA Mlolo may be producing enough food to feed everyone, but there are always some households without food at any given point in time as indicated in Figure 2 below.

From the number of people affected by the floods (10376), the total food required for a year is approximately 2,800 tons maize equivalent assuming 270 kg of maize equivalent per person. The percentage of households without food was 18% and 44% in December, 2011, and February, 2012, respectively. Assuming that in Decem-

ber 2011 the people had enough food to take them through to March 31, food stocks at that time were at 574,312 kg and 261,475 kg in February, at which time the food demand for the remaining 2 months to April was 466,920 kg.

### Losses

In GVHs Osiyana, Mchacha James, Kalonga and Sambani, all the crops were destroyed due to sustained immersion in water; too long for them to recover. The crops that were partially affected were flushed by the floods for shorter periods of time. Replanted maize

yields increased by 16.92% above the projected yields before the floods while the yields for sorghum, millet and cotton went down by 2.81%, 12.22% and 38.44%, respectively. The increase in maize yields are attributed to the positive effect of the deposition of alluvial which accounted for about 25% of the land that was replaced by rice before the floods subsided. The yield from this rice constituted a gain.

Table 12: Loses in Agricultural stores

Crop	Quantity (kgs)
Maize	11325
Millet	349
Sorghum	4279
Rice	1295
Pigeon peas	264
Cow peas	823

ber 2011 the people had a food deficit of 205,445 kg. However, the crops that were still standing in the fields led to a production of 867,627 kg maize equivalents between March and April, leading to a food balance of 662,182 kg. The maize that replaced rice also yielded 222,979 kg maize equivalents. Moreover, about 994 ha of land were put under irrigation, yielding

1,346,870 kg maize equivalents. This means that between April 1 and July 31, the people in the area had food stocks amounting to 2,232,032 kg maize equivalents to be consumed within the next 12 months, leading to a deficit of 569,488 kg maize equivalents worth MK34.2 million at MK60/kg.

However, this deficit is misleading because the people in the area still have irrigated maize and other crops in the fields at various stages of maturity, the combined quantity of which could not be quantified. Hence, the area may apparently appear to be

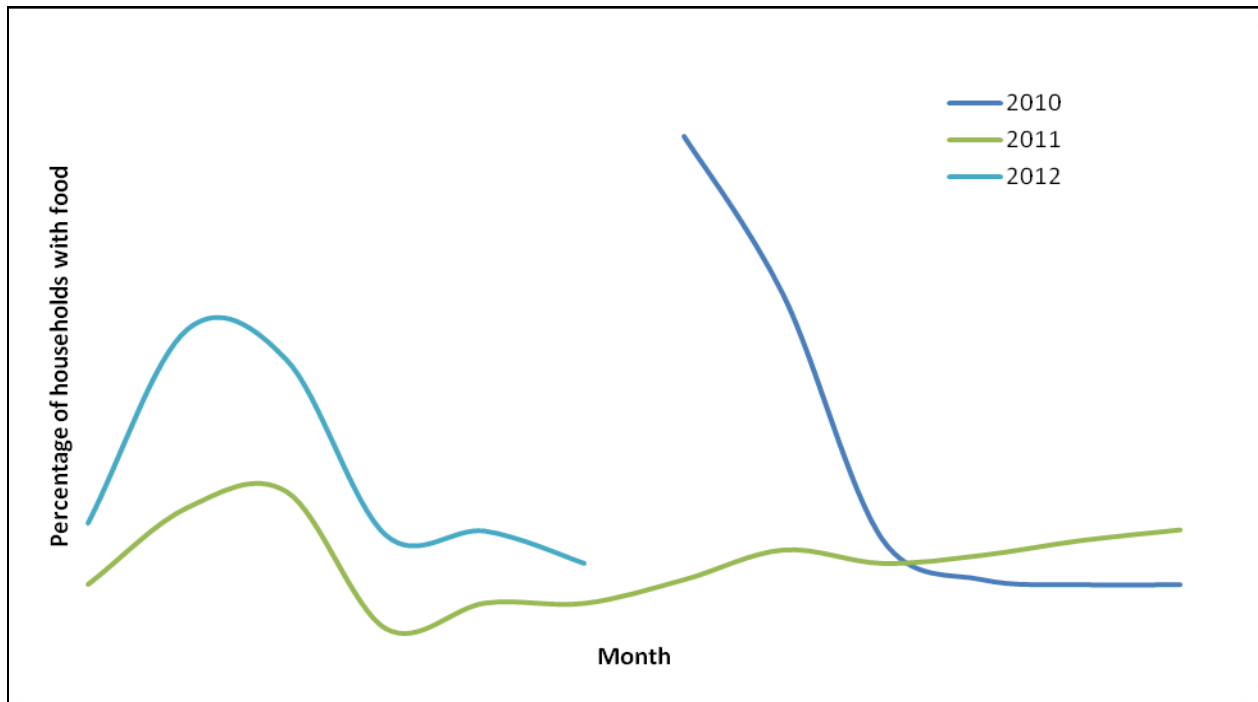


Fig 8: The percentage of farm families without food in Mlolo TA between July 2010 and June 2012

food insecure but most likely does have enough food to feed everyone.

Data on the ground indicates a contradiction. This is due to the fact that rice contributes significantly to the food production of the area, but is generally sold to buy maize and other household needs. Additionally, not all farmers have the land on which to grow rice, explaining why there are

always some people without food at any given point in time although the area produces more than enough food to feed everyone.

#### Loss of income

The loss in cotton yield constituted a big loss of income amounting to MK103.8 million. This figure is a significant loss considering the size of the area. It most likely affected the

farmers' ability to buy food (maize) and other goods and services.

#### Needs

A number of short and medium needs have arisen as a result of the floods. A summary of needs is presented in Table 13.

#### Land recovery needs

A total of 23ha of fertile and produc-

Table 13: Agriculture Sector summary recovery and reconstruction and DRR needs (MK millions)

TA	Recovery	Reconstruction	Disaster Risk Reduction	Total
Mlolo	130.1	88.9	4.0	223.0

tive land, which was planted with maize before the floods subsided, was destroyed. According to extension workers and farmers in the area, this piece of land cannot be used immediately until it is dredged and recovered.

The proposed recovery programme will therefore include the cost of dredging of 23ha to reclaim the damaged area and recover the losses for production that have resulted from the change of land use resulting from

the flood. The dredged sand can be used for construction or the repair of irrigation canals and wells, hence ensuring safe and environmentally friendly disposal of flood sand.

### **Food distribution**

An immediate impact of flood is loss of production from maize and sorghum which are staple food crops for the EPA. Loss of cotton resulted in a loss of income that farmers could use to buy food from markets.

These two impacts have caused food insecurity in the flood area and the threat of severe malnutrition is high. Food support is greatly needed for the most affected GVHs and households.

It is estimated that about 569,488 metric tons of food assistance will be required at a cost of MK34.2 million.

### **Agricultural inputs**

The assessment team has proposed that farmers should be provided with free agricultural inputs for irrigation. The proposed inputs are fertilizer (both basal and top dressing), crop seed, pesticides and de-wormers.

Given that the Malawi Government has in place social support programmes such as the Farm Input Subsidy Programme (FISP), the Public Works Programme under the Local Development Fund and the Social Cash Transfer, the assessment team would like to recommend that deliberate efforts should be made to direct

such programmes to the flood affected area.

### **Irrigation needs**

Makhanga EPA is a hub of irrigation agriculture. Floods, however, significantly destroyed the irrigation sub-sector. Both smallholder and large scale public and private irrigation systems were affected. Affected schemes included Muona Irrigation Scheme, Chitsukwa Irrigation Scheme, Mlewa Irrigation Scheme, Makombe A and B Irrigation Schemes. The common impact of flooding was the siltation of canals breaking off delivery and suction pipes.

### **De-silting of affected canals and replacement**

The impact of the floods on smallholder irrigation was mainly through damage and loss of treadle pump parts, with a total of 409 treadle pumps being affected. The main need to restore smallholder irrigation in the area is the replacement of lost or damaged parts of treadle pumps. In the medium term, the maintenance of treadle pumps should be supplemented by educating farmers on proper storage and safe-keeping of treadle pumps, particularly during the flood seasons.

### **Proposal for construction of canals**

### **and flood water reservoirs**

The assessment team found that there is a lot of potential for harnessing flood water for use for agricultural purposes (irrigation, livestock, pasture production and biodiversity). As a short to medium term strategy, the team has proposed, as part of a recovery and reconstruction programme, a strategy to construct canals that drain into storage wells that will store water for agricultural practices. The water will be treated to prevent spreading of malaria.

The pictures below shows an example of a naturally occurring lowland which is currently being used for irrigation and fishing. On their own, farmers have dug some shallow wells which they are already using to store flood and rain water for irrigation. However, these shallow wells have not yet been lined, so they tend to be ineffective. In addition to constructing new shallow wells, the recovery programme will support farmers to line the existing shallow wells.

### **Capacity building of extension workers**

The assessment team noted that despite the key role that the agriculture sector plays in the economy of the area and the extent to which the sec-



tor is affected by floods, the agriculture extension system has limited capacity to align agricultural programmes in the context of floods. The team further noted that data on damages, losses and needs of the sector, arising from floods is sparse, inconsistent and often not available, at district and community level. The team did not find evidence of capacity on data collection, analysis and interpretation at district and community level.

### Coordination needs

The assessment team found that after the floods, an assessment team was organized at district level to assess damages caused by the floods. However, the team did not have the required capacities, tools and resources to effectively carry out the assessment. In addition, the team noted that agricultural sub-sector specialists (such as crops, livestock, land resources etc) were not involved in the assessment. This could have led to underestima-

tion of damages caused by the floods. There is need for District Councils to ensure proper coordination and involvement of experts from all sectors in post-disaster needs assessment exercises.

### Needs estimation

The recovery, reconstruction and risk reduction needs discussed above are estimated in Table 13.

### Strategic initiatives

Table 14: Agriculture Sector Recovery, reconstruction and DRR needs (MK millions)

Item Description	Recovery	Reconstruction	DRR	Total
Food for households that do not have it	22.8			22.8
Inputs (seed, fertilizer, pesticides, drugs)	104.6			104.6
Replacement of animals	0.4			0.4
Purchase of land	2.3			2.3
Repair of drainage and irrigation systems		60.4		60.4
Lining of shallow wells		8.3		8.3
Digging of shallow wells		0.0		0.0
Maintenance of treadle pumps		20.2		20.2
Capacity building of extension staff		0.0	4.0	4.0
<b>Total</b>	<b>130.1</b>	<b>88.9</b>	<b>4.0</b>	<b>223.0</b>

There is a need to carry out studies to find out the possibility of dredging the Ruo River just before it reaches the Shire River. Another possibility is to train the Ruo by constructing a number of channels with inbuilt flood protection bunds to direct flood water into the marsh. Coupled with the aforementioned flood water reservoirs, such channels can act as a tool for enhancing irrigation agriculture, thereby protecting the people from floods and from drought problems associated with rain-fed agriculture while at the same time.

### Methodology

This PDNA was done at an EPA level, which is the smallest agricultural administrative unit on which data can

be found. The EPA in this case is Makhanga, which covers the entire TA Mlolo. The problem with this approach is that although the EPA is small in size, there are some variables that vary widely, especially between the upland and lowland areas of the EPA. Hence, application of coefficients and constants such as productivity indices across all the areas may be misleading, also considering that most of the affected areas are in the lowland areas. Where specific values were found or could be calculated, efforts were made to use these instead of the overall values.

The data from this assessment were broadly from secondary sources from the District Agricultural Development

Office (DADO) and the Makhanga Extension Planning Area (EPA). However, there were a lot of deficiencies in the data, mainly because the previous disaster assessment committees did not actively involve sector specialists in the assessment, or at least in developing tools for collecting necessary data for post disaster needs assessment. Hence, a field visit which was initially meant to be for verifying the data as also used for collecting data that were not available at the agriculture offices (DADO and EPA). The field visit involved meetings with community leaders and key stakeholders in the area, discussions with sector specialists and visits to sites of importance such as irrigation schemes.



# Water and Sanitation



## Executive summary

In TA Mlolo water infrastructure is composed of boreholes and protected shallow wells. There is no piped water supply. The entire water supply infrastructure is constructed with support from Government or NGOs, hence they are public property. Sanitation and hygiene facilities in these areas include latrines, refuse pits, hand washing equipment, kitchen and bath shelters. All these sanitation and hygiene facilities are private property.

The total damage for public property in Water and Sanitation Sector in TA Mlolo as a result of floods in January 2012 is estimated at MK6.4M and for private property is estimated at MK34.8. The losses in the sector include added amount of chemicals re-

quired to make the water potable and the time spent to get collect water. Thus the total loss is estimated at MK 50.1 m for public property and MK 140 m for private property.

The floods filled up all the boreholes in the area rendering them useless. Almost all the water points became contaminated and non-functional. Communities resolved to use unprotected water points far from the new dwelling locations after the floods. This led to more time spent in searching for potable water and more chemicals needed to make the collected water potable.

The recovery needs of the sector include promotion of suitable sanitation

technologies and safe hygiene practices and it is estimated at MK24.0m.

The reconstruction needs entail rehabilitation of damaged water points located near to safer location and construction of a new water supply system plus relocating sites. This is estimated at MK194.1M.

The DRR intervention includes construction of flood control structures for Thangadzi and Ruo rivers. This includes dyke construction for Thangadzi River, a Multipurpose dam and offshore storage for the Ruo River, some of these interventions requiring detailed feasibility studies. The DRR interventions are estimated at a cost of MK 219 M.

Table 15: Water and Sanitation Sector Summary Damages and Losses (all figures in Million Kwacha)

TA Mlolo GVHs	Damages		Losses		Total	Recovery	Reconstruction	DRR
	Public	Private	Public	Private				
Osiyana	2.1	12.2	18.3	51.1	83.7			
Chiponde	1.1	8.3	12.2	34.1	55.7			
Mchacha James	3.2	7.0	7.9	22.1	40.2			
Chitseko	0.0	0.3	1.1	3.1	4.5			
Karonga	0.0	6.5	7.4	20.7	34.6			
Sambani	0.0	0.5	3.2	8.9	12.6			
<b>Total</b>	<b>6.4</b>	<b>34.8</b>	<b>50.1</b>	<b>140.0</b>	<b>231.3</b>	<b>24.0</b>	<b>194.1</b>	<b>219.0</b>

### Background of sector

The Irrigation, Water and Sanitation sector is one of the key priority areas of infrastructure development that effectively contributes to sustainable economic growth and development in the country. The vision of the Irrigation, Water and Sanitation sector is 'Water and Sanitation for all always and prosperity through irrigation.' The long-term goal of the sector is to ensure that water resources are well protected and managed to meet all water demands including irrigation in a sustainable manner.

The overall sector objective is to achieve sustainable and integrated water resources management systems and proper utilization through irrigation by 2016; increase availability and accessibility of water and sanitation services for socio-economic growth and development; and develop the institutional capacity of the water and sanitation sector.

The Irrigation, Water and Sanitation Sector is guided by various key policy and strategy documents which provide the overarching management framework for the sector. These documents include the Malawi Growth and Development Strategy (MGDS 2006-2011), National Water Policy (2005), National Sanitation Policy (2008), Draft Irrigation Policy, Water

Resources Investment Strategy (2011), Water Sector Investment Plan (2012). The sector moved away from project based approaches to programme based one is currently implementing the National Water Development Programme. In December 2008, the sector launched the Sector Wide Approach (SWAp). The SWAp approach will assist in improving coordination and harmonizing implementation of programmes and activities among stakeholders in the sector as an effort to avoid duplication of resources/efforts and ensure proper utilisation of available resources.

The most recent statistics on water supply have indicated that water supply coverage in the country increased from 52% in 1985 to 75% in 2009. About 79.1% of the urban population use piped water supply systems while 61.1% of the rural population use boreholes and protected shallow wells (NSO, 2009). It is projected that water supply coverage accordingly to MGDS II will be 80% by 2013, 85% by 2015; and full coverage by the year 2025. On the other hand, the target for the MDGs is 74% coverage by 2015.

For the urban and town water supply areas, the water supply coverage is about 67%. Coverage in these areas is

mainly affected by inadequate levels of investment in infrastructure, and rapidly expanding unplanned settlements, and non-replacement of ageing infrastructure has contributed to high levels of non-revenue water. In the rural areas, the population get water from over 30,000 boreholes (fitted with hand pumps) and 13,000 taps in over 80 gravity-fed piped water supply schemes (MoIWD, 2008). According to Sector Performance Report (2012), approximately 30% of the water points are non-functional at any given time. The sector plans to reduce non-functional water points to 25% by 2013, 15% by the year 2015, and 5% by the year 2025.

On Sanitation, the coverage for basic sanitation according to the Population and Housing Census of 2008 increased from 85% in 2005 to 94% in 2009, while the coverage for improved sanitation increased from 46% in 2005 to 50% in 2009. Access to improved sanitation has not increased at the same rate as water supply, increasing from 42% in 1990 to 51% in 2010. According to JMP report (2012), Malawi still registers 8% for open defecation.

According the District State of the Environment Report, TA Mlolo in Nsanje District had 227 boreholes in 2009. It must be noted that Nsanje



Table 16: Number of Water Points in Nsanje District

TA	Year	Wells	Boreholes	Piped supplies
Mlolo	2009	0	227	0
Mbenje	2009	4	192	0
Tengani	2009	0	198	0
Malemia	2009	0	128	12
Ndamera	2009	0	112	4
Ngabu	2009	0	41	0
Makoko	2009	0	18	0
Chimombo	2009	0	50	0
Total		4	966	16

Table 17: Number of Boreholes in the flood affected area of TA Mlolo

GVH	Total # of Households	Total borehole
Osiyana	950	13
Chipondeni	667	3
Mchacha James	433	11
Chitseko	60	0
Kalonga	406	19
Sambani	174	1

Boma and Bangula Trading centers are being supplied with water by the Southern Region Water Board which also pump water from underground sources.

Ordinarily, the members of the community repair the water facilities including the pumps. These are organised and elected Water Point Committees that are trained by the Ministry of Water Development and Irrigation. Subjects on training range from Leadership, Fund Raising and Fund Management, and Pump Maintenance. Most of the committees are able to raise their own funds and repair the pumps when they break down. The

Ministry only comes in when there is a major breakdown of the boreholes. The system is known as Community-Based Management (CBM).

#### Damages

Damages on water and sanitation were experienced on boreholes, shallow wells and toilets among others. For example, interviews with stakeholders and the affected population showed that water points were completely submerged in the flood area. This caused degradation of water quality hence making the facilities unsuitable for human use. As a result during and immediately after the floods the district council with sup-

port from development partners and NGOs provided water treatment chemicals like waterguard and HTH chlorine.

Apart from degrading the water quality, the floods physically caused damage to water facilities such that some of them completely failed to function due to accumulation of silt in the boreholes.

The major areas greatly affected by the disaster were for Group Village Headmen (GVHs) Osiyana, Mchacha James, Chitseko, Kalonga and Sambani. However, GVH Chipondeni was affected but not as heavily as the oth-



Table 18: Number and category of people affected by the floods in TA Mlolo

ID NO	AFFECTED GVHs	AFFECTED PEOPLE	Extent of damage from field officers)	AFFECTED SCHOOL GOING CHILDREN	CHH AFFECTED	AFFECTED ELDERERS
1	Osiyana	2300	100%	0	0	0
2	Mchacha James	2167	100%	2547	3	210
3	Kalonga	2031	100%	3390	6	189
4	Sambani	870	100%	1604	1	101
5	Namanya	363		0	6	0
6	Chitseko	298		750	0	69
7	Gooke	510		0	0	0
8	Gatoma	308		0	0	0
9	Chiponden	672		1781	0	479
10	Chapinga	857		0	0	0
<b>Total</b>		<b>10376</b>		<b>10072</b>	<b>16</b>	<b>1048</b>

ers. According to one of the extension workers interviewed at TA Mlolo's court, the experience was like seeing death.

#### Losses

Losses in the water and sanitation sector were identified in terms of costs incurred to procure water treatment chemicals and time taken by the community to fetch potable water. Interviews with local health workers showed that a bottle of waterguard cost about MK50.00. This bottle was known to be adequate for treating about 200 litres of water, which is equivalent to the water needs for standard Malawian household size of 5 members (per capita water demand is about 36 litres).

#### Socio-economic impact

Studies in Malawi show that the majority of smallholder farmers are women. Since the floods occurred in a rural setting where the major livelihood is food cultivation it is envisaged that the population that suffered most were women, children and the elderly.

The table above shows some of the characteristics of the affected against the total number of people affected by the floods. Though the figures may need verifying the table shows that out of the 10,376 affected population 10,072 were school going children while 1,048 were the elderly. This may imply that when bringing interventions to address identified needs deliberate efforts could be made to help children and the elderly and other vulnerable groups

#### Existing sectoral policies and priorities, and major programs

The Ministry of Water Development is implementing the National Water Development Programme (NWDP) in which components on water resources and water supply are being addressed. The NWDP responds to the sector policies like the National Water Policy (2005), the National Sanitation Policy (2008) and the Decentralisation Policy (1998). In 2012, Nsanje District was targeted as one of the districts to benefit from the WASH Project with support from the Netherlands Government implemented

through UNICEF. It is hoped that some of the interventions that need to be implemented in the TA Mlolo could benefit from these initiatives among others. Besides, with regard to water resources management the Ministry is also implementing the Shire River Basin Development Project with support from the World Bank.

#### Needs estimation

The assessment team found out a number of needs to be addressed in TA Mlolo. Some of the needs are for recovery, reconstruction and risk reductions. For instance, in the short term due the affected people's needs in the area; there is need to rehabilitate and maintain the water points. These facilities will serve the people that may not immediately relocate to the new settlement.

The team also made a technical decision for the new settlement to access safe water. Due to the technical challenges and settlement pattern of the population, it was felt that boreholes fitted with hand pumps may not be suitable. Inquiries were also conduct-

ed with the people in the area to identify possible raw surface water resources for a piped water supply system. In the final analysis, the water and sanitation experts preferred to sink three (3) boreholes, which could be reticulated to the target population in GVH Osiyana. These initiatives would be done in concordance with the promotion of sanitation activities.

In the long-term, the team decided that flood control structures be constructed on Thangadzi East River and the Ruo. On Thangadzi River, the proposal is to construct two (2) dykes and dredging. This intervention would help to control the flooding of the river by raising its banks and deepening the channel. Considering that recently the Ministry of Water Development and Irrigation has procured equip-

ments to address disaster issues, this should be feasible using local resources. The rehabilitation of Muona Irrigation Scheme under the IRLAD project may further assist in this regard. Exact location and dimension of dykes will need to be further determined and modeled under the Integrated Flood Risk Management Plan for the Shire Basin.

As regards the Ruo River, the proposal is to construct a multi-purpose dam and an offshore storage. Through this activity, the flow could be controlled on the river hence preventing further risk of flooding in areas of GVH Osiyana and those around Makhanga area. The activity is feasible because the Ministry is in the process of implementing the Shire Basin Project.

### Sector priorities

As indicated in the figure below, the needs have been categorized into the short-term, medium-term and long-term. For instance, the innermost circle indicates those needs that require to be done immediately due to the condition in which the affected population is. Therefore, the team is of the opinion that the rehabilitation and maintenance of water points and sanitation promotion be the priority.

Construction of water supply system in the new settlement could be done in the medium-term, this will take into account the people's needs, technical requirements and cost implication to undertake the assignment.

The construction of the flood control structures would be considered in the

Table 19: Water and Sanitation Sector Recovery, reconstruction and DRR Needs (MK)

Water supply needs	Recovery Needs	Reconstruction Needs	DRR Needs
Rehabilitate and maintain safe water points (boreholes)	-	660,000.00	-
Construction of water supply systems in new settlements for the households****	-	193,548,125.00	-
Construction of flood control structures - dykes along Thangadzi East River	-	-	219,000,000.00
Construction of flood control structures on Ruo River - Multi - purpose dams	-	-	Requires detailed feasibility study
Construction of flood control structures on Ruo River - Offshore storage	-	-	Requires detailed feasibility study
Water Supply Sub total	-	194,208,125.00	219,000,000.00
Sanitation needs			
Promote suitable sanitation technologies	12,000,000.00	-	-
Promote safe hygiene practices	12,000,000.00	-	-
Sanitation Sub total	24,000,000.00	-	-
<b>Total</b>	<b>24,000,000.00</b>	<b>194,208,125.00</b>	<b>219,000,000.00</b>

long-term because it requires further studies and financial support from both Malawi Government and the development partners.

*First tier critical:* Rehabilitate and maintain safe water points. Construction of water supply systems, Promote suitable sanitation technologies, Promote safe hygiene practices

*Second tier:* Construction of flood control structures on Ruo River - Offshore storage, Construction of flood control structures - dykes along Thangadzi East River

*Third tier:* Construction of flood control structures on Ruo River – Multi-purpose dams

### **Methodology**

The assessment was done in TA Mlolo of Nsanje District where floods that occurred in January 2012 damaged property, and in the process rendered many people about 6159 homeless. The results in this report are based on data gathered through interviews with district officials, NGO representatives, volunteers and the flood victims themselves.

In addition to interviews, the assessment involved observation of infrastructure and physical checks on damage. For example, boreholes that were reported damaged had to be tested by attempting to pump water

and listen to any defects in the equipment. One hand pump at Osiyana village about 300 metres from the new settlement indicated a disconnection on the down hole components.

The assessment team is aware that some of the findings may be difficult to substantiate because some data was missing. For instance, it was not possible to tell the extent of damage on the hand pumps because no attempt was made to dismantle the equipment due to time limitation and unavailability to do thorough checks.

Table 20: Water and Sanitation Sector Recovery Plan

Challenge in Sector	Need	Current Road-blocks (e.g. Information, Institutional Capacity etc)	Activities	At What Level Should this Activity be Undertaken	Estimated Cost (MK)	Responsible	Existing Initiatives and Partners to be leveraged	Indicative Timeframe
I. Provide safe water supply to the communities	IA. Rehabilitate and maintain safe water points (boreholes)	A. Lack of accurate information regarding areas/people to target B. Inadequate monitoring and evaluation (M&E) system C. Inadequate number of technical staff to supervise works	A. Identification of target households to supply facilities B. Procurement and distribution of Afridev pump spare parts C. Follow up (e.g. pest control, M&E) to be done up until time of harvest D. Assessment of condition of the hand pump	County, District	660,000.00	Ministry of Water Development and Irrigation (MoWDI)	e.g. Red Cross and WALA	Nov. 2012 to March 2013
	IB. Construction of water supply systems in new settlements for the households****	A. Inadequate finances B. Low technical capacity of communities to manage the facilities C. Poor access road D. Weak M&E systems in the sector	A. Geophysical surveys of borehole drilling sites  Preliminary surveys of socioeconomic and topography of the area B. Community mobilization and sensitization C. Borehole drilling D. Construction of water supply reticulation system powered by solar	County, District, Village	193,548,125.00	MoWDI, Ministry of Local Government, Ministry of Health	National Water Development (WASH Component)	Jan 2013 to February 2013
	IC. Construction of flood control structures - dykes along Thangadzi East River	Inadequate number of technical staff Limited financial resources	A. Feasibility studies B. Creation of access roads C. Mobilization of equipment and construction materials			219,000,000.00	MoWDI, Ministry of Local Government,	Shire River Basin Development Project

Challenge in Sector	Need	Current Roadblocks (e.g. Information, Institutional Capacity etc)	Activities	At What Level Should this Activity be Undertaken	Estimated Cost (MK)	Responsible	Existing Initiatives and Partners to be leveraged	Indicative Timeframe
	ID. Construction of flood control structures on Ruo River - Multi - purpose dams	Inadequate number of technical staff B. Limited financial resources	A. Feasibility studies B. Environmental and Social Impact Assessments C. Procurement of contractors D. Construction works	County, District,		MoWDI, Ministry of Environmental Affairs, Department of Disaster Management	Shire River Basin Development Project	Oct. 2014
	Construction of flood control structures on Ruo River - Off-shore storage	Inadequate number of technical staff B. Limited financial resources	A. Feasibility studies B. Environmental and Social Impact Assessments C. Procurement of contractors D. Construction works	County, District,		MoWDI, Ministry of Environmental Affairs, Department of Disaster Management	Shire River Basin Development Project	Oct.2014
II. Provide improved sanitation services	IIA. Promote suitable sanitation technologies	Inadequate number of technical staff B. Limited financial resources	A. Assessment of existing technologies B. Selection of existing technologies that suit the area C. KAPs Survey	County, District, Village	12mn	MoWDI, Ministry of Local Government, Ministry of Health	NWDP (WASH Project)	Nov. 2012
	IIB. Promote safe hygiene practices	Inadequate number of technical staff B. Limited financial resources	A. Baseline study	County, District, Village	12mn	MoWDI, Ministry of Local Government, Ministry of Health	NWDP (WASH Project)	Nov. 2012



# Health



## Executive summary

Evidence from the assessment clearly shows that the floods in TA Mlolo affected the health sector amongst others. Although there were no damages reported, the health sector disaster effects totaled MK 88.7 Million in losses, nearly 80 percent (MK 69.6 Million) of which was due to effects on malnutrition, 16 percent (MK 13.3 Million) were malaria related effects and the rest were combined effects of Other Flood Related Diseases (OFRDs). The cost of recovery and DRR needs associated with these effects is MK 27.5 million and MK 98.5 million respectively. Priority is emphasized on first curbing high incidence of post disaster malnutrition amongst the under five children and secondly on interventions to reduce post disaster malaria incidence for recovery needs. On the DRR needs side, priority is being placed on capacity building in IDSR System management.

Table 21: Health Sector Summary of Damages and Losses

Health Facilities in TA Mlolo	Damages		Losses		Total	Recovery	DRR
	Public	Private	Public	Private			
Trinity				19,186,998			
Masenjere			17,983,725				
Mlolo			18,557,744				
Makhanga			4,040,591				
Sankhulani			28,919,703				
Mchacha			0.00				
Total			69,501,765	19,186,998	88,688,764	27,500,000	98,500,000

## Sector background

The Ministry of Health (MoH), composed of different departments, is a government agency that sets the agenda for health in Malawi in collaboration with stakeholders. It is responsible for the development, review and enforcement of health and related policies for the health sector; spear-

heading sector reforms; regulating the health sector including the private sector; developing and reviewing standards, norms and management protocols for service delivery and ensuring that these are communicated to lower level institutions; planning and mobilizing health resources for the health sector including allocation and management; advising other min-

istries, departments and agencies on health related issues; providing technical support supervision; coordinating research; and monitoring and evaluation. The MoH established five zonal offices. The role of the Zonal Offices is to provide technical support to District Health Management Teams (DHMTs) in planning, delivery and monitoring of health service delivery

at the district level and facilitation of central hospitals' supervision to districts.

In Malawi health care services are delivered by both the public and the private sectors. The public sector includes all facilities under the MoH, MoLGRD, the Ministry of Forestry, the Police, the Prisons and the Army. The private sector consists of private for profit and private not for profit providers (mainly CHAM). The public sector provides services free of charge while the private sector charges user

fees for its services. In accordance with the Decentralisation Act (1997) the MoLGRD is responsible for the delivery of health services at district and lower levels with technical guidance from the MoH. As has been mentioned earlier, the MoH headquarters is mainly responsible for development of policies, standards and protocols and providing technical support supervision. It also manages central hospitals. As was the case during the PoW 2004-2010, during the HSSP the health services will be delivered at different levels: namely: primary, sec-

ondary and tertiary. These different levels are linked to each other through an elaborate referral system that has been established within the health system.

Health facilities in the area are not adequately staffed. The number of the Health Surveillance Assistants who are the grass root Community Health workers are fall short of the recommended ratio of 1:1000.

Table 22: Services Provided and Flood related diseases in TA Mlolo

Health Facilities In TA Mlolo	Catchment Population	Services provided			No. of HSAs	Flood Related Diseases before floods (3 <sup>rd</sup> Quarter)					
		Clinical	Maternal and Child Health (MCH)	Public Health		Bilharzia	Cholera	Dysentery	Malaria	Malnutrition	HIV/AIDS
Trinity	19,042	Yes	Yes	Yes	6	42	0	0	2207	16	78
Masenjere	14,789	Yes	Yes	Yes	6	0	0	0	2273	65	0
Mlolo	8,181	No	Yes	Yes	6	9	0	0	0	0	0
Makhanga	13,222	Yes	Yes	Yes	5	90	0	5	818	10	21
Sankhulani	6,715	Yes	Yes	Yes	6	24	0	13	454	0	25
Mchacha	7,633	No	Yes	Yes	6	0	0	0	0	0	0

### Damages and Losses

The floods did not cause any damage to health facilities. However, disruption to basic needs and essential services resulted in Flood Related Diseases. Malnutrition, malaria and cholera were amongst the most notable in local health facilities.

Access to some health facilities was disrupted for more than a month where health facilities were com-

pletely surrounded by water and could only be accessed by boat or helicopter.

The burden of Flood Related Diseases exceeded normal thresholds three months after the floods. Cost of treatment of diseases such as malnutrition and malaria were higher they were before floods.

The most affected health facilities were Trinity Hospital, Sankhulani and Makhanga. The floods caused disruptions of HIV and AIDS services because patients lost Health Passports with vital information about their status and treatment. Such patients were out of camps and information on impacts to them was not available for the assessment.

Table 23: Flood Related Diseases incidences in the 4th Quarter

Health Facilities in TA Mlolo	Flood Related Diseases after floods (4 <sup>th</sup> Quarter)					
	Bilharzia	Cholera	Dysentery	Malaria	Malnutrition	HIV/AIDS
Trinity	82	0	618	2816	63	201
Masenjere	3	0	3	1983	127	0
Mlolo	10	0	0	0	0	0
Makhanga	55	14	35	1226	9	66
Sankhulani	43	0	14	918	72	19
Mchacha	0	0	0	0	64	0

### Existing sectoral policies and priorities, and major programs

The goal of the Ministry of Health (MOH) is to improve the quality of life of all the people of Malawi by reducing the risk of ill health and occurrence of premature deaths thereby contributing to the social and economic development of the country. To achieve this goal the MOH is guided by the Essential Health Package (EHP) which highlights the key priorities and interventions to be implemented. The interventions and priorities are identified through EHP conditions and they are 13 in all as follows: HIV/AIDS/STI; Acute Respiratory Infections (ARI); Malaria, Diarrhoea diseases (cholera, dysentery etc); Adverse

maternal and neonatal outcomes; Non Communicable Diseases (NCD) and trauma; Tuberculosis (TB); Malnutrition; Cancers; Vaccine Preventable Diseases (VPDs); Mental illness including epilepsy; Neglected Tropical Diseases (NTDs); and Eye, ear and skin infections.

### Challenges

The following challenges were identified as a result of the disaster:

- Increased post disaster incidence of malnutrition amongst under five children;
- High levels of post disaster malaria at all levels (under five & over five populations);
- Continued post disaster resurgence of Other Flood Related Diseases (OFRDs) - Bilharzias, Diar-

rhoea, Dysentery, Cholera, HIV / AIDS

### Key objectives of recovery and resilience building in this sector

To prevent and/or reduce the incidence of Flood Related Diseases in TA Mlolo, specifically:

- To assess the extent of nutritional status of under 5 children;
- To conduct flood related awareness campaigns on health & nutrition;
- To strengthen integrated nutrition management;
- To reduce malaria incidence;
- To implement Indoor Residual Spray (IRS) campaign; and
- To strengthen an IDSR

## Needs estimation

The recovery needs were estimated at MK 27.5 million while those for DRR were estimated at MK 98.5 Million. Some examples for recovery needs include costs pertaining to deworming, micronutrient supplementation, treatment of severe acute malnutrition, early treatment of malaria at household, community and health centre level, early care seeking- use of ORT for Cholera/ Dysentery, provi-

sion of ART and supplementary Feeding for HIV/AIDS. The DRR needs primarily pertained to capacity building initiatives data requirements; and awareness campaigns respectively.

Disasters like floods and others require multi-sectoral approach if they are to be effectively and efficiently handled. In this regard collaboration and coordination of all stakeholders through partnerships and other sup-

port groups are being highly advocated. DODMA should therefore take a leading role in identifying and engaging strategic partners as well as coordinating DRR and other related needs at all levels in the disaster area. Streamlining of activities will ensure cost cutting; holistic approach to disaster problems and feasible solutions; and effective means of resource pooling and integration.

Table 24: Health Sector recovery and DRR Needs

Subsector Needs	Recovery Needs	DRR Needs
TA Mlolo	MK' Million	
1. Conduct a Nutritional Survey in TA Mlolo		15.0
2. Recruit, train & deploy CHWs according to staffing norms		2.5
3. Procure & distribute bicycles to all CHWs		1.5
4. Rejuvenate existing Nutrition Management coordination & collaboration structures at all levels	0.5	
5. Conduct regular stakeholders' coordination & collaboration Meetings		4.5
6. Conduct rigorous awareness campaigns on Insecticide Treated Nets (ITN) use	12.0	
7. Recruit, train and deploy Indoor Residual Spraying (IRS) Operators	5.0	
8. Conduct awareness campaigns on Other Flood Related Diseases	2.5	
9. Strengthening IDSR through capacity building; infrastructure development etc		75.0
10. Conduct mass treatment campaigns	7.5	
<b>Total</b>	<b>27.5</b>	<b>98.5</b>

Table 25: Health Sector Recovery Plan

Challenge in Sector	Need	Current Road-blocks (e.g. Information, Institutional Capacity etc)	Activities - What has to be Done to Resolve the Need and to Overcome the Road-blocks	At What Level Should this Activity be Undertaken	Estimated Cost	Responsible	Existing Initiatives and Partners to be leveraged	How Will this Intervention be Different in Delivering Impact	Indicative Timeframe	Suggested Indicator of Output Progress
I. Malnutrition	a. To assess the extent of nutritional status of <5 children in TA Mlolo	a. Funding	a. Conduct a Nutritional Survey	Traditional Authority	MK 15 Million	Ministry of Health & NSO	UNICEF, UNDP, JICA, GIZ, Hunger Project etc	a. Extent of malnutrition in TA Mlolo will be established by the survey hence ease of design of appropriate interventions	Short term	- 2 Nutritional Surveys implemented - Nutritional Survey Report produced
	b. To conduct flood related awareness campaigns on health & nutrition	a. Inadequate community health workers b. Mobility	a. Recruit, train & deploy CHWs according to staffing norms b. Procure & distribute bicycles to all CHWs	Community	a. MK 2.5 Million b. MK 1.5 Million	Ministry of Health	UNICEF, UNDP, JICA, GIZ, Hunger Project etc	a. TA Mlolo will be sensitized on health & nutrition promotion hence saving costs	Short-to-long term	- No. of CHWs recruited, trained and deployed - No. of bicycles procured and distributed to CHWs - No. of planned awareness campaigns actually conducted
	C. To strengthen integrated nutrition management	a. Lack of stakeholders' coordination & collaboration framework	a. Rejuvenate existing coordination & collaboration structures at all levels b. Conduct regular stakeholders' coordination & collaboration meetings	All	MK 5 Million	Ministry of Health	UNICEF, OPC	a. Improved coordination & collaboration of all stakeholders	Long term	- TORs developed - No. of stakeholders meetings conducted - Integrated Nutrition Management Framework strengthened

Challenge in Sector	Need	Current Roadblocks (e.g. Information, Institutional Capacity etc)	Activities - What has to be Done to Resolve the Need and to Overcome the Roadblocks	At What Level Should this Activity be Undertaken	Estimated Cost	Responsible	Existing Initiatives and Partners to be leveraged	How Will this Intervention be Different in Delivering Impact	Indicative Timeframe	Suggested Indicator of Output Progress
2. Malaria morbidity	<p>a. To reduce Malaria incidence in TA Mlolo</p> <p>b. To implement Indoor Residual Spray (IRS) campaign in TA Mlolo</p>	<p>a. Adherence to proper use of ITNs</p> <p>b. Funding and timing of the campaign</p>	<p>a. Conduct rigorous awareness campaigns on ITN use</p> <p>b. Recruit, train and deploy IRS operators</p>	Community	<p>MK 12 Million</p> <p>MK 5 million</p>	Ministry of Health	UNICEF, Red Cross, PSI	Cost cutting measure on treatment considering wastage in use of free ITNs	Medium to Long term	a. No of awareness campaigns conducted
3. Other flood related diseases (OFRDs) - Bilharzias, Diarrhea, Dysentery, Cholera, HIV /AIDS	a. To have an Integrated Disease Surveillance & Response System (IDSR)	Inadequate funding	<p>a. Conduct awareness campaigns on OFRDs</p> <p>b. Strengthening IDSR through capacity building; infrastructure development etc</p> <p>c. Conduct mass treatment campaigns</p>	District	<p>a. MK 2.5 Million</p> <p>b. MK 75 million</p> <p>c. MK 7.5 Million</p>	Ministry of Health	WHO, UNICEF, PSI	Streamlining of activities therefore cost effective measure	Medium to Long term	<p>a. No. of OFRDs awareness campaigns</p> <p>b. No. of mass treatment campaigns for Bilharzias conducted</p>

# Energy



## Executive Summary

The damage to electricity infrastructure as a result of the floods which occurred in January 2012 was not extensive as compared to other sectors. The damage only involved one transformer that fell down due to weakened poles. It is important to note that some of the poles which were immersed in flood water will have their life span reduced and will need replacement earlier than planned.

The losses incurred during the disaster included loss of revenue by Electricity Supply Corporation of Malawi (ESCOM) Limited, loss of revenue to some enterprises, and additional costs incurred for alternative source of lighting due to loss of power after the transformer got damaged. The period for loss of power was only two days.

The needs after the disaster include replacement of the damaged transformer and supply of power to the relocation site. The need for earlier replace-

ment of immersed poles will have to be done gradually and can be done within the utility's budget. It is therefore important that this should be incorporated in the risk management plan of the utility. The table below shows summary of the damages, losses and needs. It should be noted that the DRR needs have been addressed under the environment chapter, and that the recovery needs have already been made available through the power utility.

Table 26: Energy Sector Summary Damages and Losses (all figures in MK million)

Sub-District or TA	Damages		Losses		Total	Recovery	Reconstruction	Total	DRR
	Public	Private	Public	Private					
GVH Karonga and Sambani	1.232		0.005	0.005	1.242	18.938	17.71	18.938	2.5
Total	1.232		0.005	0.005	1.242	18.938	17.71	18.938	2.5

## Pre-disaster Situation

**Electricity generation and transmission:** The Power Sector in Malawi is currently undergoing reforms following the formulation of the National Energy Policy and enactment of the Energy Laws in 2008. However,

ESCOM Ltd is the national power utility responsible for the generation, transmission and distribution of electricity in the country. The total installed capacity is 282.5 mega watts (MW) for the country. Except for a 4.5 MW Wovwe mini hydro-power station on Wovwe River in

Karonga District the remaining electricity is generated on Shire River whose swelling waters caused the flooding of the area in question. These are:

- Nkula A with a capacity of 24MW
- Nkula B with a capacity of

- 100MW
- Tedzani I, II, and III with a capacity of 90MW
- Kapichira with a capacity of 64MW

Other energy sources include liquid fuels and gas, biomass (firewood and charcoal), renewable energy sources (solar and wind) and coal. Over 90% of the energy demand is met by biomass, while liquid fuels and gas contribute 3.5%, electricity at 2.3%, coal

at 1% and renewable energy sources at 0.2%.

Malawi does not import power from neighbouring countries but does export to border towns in Mozambique and Zambia. The current peak demand for power is at 347MW. Electricity is transmitted at 132kV and 66kV.

**Distribution:** Distribution of electricity is at 33kV and the facilities are di-

vided into three regional distribution networks namely; South Electricity Supply, Centre Electricity Supply and North Electricity Supply. The rate of access to electricity in Malawi is about 9% of the total population, and in the rural areas it is about 2% of the rural population. As such over 90% of the energy demand in Malawi is met by biomass energy which includes firewood, charcoal and agricultural residues.

Table 27: Electricity Penetration in TA Mlolo

Sub district or TA	Households				
	Total # of Households	Electrified Households			
		Total with Electricity	Grid	Solar	% of Electrified Households
Mlolo	2887	378	378	0	13%

Source: ESCOM Ltd and Final Report on Flooding Disaster in TA Mlolo and Mbenje Area by DODMA

## Damages

The damage caused by the disaster to the electricity infrastructure was not extensive and limited to the distribution facilities since there are no electricity generation and transmission facilities in the affected area. The damage included a few poles for the power distribution lines and one distribution transformer which fell down due to weakening of the soil supporting these structures.

Replacement of the damaged transformer was done after two and half weeks but

power was restored earlier by connecting to an existing transformer. The fallen poles were not replaced but were merely put back to position. Except for the fallen poles the rest were partly immersed in the flooding waters. It is therefore likely that the replacement of these poles will be within a shorter period than normal. All the damaged houses were not connected to electricity so there was no replacement of energy meters. The table below contains details of the damages to electricity infrastructure in the affected area. Over knee high level of flood water on the electricity poles



Table 28: Damages to Electricity Infrastructure

Type of Equipment	Quantity	Unit Cost (MK)	Total Cost (MK)
Distribution Transformer	1	1,232,000	1,232,000
Total	1	1,232,000	1,232,000



Table 29: Losses to ESCOM clients

Type of Customer	Quantity	Period (Days)	Revenue/Cost (MK)	Total Revenue in 2 Days (MK)
Maize Mills	8	2	4,250	68,000
Domestic	252	2	150	75,600
<b>Total Revenue</b>				<b>143,600</b>

Table 30: Losses to power utility due to loss in electricity sales

Type of Customer	Quantity	Period (Days)	Unit Revenue per Month (MK)	Total Revenue in 2 Days (MK)
Domestic	252	2	284.42	4,778.30
Maize Mills	8	2	8,891.39	5,471.63
<b>Total Revenue</b>				<b>10,249.93</b>

### Socio-economic impact

The social and economic impact of the disaster has been mainly to the loss of power for two days. Economically people had to spend more money looking for alternative sources of electricity, others lost revenue since their businesses wouldn't operate. Refer to the damages and losses above for resources spent for alternative energy sourced and revenue due to the disaster.

### Proposed sectoral recovery and resilience building analysis

The key energy policies relevant to this situation include:

- Reliable supply of modern energy services;
- Increased access to electricity; and
- Sustainable and efficient use of

energy resources without compromise to environment.

In pursuit to these policies the government is implementing the Malawi Rural Electrification Programme (MAREP) through electricity grid extension and stand alone mini grid systems, promotion of renewable energy technologies and use of energy saving technologies.

The major concern is the supply of modern energy services and efficient use of energy sources in the newly occupied area. Considering that firewood is the major source of energy as of now, the first priority will be the promotion of energy saving stoves to reduce the amount of firewood required for cooking in the relocated area. The introduction of the energy saving stoves has already been done in the area by Total Land Care but

there is need to enhance its promotion.

### Challenges

Since energy saving stoves uses biomass energy the challenges for their promotion are the same as those related to biomass energy. Apart from the major challenge pertaining to the type of settlement in the area, other challenges include:

- Dependence on inefficient technologies;
- Market regulation is very difficult because biomass is a free resource;

There is need for permanent structures as these stoves are fixed and need to be protected from rains. As for the provision of modern energy services, such as electricity the major

Table 31: Cost for Electricity provision to new settlement

Item	Cost (MK)	Remarks
Provision of Electricity to new Settlement	17,706,500	This involves construction of a 33kV power lines for 6.5km from Makhanga to Osiyana and a 400V power lines for 1.5km and installation of a 100kVA transformer.



challenge is financing.

### **Key objectives of recovery and resilience building in this sector**

The key objectives include:

- Supply of affordable and modern energy services; and
- Sustainable and efficient use of energy resources.

### **Needs estimation**

The damaged transformer has already been replaced. The replacement was financed by ESCOM Ltd. The fallen poles have also been put back to the original position and supply has been restored. However, since some people are being relocated to a new area there is probability that certain facilities that will need provision of electricity will be established and provision of electricity will be required.

Since most existing poles were immersed in flood waters their life span is expected to reduce and there is need for a replacement plan (see picture). The estimated cost of providing electricity to the relocation site and pole replacement plan is detailed in table 31. The relocation site is up hill

where there is a natural forest. During investigations it was observed that there is unnecessary cutting down of trees far beyond resettlement requirement. Indications were that some of the cut trees are used for firewood. There is no other alternative to firewood for cooking energy since firewood has been the source of energy prior and post disaster. Therefore the immediate intervention required is to introduce energy saving cooking stoves. This technology has already been introduced in the area by Total Land Care, but intensive promotion needs to be strengthened.

### **Strategic initiatives**

Two projects have been identified and these are promotion of the energy saving stoves and electrification of the relocated area. Activities in the promotion of energy saving stoves will include training of the villagers on construction and efficient use of the stoves. The training will be conducted through extension officers for government and non-governmental organizations within the area. The rationale for this project is to intervene on the efficient use of the energy sources within the area thereby saving the

forest resources.

The electrification of the area will involve construction of power lines to the area. Coincidentally, Sankhulani Trading Centre in Nsanje District has been identified to be electrified under MAREP Phase Seven which is expected to commence early next year. The area can then be electrified under this project. The rationale for electrification of the area is to supply power to the upcoming trading centre and other facilities.

### **Methodology**

The methodology employed to come up with the chapter included field trips, collection of information through officers in the field and interviewing of people in offices. Interviewed people included, ESCOM Officer, Officer-In-Charge for the area, government extension staff from various departments, small scale business enterprise at District and Village levels. The major limitation was lack of readily available data from ESCOM Ltd on the actual power demand for the area.

Table 32: Energy Sector Recovery Plan

Challenge in Sector	Need	Current Roadblocks (e.g. Information, Institutional Capacity etc)	Activities - What has to be Done to Resolve the Need and to Overcome the Roadblocks	At What Level Should this Activity be Undertaken	Estimated Cost	Responsible	Existing Initiatives and Partners to be leveraged	How Will this Intervention be Different in Delivering Impact	Indicative Timeframe	Suggested Indicator of Output Progress	Suggested Indicator of Outcome Success	Baseline and 2014 Target
I. Efficient use of Energy Resources in area in the next 6 months	IA. All people resettled in the area are trained in construction and efficient use of Energy Saving Stoves.	Lack of information on technologies and practices for efficient use of energy resources	Training of villagers on construction of energy saving stoves and their use and benefits	District and Village	2,500,000	Dept. of Energy Affairs	Total Land Care Promotion of Energy Saving Stoves Project	Focused targeting of beneficiaries and a mandatory M&E framework	Sept 2012 to Feb 2013	60 Villagers trained in Construction of Energy saving stoves	Number of stoves constructed by the trainees	0% and 90%
	IB. All households in the area own and use energy saving stoves	Cultural beliefs and practices	Training of villagers on construction of energy saving stoves and their use and benefits	District and Village	-	Dept. of Energy Affairs	Total Land Care Promotion of Energy Saving Stoves Project	Focused targeting of beneficiaries and a mandatory M&E framework	Sept 2012 to Feb 2013	Number of stoves constructed	Number of stove being used	0% and 90%
II. Supply of affordable and modern energy services	Relocation area is electrified	Lack of funding	Construction of power lines to the area	District and Village	17,706,500	Dept. of Energy Affairs and ESCOM Ltd	Dept. of Energy Affairs Rural Electrification Programme	Focused targeting of beneficiaries and a mandatory M&E framework	2013 to 2014	Construction of power lines	Number of households and facilities connected	0% and 20%

# Environment



## Executive summary

Disasters such as floods are natural phenomena, but man-made factors influence their intensity, frequency and more importantly, the severity of damages and losses. The impact of the floods on the environment is complex which makes quantification particularly tricky when baseline data is not readily available. The process is further complicated by the difficulty in gathering data during and after the floods.

## Background

The following is a summary of relevant policies referenced for the assessment:

### National Environmental Policy (2004)

National Environmental Policy (NEP) was developed in 1996, and revised in 2004. The overall policy goal of the NEP is promotion of sustainable social and economic development through the sound management of the environment in Malawi. The NEP highlights the areas of priority including efficient utilization and management of natural resources. It accommodates the private sector, CBOs, NGOs and the community to participate in the initiation and mobilization of resources, to achieve sustainable environmental management. It also provides for the involvement of local communities in environmental planning. The policy empowers the communities to protect, conserve and sustainably utilize the nation's natural resources. It advocates enhancement

of public awareness and promotion of public participation. It also prescribes cooperation with other governments and relevant international/regional organizations in the management and protection of the environment. The NEP objectives set a foundation for addressing a broad range of environmental problems facing Malawi.

### National Forestry Policy (1997)

This policy main goal is to promoting sustainable contribution of national forests, woodlands and trees towards the improvement of the quality of life in the country by conserving the resources for the benefit of the nation and to the satisfaction of diverse and changing needs of Malawi population, particularly rural smallholders. The policy provides an enabling framework for promoting the participation of local communities and the private sector in forest conservation and management, eliminating restrictions on sustainable of essential forest products by local communities, and promoting planned harvesting and regeneration of forest resources by Village Natural Resources Manage-

ment Committees (VNRMC)

### Fisheries Policy (2001)

The main goal of the fisheries policy formulated in 2001 is to maximize the sustainable yield from the national waters of Malawi and made-made water bodies. The policy aims at improving the efficiency of exploitation, processing and marketing of quality fish products, and promotes investment in the fishing industry, rural fish farming units and exploits all opportunities to expand existing and develop new aquatic resources.

### Wildlife policy (2000)

The wildlife policy (2000) was formulated to ensure proper conservation and management of wildlife in order to provide for sustainable utilization, equitable access and fast sharing of benefit from wildlife resources for both present and future generations. To achieve this, the policy set several objects such as: ensuring adequate protection of representative ecosystems and their biological diversity through promotion and adoption of appropriate land management prac-

tices that adhere to principles of sustainable use; enhancement public awareness and understanding of the importance of wildlife conservation, management and its close relationships with other forms of land use and others.

#### *Important Ecological Sites*

TA Mlolo is in Nsanje district and is bordered by Thyolo in the north, Chikwawa in the northeast and the remaining areas are surrounded by

the Republic of Mozambique. The district has several important ecological sites which include Ndindi Marshes, Elephant Marshes, Mwabvi Wildlife Reserve, Matandwe and Masenjere Forest Reserves which serve as centers for the conservation of biological diversity.

The flood affected areas in TA Mlolo have two main ecological sites; Masenjere and Elephant Marshes. Although the economic benefits of the elephant marshes are not fully under-

stood, they house significant biological diversity in terms of fauna and flora. The area has more than 13 fish species, a diverse range of birdlife including migratory birds, some wildlife such as hippos and crocodiles which are some of the endangered species under the Convention on International Trade in Endangered Species (CITES) and a variety of plant species (Nsanje DSOER). Table 33 below, lists the locations of some of the important ecological sites.

Table 33: Location of important ecological sites

Ecological Sites	Location
Elephant Marshes	TA Mlolo
Masenjere Forest Reserve	TA Mlolo
Matandwe Forest Reserve	TA Mbenje, TA Tengani, TA Malemia
Mwabvi Game Reserve	TA Mbenje, TA Tengani, TA Malemia

## **Damages and Impact**

### *Biodiversity*

#### *Flora*

As mentioned above, TAs Mlolo and Mbenje are within forestry, ecological and important sites. All the three reserves were affected by the floods that affected TA Molo and Mbenje directly and indirectly.

Masenjere Forest Reserve covers an area of 1100 hectares. After the floods, people were moved to an area near the reserve and according to the Acting District Officer, it is estimated

that 36 hectares of forests were destroyed by displaced people who were cutting down trees for firewood, charcoal and temporary shelter construction. Similarly, Matandwe Forest Reserve, which has a total area of 26,381 hectares lost 10 hectares in the same manner. It was also reported that encroachment in the Masenjere and Matandwe Forest Reserves for cultivation was a survival strategy in the event that fields in Dambo lands were affected.

Some efforts were made to minimize destruction of indigenous trees in the response to the floods. The Red Cross

for example assisted the flood affected people in TA Mlolo by providing tents, plastic sheets and also dug and built temporary toilets. In all these activities blue gum, pine, acacia and neem poles were used but they were bought and indigenous trees were not used. . At the relocation site, where about 850 households are relocating, trees are wantonly cut for fuel wood and other purpose such building of temporary shelters. The building of temporary shelters using indigenous trees is attributed to the absence of alternative building materials and a lack of environmental awareness despite the availability of Village Natural Re-



sources Management Committees (VNRMC) in the area.

## **Fauna**

### **Impact on Fish**

The impact of the floods on the fishing industry in TA Mlolo was both positive and negative. It is estimated that 20% of the population of people in TA Mlolo are fishermen. The floods affected an important ecological site, the Elephant Marshes. The Elephant Marshes are regarded as natural dams or ponds and cover 1200ha, where most of the fishing is done. Floods are advantages in the area because they assist in restocking fish in the marshes.

There are several types of fish species which are caught in the area, but the most common ones are: *Oreochromis Mossambicus* locally called Makakana or Mphende; *Clarius Nganensis* locally known as Chikano; *Clarius Gariepinus* locally known as Mlamba.

It is estimated that there was a 40% reduction in fish production in the months preceding the disaster especially in January 2012. This was as a result of losses in fishing gear as well as displaced people. However in the month of February, the tonnage increased. This was because the flood water left behind numerous fish in the shallow waters and it became easy for fishermen to catch the fish.

The District Fisheries Officer was quick to point out that sometimes fishermen disturb the ecosystem by burning grass in the marsh that disturbs aquatic life such as Nyika (tubers that grow in the Shire River as well as Elephant Marshes). Nyika act as a coping mechanism in Nsanje when there is food shortage as the tubers are pounded into flour and eaten as nsima. Some vulnerable com-

munities also use Nyika as a source of income by selling it in markets.

### **Impact on other aquatic animals**

The floods also affected other aquatic animals such as crocodiles and hippopotamus both directly and indirectly. The directly impact of floods on crocodiles was the siltation and destruction of breeding ground and nests. Although it is difficult to assess the number of nest destroyed, the floods deposited a lot of silt along the river banks which might have covered crocodile nests.

The indirect impacts of floods according to National Parks and Wildlife Officer were caused by farmers. Most of the farmers tend to rely on residual moisture in the marshes to cultivate winter crops. While winter cropping, farmers clear bushes in the marshes, disturbing the breeding and feeding grounds for crocodiles and hippopotamus. This creates conflicts whereby animals attack farmers and destroy crops and during this period there was an increase in crocodile attacks.

To protect farmers from crocodile attacks, the officials from National Parks and wilds life kill crocodiles which are found or reported to be in shallow water near the crops fields. After the floods about 58 crocodiles were killed by parks official and the national crocodile hunters association. Apart from winter cropping, during floods, crocodiles tend to move inland with flood waters. When water rescinds, the crocodiles get stranded and attacks on people increase.

### **Impact on terrestrial animals**

The floods also affected other terrestrial animals. Relocated to uplands is occurring in natural habitats for hyenas. The loss of their habitats has forced hyenas to move around villages where reports of attack on livestock

have increased. The District National Parks and Wildlife Officer further said that the floods that hit TA Mlolo coupled with dry spells has increased poaching and illegal timber sawing in Mwabvi Game Reserve. The increase in the illegal activities in these protected areas by the communities is a direct result of the floods and dry spells that hit the district and the people have resorted to unconventional coping strategies. The animals that are easy targets for poachers are kudus and buffaloes.

### **Land degradation**

The use of land in the affected areas is not based on recommended practices that support the sustainability of the land and this leaves it susceptible to erosion. During the second decade of January, 2012 Ruo catchment received more than 1311mm cumulative rainfall which translates to 158% more than normal for that decade.

At this time, soil water content was already high as such much of this water translated into run off that was dumped in the Ruo river and resulted in floods in TA Mlolo where erosion was a secondary problem. However, the extent of the damage due to erosion is difficult to quantify as field measurements of erosion are not available no institution measures this.

It should also be noted that soil erosion due to floods is exacerbated by many other factors including unsustainable farming practices that are common in the catchment. These include tillage of agricultural lands that breaks up soil into finer particles, increasing the amount of soil available for erosion. Other such practices include cultivation on steep slopes and the usage of chemical fertilizers that kill microorganisms that bind soil together. There is a high rate of deforestation in the catchment of Ruo River

which also increases soil erosion.

In TA Mlolo, covers 36082 hectares where 21500 is arable land for agriculture. Agriculture requires removing of trees that produce a layer of leaf litter and humus that cover the floor. These layers form a protective mat over the soil that absorbs the impact of rain drops. The layers allow rainwater to slow and percolate into the soil. The roots of the trees also hold soil particles together preventing them from being washed away. Cultivating very close to river banks also increases soil erosion due to loosening of the soil during plowing. Heavy grazing reduces vegetative cover and causes severe soil compaction, of which increases erosion rates.

During floods a lot of sand was deposited along the productive dambo soils. About 23 hectares of fertile dambo soils was covered with sand and rendered unproductive. The rate of soil erosion is also a function of population (Reich Eswaran and Beinroth, Global Dimensions of Vulnerability to Wind and Water Erosion, <http://soils.usda.gov/use/worldsoils/landdeg/papers/ersnpaper.html> ) For instance a population density of 41 to 1000 persons per square kilometer is very moderate vulrenability (moderate land conseravtaion is fol-

lowed) to water erosion has a potential of losing soil 10mg per hectare annually.

Soil erosion also results in siltation of rivers that raises the river bed and then provides a positive feedback of floods by increasing chances of flood occurrences since rivers fill more quickly as is noted in TA Mlolo. Floods that break the banks as is common in TA Mlolo change the pathe of the river and cause additional erosion where water flows.

#### *Water quality*

The major impact/damage of floods on water quality was the pollution of drinking water sources. Most people in TA Mlolo depend on unprotected shallow wells, bore holes, and rivers as a source of drinking water that were polluted by overflowing pit latrines.

TA Mlolo had 2649 latrines that were damaged by floods. Most of these pit latrines are usually shallow due to sand loams soils which characterized the area. Diffuse source was another source of pollution for drinking water sources.

#### *Waste management*

After the floods, relief activities from the government, NGOs, Churches, and other well wishers poured into the affected area. Most of the relief product contains packaging materials which are supposed to be disposed properly. None of the institutions, which provided relief materials after the floods, had waste management plans and the people were not sensitized on proper waste management such as reuse and disposal **Losses**

The losses caused by the damage to the environmental sector are poorly understood due to difficulties in quantifying the economic benefits of the ecosystem to the community in Malawi. The baseline information on the benefits derived from the ecosystem services in TA Mlolo were not available making it difficult to quantify the losses incurred by the community.

#### **Challenges**

The environmental sector is facing several challenges which affect the severity of the floods, the quantity of damages and losses, recovery and construction as well as recovery needs of the area. While forestry sector disaster management plans exist, the challenge lies in their implementation as the sector does not have adequate funds to implement the various activities. At the community level,



officials mention that VNRMCs have been trained in natural resource management. In TA Mlolo for example, there are 18 VNRMCs. Each VNRMC also has a work plan but the major problem is implementation by the committees and supervision by forest officials.

There are several benefits from the forest reserves such as bee keeping, fuel wood, mushroom collection, grass cutting and herbs such as *Jatropha* (Tabalaba). However it is difficult to quantify the benefits because data is not collected on the economical value of forestry to community. Some additional challenges are:

**a. Deforestation and Land Degradation.**

Deforestation, especially in the catchment areas of the major tributaries of Ruo and Shire Rivers, has affected the water retention capacities. As a consequence, after heavy rains water runs quickly into these two major rivers thus increasing the severity of floods. Apart from deforestation, cultivation long river banks and overgrazing has caused land degradation along most rivers in the area.

**b. Limited knowledge in community based natural Resource Management**

The areas affected by floods are endowed by several areas of ecological value, such as the elephant marshes and forest reserves. These areas provide the community with ecosystem services such as forest-based prod-

ucts (honey, mushroom, fruits, timber, phalambungu), and offer a natural defense from floods. However due to limited knowledge on community-based natural resource management, these areas are exploited thus increasing the vulnerabilities of the communities to floods. Apart from this increased vulnerability, there are also possibilities of impacts on livelihoods, although the economic values of ecosystem services are poorly understood.

**c. Lack of an alternative source of income**

Lack of an alternative source of income is one of the major drivers for the overexploitation of natural resource products in TA Mlolo and the catchment areas of the major rivers. Communities engage in the production of charcoal as an alternative source of income.

**d. Uncoordinated and conflicting sectoral policies.**

Government policies, especially in environment and natural resources management, agriculture, water, disaster management and other sectors are not coordinated resulting in conflicts in terms of implementation.

**e. Climate Change**

Climate change is increasing the vulnerability and lessening the resilience of communities in TA Mlolo. The increasing frequency of the dry spells in the area is attributed to climate change.

**Strategic Initiatives**

The main objectives of recovery and resilience to the environmental sector are:

- To safeguard the environment from recovery and reconstruction impacts;
- To increase environmental resilience to flood impacts;
- To increase community resilience to floods;
- To protect and manage the catchments in highlands.

**Needs estimation**

The needs of the environment sector are derived from mitigation/rehabilitation measures which will be put in place to mitigate environmental impacts caused by relief operations as well as potential environmental impact from others sectors recovery process. Apart from mitigations/ rehabilitation needs, direct recovery and reconstruction needs have also been estimated.

**Methodology**

The following methods were used to write this environment section;

- Desk based studies: A review of important national and international documents relevant to the study.
- Field Interviews: Interview were conducted at the district and community levels.



Table 34: Environmental Sector Recovery Plan

Challenge in Sector	Need	At What Level Should this Activity be Undertaken	Estimated Cost (MK)	Responsible	Indicative Timeframe			Priority
					Short Term	Medium term	Long Term	
Limited Knowledge in Community Based Natural Resource Management	Promote awareness in CBNRM	Community	2,000,000	Dept. Forestry				3
	Lack of alternative source of income	Create market mechanism for Natural resource based products	10,000,000	NGOs, Ministry of Agriculture Community				2
Promotion of Alternative Income generation activities	Community	5,000,000	NGOs, Dept Of Forestry					
Uncoordinated and conflicting sectoral policies	Harmonization of sectoral policies	National	5,000.000					5
Land Degradation	Afforestation long River Banks	Community	2,000,000	Forestry Dept.				1
	Promotion of conservation agriculture	Community	4,000,000	Min. of Agriculture				1
	Rehabilitation of gravel pit	Community	450,000	Roads Authority				4

# Education



## Executive Summary

Overall the education sector was affected by this disaster to a magnitude of MK 2,234,000. The majority of this figure corresponds to damages inflicted on furniture, education materials and a school building. The socio-economic impact of the floods is significant to education continuity and dropout rates especially for girls. The reconstruction and recovery needs center on items such as skirting of classroom blocks, construction of storage compartments and the provision of education materials which amount to MK 633,000. The key longer terms DRR needs include relocation of the schools to safer areas, mitigation works and the incorporation of disaster preparedness in education planning.

Table 35: Education Sector Summary of Damages and Losses

Sub District or TA	Damages		Losses		Total	Recovery	Reconstruction	Total	DRR
	Public	Private	Public	Private					
Mlolo	2,232,000		2,000		2,234,000	325,000	308,000	633,000	72,000,000
Total	2,232,000		2,000		2,234,000	325,000	308,000	633,000	72,000,000

## Background

The education system in Malawi follows an 8-4-4 pattern comprising primary, secondary and tertiary levels. Primary education consists of eight years in school, divided into three sections: infant (Std 1 and 2), junior (Std 3 and 4) and senior (Std 5, 6, 7 and 8).

In Std 8 pupils take the Primary School Leaving Certificate Examinations in order to gain access to secondary school. Secondary education lasts for four years and is split into two sections each of two years. The duration of tertiary education varies between two and four years depend-

ing on the specifics of the programme pursued.

Of the current total of 45,075 primary school teachers only 23,429 have qualifications from official teacher training colleges (TTC), leaving approximately 21,000 (42% of the total number of teachers) unqualified and poorly trained.

Furthermore, the distribution of untrained teachers is of significant disadvantage to rural schools, with often only a minority of teachers in these schools being fully qualified (Kunje and Stuart, 1996). Access to each level of education suffers even more from location and income disparities. The

difference in the primary completion rate is 14 percent between boys and girls and 34 percent between urban and rural students. And the disparity is still greater between the richest 20 percent of the population and the poorest 20 percent. Furthermore, university students from the poorest quintile make up only 0.7 percent of students, while the richest quintile accounts for 91 percent.

Access to education is not so obvious in Malawi despite the Malawian constitution giving every child a right to education. This is added to the fact that primary education in Malawi is free but not mandatory.

Nsanje district is located in the southern part of country, some 180 km from Blantyre which lies on either relatively flat or hilly areas. The district is particularly vulnerable to both flooding and prolonged dry spells. Flooding occurs on a more annual basis due to the flatness of the area and the presence of big rivers. According to the District Education Manager (DEM), flooding has negatively impacted education in the district in as far as attendance and condition of classrooms are concerned. Nsanje district has a total of 104 schools with a total of 83,173 learners and 686

qualified teachers representing pupil: qualified teacher: pupil ratio of 121:1 which is above the national average of 80:1. Of the 104 schools 23 are located in T.A Mlolo. These schools have a total of 18,796 pupils and 140 qualified teachers; representing 22.5 % of the total pupils in Nsanje and a qualified teacher ratio of 134:1.

Although the National Education Sector Plan indicates commitment by the Ministry of Education to among other things, improve the quality of education, most education infrastructure in Mlolo area are more than 50 years

old. These buildings, left without any renovations have made it very difficult to adapt to changing environmental conditions resulting from degradation and expanding human settlements. The flooding of January 2012, affected six schools. Of the six schools affected in the area 5 are public schools while 1 is a private school which has not been in use for some time. The five schools have a total of 4,722 pupils, about 5.6 % of the pupil population in Nsanje District. Table below shows the affected schools and number of pupils in the affected schools.

Table 36: Number of pupils and teachers in affected schools

Name	Pupils		Total	Teachers		Total
	Boys	Girls		Male	Female	
Namiyala	343	304	647	11	2	13
Chikonje	433	332	765	9	1	10
Makhanga	769	699	1,468	12	5	17
Chikali	636	473	1,109	10	1	11
Muona	376	357	733	11	3	14
Muona Islamic Boarding (disused)						
Total	2557	2165	4722	53	12	65

## Damage and Losses Assessment

### Damages

According to the Nsanje DEM, a total of six (6) schools were affected by the floods in January, 2012. Although none of the school blocks collapsed due to floods, some schools reported damage to teaching and learning materials due to poor storage systems as flood waters rushed into classrooms and offices. In other cases, some

school blocks had their foundations weakened as a consequence of waters that flooded the schools and stayed for some time.

The floods affected school attendance in two ways. Some schools were closed for a period of four (4) weeks. Two primary school head-teachers also reported to the PDNA team that attendance during the floods dropped significantly as pupils feared to walk the long distance due to presence of crocodiles which come to the shallow flood waters. For schools that also

had school feeding interventions, and the school authorities informed the team that some school feeding materials like Corn Soya Blend was damaged, but they have since been replaced by the World Food Programme (WFP). In total the education sector registered very low damages i.e. MK 2,234,000. This amount comprises damage to skirting at Namiyala school, teaching and learning materials and Likuni Phala for school feeding.

## Losses

Under losses, teaching and learning time was disrupted for a period of one month which resulted in teachers doing double shifts of lessons per day in order to make up for lost time. In terms of revenue losses, the schools were not affected because primary education is free and those that were affected were all public primary schools. The only private school that was affected did not register any losses as learning was off so no classes were disrupted. The only loss recorded was negligible as the opportunity cost of using parents of the pupils to remove mud trapped in classroom. The assumption is the same service if obtained from hired labor would have cost MK 2,000. There was also an additional loss incurred by parents who were expected to pay a total of MK 4,000 for the overtime of teachers towards extra classes to make up for lost time.

## Socio-economic impact and cross-cutting issues

Schools drop outs and low primary school completion rates are some of the concerns that Education authorities in the district raised. This is an issue as the country's MGDS sees education as contributing to Economic Development drop outs and low completion rates however rob the country of quality human capital that could otherwise have contributed to the development of the country. Additionally pupils who drop out end up in early marriages which in turn have far reaching consequences in terms of pressure exerted on basic social services. In addition to these issues the suspension of classes that occurs following flooding leaves the pupils at a disadvantage compared to their fellow pupils in other non affected areas. This in turn might affect the quality of

education that the pupils are getting, and hence the quality of human capital that is supposed to be part of the country's development ingredients.

Girls are at a particular risk of exploitation and abuse during displacement due to floods. Inadequate lighting and bathing facilities in temporary shelters make girls and women vulnerable and fearful of sexual abuses as well as harassment.

The DEM explained that many girls dropout in the district either because of early marriage due to poverty or to look after their siblings due to the deaths of their parents. The decrease in the number of girls in upper classes is higher, especially from standard 5 up to standard 8.

Bearing in mind dropout cases for girls, the Ministry of Education, Science and Technology in collaboration with key development partners like WFP introduced a take-home package every three months. Each girl from Standard 5 to Standard 8 is given 25 kg of flour as an incentive to continue schooling.

## Challenges

- Both the DEM and Member of Parliament for Nsanje North bemoaned of poor natural disaster rapid response and recovery system at the district level. They proposed equipping the district with resources for recovery interventions, which could alleviate some of the issues for people living in flood prone areas in the district.
- Most of the schools were built long time ago and have not undergone periodic maintenance or renovations, for example, some schools such as Muona Primary

School were built as early as 1910. This has meant that the structures were built on very low foundations making it easier for flood waters to rush into classrooms and offices. There are no deliberate drainage systems hence flood waters tend to stay in classes longer, thereby affecting the buildings.

- Shortage of permanent toilets in the schools also poses a big challenge to both teachers and pupils. Each school may only have one or two permanent toilets for pupils while the temporary toilets are easily washed away during floods.
- The presence of crocodiles cannot be overlooked, since this poses a major challenge to people in the surrounding areas as crocodiles take refuge in shallow water, during floods.
- Shortage of classroom blocks is a constraint as well - for instance, Chikonje Primary School has only four (4) classrooms for standard 1 to 8.
- Shortage of teachers and staff houses has been a major challenge for these schools before and after floods. Most of the staff reside some kilometres away from their respective schools and this causes a challenge during rainy season as paths and roads become impassable hence pupils miss out on learning.

## Sector strategies and priorities

The Malawi Growth and Development Strategy (MGDS) recognize education as a catalyst for socio-economic development, industrial growth and as an instrument for empowering the poor, the weak and voiceless. Educating children helps in building knowledge

which is necessary to eliminate poverty and hunger, combat diseases and ensure environmental sustainability.

The Government introduced Universal Primary Education (UPE) in 1994/95 which is aimed at increasing access to basic education. Reforms are currently being implemented to improve access, retention, quality and relevance of education in the country. The current priorities being implemented include construction of additional classrooms, training of more teachers and upgrading of existing under-qualified ones.

The education sector remains one of the key priority areas under the MGDS since human capital development is regarded as key in facilitating socio-economic development. Education is guided by the National Education Sector Plan (2008 – 2017), which highlights the following pillars:

- Expand equitable access to education to enable all to benefit,

- Improve quality and relevance of education to reduce drop-out and repetition and promote effective learning, and
- Improve governance and management of the system to enable more effective and efficient delivery of services.. Given the above goals flooding has definitely negative impact on the ambitions of the plan as access to education at all times is not guaranteed for pupils in the flood affected schools.

#### Needs estimation

The recovery and reconstruction needs for the education sector amount to MK 2,745,000. On the recovery side, this constitutes MK 325,000 towards provision of education materials while on the reconstruction side, the MK 308,000 covers the skirting of classroom blocks for the public school in GVH Mouna and the construction of storage compartments. Longer term DRR requires relocation of the Chikonje public school to a safer area

which, according to preliminary estimates would cost MK 66,000,000. A detailed assessment would however be required to finalize this amount. The table below provides a breakup of these costs and the detailed action plan in the annex below goes into further details.

#### Methodology

Data was collected to assess the damages, human recovery and losses. The education team conducted interviews with responsible authorities, that is, head-teachers and primary education advisors in T.A. Mlolo. Quantitative and qualitative data was analyzed to develop the basis of the recovery framework.

Table 37: Education Sector Recovery, Reconstruction and DRR Needs

Subsector needs by province for TA Mlolo	Recovery Needs	Reconstruction Needs	Total	DRR Needs
Relocation of school to safer area			0	66,000,000
Skirting of classroom blocks		200,000	200,000	
Construction of storage compartments		108,000	108,000	
Education materials	325,000		325,000	
Mitigation works at Namiyala School				2,500,000
Incorporation of Disaster Preparedness and in Education planning				3,500,000
Total	325,000	308,000	633,000	72,000,000

Table 38: Education Sector Recovery Plan

Challenge in Sector	Need	Current Road-blocks (e.g. Information, Institutional Capacity etc)	Activities - What has to be Done to Resolve the Need and to Overcome the Roadblocks	At What Level Should this Activity be Undertaken	Estimated Cost	Responsible	Existing Initiatives and Partners to be Leveraged	How Will this Intervention be Different in Delivering Impact	Suggested Indicator of Output Progress	Suggested Indicator of Outcome Success
Failure to attend school during flooding	Relocation of Chikonje P. School	Lack of basic social services in new location	Provide water and health facility in relocation site	National , District and Community	66,000,000	MoEST, DoDMA, MLUD, Public Works	Relocation of the whole community	This would enhance protection of people in the area from floods	Safe water provided at new site	Improved attendance rates throughout the year
Destruction of teaching and learning materials	Ensure teaching and learning materials are safe from flood waters	Lack of resources and awareness	Construct raised storage facilities for teaching and learning materials	National and district	108,000	Public Works, DoDMA, MoEST	UNICEF donated some textbooks, pens, etc;	This would help in ensuring that learning and teaching materials are safe from floods and that schools do not experience shortage of teaching and learning materials	Office fitted with flood proof storage shelves	Safe teaching and learning materials
Gaps in Contingency Planning	Disaster Preparedness and planning should be incorporated in Education planning	Capacity for safe schools planning	Awareness and training	National, districts and community	3,500,000	DoDMA, MoEST, MICE	MOEST in collaboration with DoDMA should carry out awareness campaigns	Will enhance preparedness at the school level or within education sector	School plans in place, Drills every Year at the start of academic year	Safe school planning mainstreamed into education plans
Education continuity	Education materials and skirting of classroom blocks			District and community	525,000					
Flooding at Namiyala School	Mitigation works at Namiyala School	Lack of Mitigation Structures	Construction of Mitigation Structures	District and community	2,500,000	Public Works, DoDMA, MoEST	Ministry of Education should construct reliable drainage systems in all schools	Will control flow of displaced water hence controlling floods at community level	Drainage channels constructed	School blocks foundations are not eroded

# Transport



## Executive Summary

TA Mlolo is located to the northern tip of Nsanje District. The total damage to transport infrastructure in TA Mlolo as a result of the floods in January 2012 is estimated at MK 46,660,000. The assessment findings reveal that the losses experienced that were attributable to the floods were mainly due to the poor road conditions following the floods and the losses were in the form of unrealised income for private transport operators who experienced a loss in income for two weeks when the floods rendered the roads impassable. The total value of losses is estimated at MK 11,760,000. The total effects of the damages and losses of the floods is thus MK 58,420,000.

The floods caused damage to two secondary roads S151 and S152 running through the area but bridges remained unaffected. During the period of the floods, vehicular traffic to the area reduced drastically. Operators who took the risk during this period resorted to increasing fares by up to 70% (MK 700 to MK 1200) and this resulted in the increased cost of basic commodities. Shops that had these basic commodities in stock increased their prices as demand could not match supply. Disruption in transportation resulted in an increase in the price of basic commodities like sugar, soap and paraffin by almost 100 per cent. Additionally, passenger travel time increased to 6 hours from the four hours it takes people in the area

to connect to Thabwa.

A short section of the railway line passing through the area also suffered some siltation. However, this had no impact to the operations of rail traffic in the area as by the time the floods occurred, rail transport had already been suspended in October 2011 and only resumed in February 2012.

The total needs for recovery reconstruction and Disaster Risk Reduction (DRR) sum up to MK 47,932,000. This includes reconstruction of the damaged roads, culverts and drifts and erosion protection works through the construction of gabion baskets and masonry protection works.

Table 39: Transport Sector Summary of Damages and Losses

Sub District / TA	Damages		Losses		Total	Recovery	Reconstruction	DRR	Total
	Public	Private	Public	Private					
Mlolo	46,660,000			11,760,000	58,420,000		46,660,000	1,272,000	47,932,000
Total	46,660,000			11,760,000	58,420,000		46,660,000	1,272,000	47,932,000

## Background of Sector

### Road Network

TA Mlolo is located to the northern tip of Nsanje district. In topographical terms, the north-eastern side of the

area is hilly while the rest of the adjacent area is in a flood plain bordered by the Shire River on the west and the Ruo River on the southern extreme of the area. During the rainy season, flooding and wash-aways are a common occurrence in the area due to this

topographical characteristics.

The area is served by two major secondary roads S151 and S152. S151 connects the area to Thyolo District while S152 connects the area to Chikhwawa and Blantyre. Initially

S152 connected the area to Bangula and Nsanje but a major wash-away eroded the road embankment rendering the road unusable in the 1990s. Since that time, the area can be ac-

cessed from Bangula using boats and canoes. For vehicles travelling from Nsanje Boma to the TA, the vehicles have to go through Thabwa in Chikhwawa to access the area. In ad-

dition to the secondary roads network, the area is also served by a number of undesignated community road networks. The baseline information below provides details of the

Table 40: Road network in TA Mlolo

No.	CLASSIFICATION	DESIGNATION	LENGTH	TYPE OF SURFACE	NAME OF BRIDGES ALONG THE ROAD
1	S 151	Bangula - Chiphwanya	32	Spot Gravel	Chiromo Bridge, Mbwazi Bridge
2	S 152	Fatima –Masenjere	15	Spot Gravel	Thangadzi and Chinoro Bridges
3	D 394	Chiphwanya– Makhanga	41	Earth	
4	UD/B	Muona – Chipondeni	4.5	Earth	
5	UD/B	Fatima – Gatoma	5	Earth	
6	UD	Gwoke – Muona	5	Earth	
7	UD	Fatima – Makhapa	5.5	Earth	
8	UD	Tchereni – Mchacha James	5	Earth	
9	UD	Bitoni – Alufazema	5.8	Earth	
10	UD	Gundani – Zuwaki	8.8	Earth	
11	UD	Makhanga – Mwala	4.2	Earth	
12	UD	Kalulu – Mchacha	10	Earth	
13	UD	Chabuluka – Osiyana	7	Earth	
14	UD	Napasha – Gelevulo	8	Earth	
15	UD	Mlambala – Chapinga via Weyere	8	Earth	
16	UD	Fatima – Mathiya	6	Earth	
17	UD	Sankhulani – Gundani	10	Earth	
18	UD	Ng’ombe – Mchacha	5	Earth	
19	UD	Thaboni – Msamboni	4	Earth	
20	UD	Osiyana – Namiyala	5	Earth	
21	UD	M’bwazi – Kambadza	6	Earth	
22	UD	Maheya – Mulalana	9	Earth	



### road network in TA Mlolo. **Routine Maintenance Interventions**

The Roads Authority has been carrying out routine maintenance activities on the two secondary roads above. Works have concentrated on spot improvements, grading and repairing of drainage structures. However, because the road network is sandwiched between the Thyolo Escarpments, the Shire River and the Ruo River, it is usually damaged by flooding from rivers and the effects of fast flowing

waters from the escarpment.

Recurrent road maintenance works are carried out on a yearly basis. The last time this was undertaken was in 2011. However, these interventions are superficial as the roads (S152 and S151) require complete upgrading with need for significant investment in the raising and improvement of the drainage structures, especially on the S152 which is low lying and runs parallel to the escarpments.

### **Other Interventions**

The undesignated community feeder roads are maintained by the district council through interventions funded by the Roads Fund Administration and other NGO or donor supported programmes. The table below illustrates the length of road for which maintenance was performed under the Public Works Programme and the number of beneficiaries before the floods.

Table 41: Public Works Maintained Roads Before Floods

N o.	Class	Designation	Length (KM)	Type of Maintenance	No. of beneficiaries	Male	Female	Total Amount Disbursed
3	UD	Napasha – Gelevulo	8	Hand Reshaping	238	128	110	571, 200
4	UD	Mlambala – Chapinga via Weyere	8	Hand Reshaping	238	138	100	571, 200
5	UD	Tchereni – Mchacha James	8	Hand Reshaping	240	145	95	576, 000

### **Rail Transport**

Rail Transport also connects the area to Luchenza and Blantyre. The train ideally was meant to go as far as Beira in Mozambique but due to the civil war in Mozambique and a major wash-away of the rail line at Chiro-mo in the early 1990s, it only goes as far as Makhanga just before the Chiro-mo Bridge.

People of the area transport their bulky goods in the form of firewood, rice, cotton, maize, cassava and vegetables among many things mostly using rail transport. However it should be noted that train opera-

tions were suspended in October 2011 before the floods due to fuel scarcity and operations have resumed in July, 2012. The major modes of transportation (trucks, pickups and trains) carry both passengers and goods

### **Damages**

The sector experienced damages on the major secondary road S152 and railway line. The summary of damages is as follows:

Damage to drainage structures like drifts and culverts at Fatima Trinity

Hospital.

Erosion and wash-away of embankments and approaches to drainage structures.

The railway stretch at Osiyana suffered some siltation

Between Mbwazi ADMARC and Makhanga the damage to the road occurred to an extent that vehicular traffic and cyclists were completely unable to connect between the two points for the duration of the flood. The total damage as captured in table 39 is MK 46,660,000.



A section of the major wash away that occurred in the 1990s that has disconnected access between the affected areas and the district council.



Part of the damage to the road within the Mbwazi AD-MARC and Makhanga Stretch

### Losses

There was significant disruption to normal flow of vehicular traffic serving the area. Only small vehicles (pick-ups and four wheel drive vehicles) could access the area. This increased the transportation costs as vehicle

running costs skyrocketed. The losses for vehicle operators were in the form of lost income. During the two weeks in which the vehicles completely stopped going to the area, there was a total of MK 23,520,000 in lost incomes as the table below illustrates. Note that the MK 700 was the

fare prior to the floods for a distance from the affected area to Thabwa. Disaster relief items were transported by helicopter from Bangula to the affected area after lorries from Blantyre had brought the relief items.

Table 42: Losses of Vehicle Operators

Vehicle Type	Number of return trips a day	Passengers carried	Passenger fare per trip (MK)	Total Passenger fare per trip	Duration of floods	Grand Total
Pick up	2	20	700	28000	14	392,000
Total average number of vehicles to and from the area per day is 30 (from a study that was done by Bua Consulting Engineers and also as shown in the annex of damages and losses). Total number of one-directional trips per vehicle per day is 2						11,760,000

### Socio-Economic Impact

The socio-economic impact was significant because of the dependency of other sectors to the transport sector. For example, the cost of transportation was felt in increases in prices of various commodities as shown in table 43 & 44. The increase in transport-

tation fares from TA Mlolo to Thabwa in Chikhwawa resulted in shop owners' increasing the price of groceries

Shops ran out of groceries and other essentials and table 44 captures the changes in prices of household items. Households paid more for the same

items after the disaster. This implies households were affected greatly and had to adjust their expenditure patterns to suit the price adjustments. The changes in prices as of August 2012 are more today with the changes in the economic environment and not with the flood.

Table 43: Impact on Transport Cost – Unit Cost Per Person: TA Mlolo to Thabwa

Transport Mode	Price Pre-Disaster	Price Post-Disaster	Price as of August 1, 2012
Lorries	700	1200	1200
Pick Ups	700	1200	1200
Oxcart	400	1000	

Table 44: Impact on businesses and cost of items

Item	Price Pre-Disaster (MK)	Price Post-Disaster (MK)	Price as of August 2012
Soap (Nima)	50	100	60
Paraffin (Per Litre)	300	400	250
Sugar (1 packet)	270	550	350
Aspirin (1 tablet)	5	15	10
Salt (50 Kg)	1200	1700	1500
Maize (basin)	200	450	300

## Needs

### Immediate Short-Term Needs

The immediate short-term transport infrastructure needs centred on restoring passability to the sections of the roads which were damaged by the floods. These included the following:

- Repair to erosion damage
- Installation of new culvert pipes
- Repairs to damaged drainage structures
- Erosion protection works

through construction of gabion baskets and masonry protection works

### Long-Term Needs

- Raising of the road embankment above the flood prone level
- Installation of adequate and permanent drainage structures to cater for the flooding and wash ways which are perennial to this area.
- Upgrade the road surfacing from the current earth/gravel to bituminous surfacing

- Install proper road furniture including road safety signage

The following reconstruction and DRR activities have been identified to be undertaken in the next six months and the following priority order. Details regarding the action plan for recovery and reconstruction are provided in table 45 below.

- Repair to erosion damage
- Installation of new culvert pipes
- Repairs to damaged drainage structures
- Erosion protection works through construction of gabion

Table 45: Transport Sector Reconstruction and DRR Needs

Recovery Needs	Reconstruction Needs	DRR Needs	Total
	46,660,000	1,272,000	47,932,000

baskets and masonry protection works

### **Existing sectoral policies and priorities**

The Malawi Government has developed policies which guide implementation in the transportation sector. The policies are the Malawi Growth and Development Strategy which is the government's overarching policy agenda and the National Transport Policy whose goal is to ensure the provision of a coordinated transport environment that fosters a safe and competitive operation of commercially viable, financially sustainable, environmentally friendly and gender and HIV responsive transport services and enterprises.

### **Programs and priorities in this sector**

The Roads Authority in conjunction with various stakeholders in the

transportation sector has produced the Transport Sector Investment Program (TSIP) document and the Five Year Strategic and Business Plan document. The main objective of the Transport Sector Investment Programme is to guide selection, prioritization and ranking of programmes and projects for investment in the transport sector among the various modes of transport. More specifically the TSIP will assist in road programmes selection, prioritization and ranking including financing. The TSIP builds on achieving the objectives of the National Transport Policy. The Five Year Strategic and Business Plan articulates the strategic issues, road programmes and resource requirements for road construction, maintenance and rehabilitation over the planned period and is contributing towards the attainment of the objectives of the TSIP.

### **Challenges**

The challenges in the transport sector are enormous. Due to funding constraints, there is a backlog in maintenance and rehabilitation activities which makes it difficult to allocate adequate funding for emergency works. Due to acute shortages of fuel in the local market, generation of road levy was reduced to a minimum resulting in significant reductions in road maintenance activities. Although there is an annual provision for emergency works in the Annual National Roads Programme, this usually falls short of the requirement on the ground. Capacity constraints exist in the sector in terms of personnel qualification and experience as well as financial and administrative capacity of the contractors and consultants. Finally, the Malawi Kwacha is highly unstable and subject to intermittent fluctuations. This results in huge price fluctuations with huge adverse effects on the construction industry.

Table 46: Transport sector Recovery Plan

Challenge in the Sector	Need	Current Road-blocks	Activities	At What Level Should the activity be undertaken	Estimated Cost	Responsibility	Existing Initiatives and Partners to be leveraged	Indicative Time Frame	Suggested Indicator of Output Progress	Suggested Indicator of Outcome success
Emergency repairs to restore access only	Repair to erosion damage and installation of new culvert pipes, construction of erosion protection works like gabion baskets	Limited budget in the Road Maintenance programs	Generate more money by raising fuel levy rate and carry out repair works	National (fuel levy adjustment), Institutional (implementation issues)	47,932 ,000	Roads Authority	Ministry of Transport & Public Works, Road Fund Administration	July- Dec 12	Damaged structures repaired	Passability restored
Medium term repairs to ensure transitability	Raising of the road embankment, and provision of adequate drainage structures	Limited budget in the Road Maintenance programs	Generate more money by raising fuel levy rate and carry out repair works	National (fuel levy adjustment), Institutional (implementation issues)	Realistic estimates can be derived from a detailed design study	Roads Authority	Ministry of Transport & Public Works, Road Fund Administration, donors	January 2013- December 2015	Well engineered road in place with ability to withstand effects of flooding	Damage to road minimized
Inadequate funds dealt with by adequate provision in the budget	Sensitization of the government and various stakeholders, including donors on the need for provision of adequate budget	Limited budget in the Annual National Roads Program	Conduct awareness campaigns with stakeholders including donors	International, National and Institutional		Roads Authority	Ministry of Transport & Public Works, Road Fund Administration, Ministry of Finance, donor community	January 2013- December 2014	Adequate emergency budget in place	Disaster damage and losses adequately and timely addressed.

# Housing



## Overview

The following section details the findings of Needs Assessment in the housing sector following the flood disaster which occurred in TA Mlolo's area in January, 2012. The housing profile provides a brief damage overview, identifies current recovery initiatives and progress made thus far, and short, medium, and long-term needs and priority interventions. This is not an exhaustive sector review but a

snapshot to guide the elaboration of a probable reconstruction and recovery project. Emphasis has been given to post-flood disaster reconstruction needs.

## Summary

There were three types of houses in the disaster affected areas: permanent houses (made of burnt bricks, cement and iron sheets), semi-

permanent houses (thatch, burnt bricks/ iron sheets, un-burnt bricks) and traditional houses (thatch and mud). According to a report produced by DoDMA, a large fraction of the population in affected group village headmen's areas (GVH's) were residing in traditional houses. It is estimated in the report that 6159 people were affected.

Table 47: Housing Sector Summary of Damages and Losses

GVH IN TA MLOLO	Damages			Losses			Recovery	Reconstruction	DRR
	Public	Private	Total	Public	Private	Total			
Osiyana	0.0	50,721,764.8	50,721,764.8	0.0	6,266,648.3	6,266,648.3	642,981.1	372,259,539.9	5,175,093.0
Mchacha James	0.0	46,523,129.8	46,523,129.8	0.0	5,747,909.1	5,747,909.1	589,756.6	341,444,722.4	4,746,710.3
Kalonga	0.0	57,794,633.1	57,794,633.1	0.0	7,140,497.6	7,140,497.6	732,641.3	424,169,064.6	5,896,731.0
Sambani	0.0	24,261,910.8	24,261,910.8	0.0	2,997,546.8	2,997,546.8	307,559.3	178,064,146.6	2,475,419.5
Namanya	0.0	535,396.4	535,396.4	0.0	66,148.0	66,148.0	6,787.0	3,929,406.3	54,626.0
Chitseko	0.0	8,397,270.0	8,397,270.0	0.0	1,037,478.4	1,037,478.4	106,449.1	61,629,634.9	856,765.4
Gooke	0.0	2,930,590.9	2,930,590.9	0.0	362,073.0	362,073.0	37,150.0	21,508,329.0	299,005.4
Chipondeni	0.0	11,384,218.3	11,384,218.3	0.0	1,406,514.4	1,406,514.4	144,313.5	83,551,585.6	1,161,520.9
Chapinga	0.0	2,000,691.8	2,000,691.8	0.0	247,184.5	247,184.5	25,362.0	14,683,570.7	204,128.7
Total	0.0	204,549,606	204,549,606	0.0	25,272,000	25,272,000	2,593,000	1,501,240,000	20,870,000

DoDMA estimates that a total of 2887 houses which were either partially or fully damaged by the floods still need

external assistance for rebuilding. It is estimated that a total cost of MK1,524,703,000.00 is required to

meet the needs of the affected households that are expected to relocate to a flood free site.

Table 48: Number of houses by GVH before the floods

	GVH in TA Mlolo	Type of housing unit			
		Permanent.	Semi-permanent	Traditional	Total
1	Osiyana	226	110	882	1218
2	Mchacha James	3	0	55	58
3	Kalonga	5	16	1039	1060
4	Sambani	204	320	337	861
5	Namanya				1461
6	Chitseko				1346
7	Gooke				1287
8	Chipondeni				918
9	Chapinga				71
	<b>Total</b>				<b>8280</b>

### Background

In Malawi, houses are classified into three categories based on the building materials used in construction of the structures, namely: (a) traditional/temporary houses, (b) semi-permanent houses, and (c) permanent houses<sup>1</sup>. Before the floods the affected area, TA Mlolo, had 57,075 people (27,428 male and 29,647 female) out of whom 10.8% (6159 people) were affected by the 2012 flood disaster. It was further reported that before the floods occurred there were 8280 housing units as per table 48 above.

### Damages

Most houses affected by the 2012 flood disaster in TA Mlolo were the traditional type. A total of 1384 houses were completely damaged of which 928 houses (67.05%) were traditional, 240 houses (17%) permanent and 216 houses (15.6%) were semi-permanent. In addition, 1503 houses were partially damaged. TA Mlolo has 14 Group Village Headmen (GVH) and the Villages affected were those in low lying areas under 9 Group Village Headmen: Mchacha James, Kalonga, Osiyana, Sambani, Chipondeni, Gooke, Chitseko, Kadyamba and Namanya, (Area Civil Protection Committee reports). Detailed damage

summary is as per Table 49 below.

The average value for damaged housing units varied basing on the house type. As a result, as many as 6159 people were without shelter. A total of 4886 people had to be accommodated in 7 relief camps and the remainder had to seek shelter from relatives. The estimated cost for a permanent house was MK260, 000; semi-permanent was MK 195,000; and traditional was MK39, 000. The total **estimated damage was valued at MK 204 549,606.00 (US\$743816.7), see table 47.**

Table 49: Housing Sector Damages and Losses Details

Estimation of Damage	Description	Type of housing unit				Disaster effect		
		Perm.	Semi-	Trad.	total	damage	losses	Total
Houses fully destroyed	-number of houses	240	316	828	1384			
-houses partially destroyed	-number of houses	130	172	450	752			
-household goods	-furniture, kitchen ware, etc for fully destroyed	52,000	39,000	7,800				
<b>Total damage</b>					<b>204,549,605.75</b>	<b>204,549,606</b>	<b>757,591</b>	
Estimation of Losses								
Duration of reconstruction period		534,000			12,816,000			
Cost of demolition and rubble removal	3,000	720,000	948,000	2,484,000	4,152,000			
Cost of temporary housing scheme	Construction using locally available materials, and salvaged materials	1,440,000	1,896,000	4,968,000	8,304,000			
<b>Total loss</b>					<b>25,272,000</b>		<b>25,272,000</b>	
<b>Total damage and loss</b>								<b>229,821,606</b>

### Losses

The affected households incurred losses amounting to MK 25, 272, 000.00 arising from loss of rentals, meeting cost constructing temporal shelter and demolition/rubble removal. Thus, in the two year reconstruction period, households lost an accumulated value of MK 12,816,000 from 178 houses that were being rented out at an average value of MK3, 000 per month. Furthermore, through construction of temporal shelter, the affected households incurred a loss of MK 8,304,000.00. Lastly, households had to salvage

building materials from partially and fully damage houses for reconstruction of temporal shelter resulting in a further loss of MK 4,152,000.

### Socio-economic impact

The disaster made most people homeless, especially child headed households, the elderly and other vulnerable groups. There were 16 child headed and 210 elderly headed households who had to be provided with tents and other household goods. Construction of temporal shelter mainly uses locally found materials such as grass and trees which negatively is affecting the

environment. If not checked, this may lead to other risks in the near future.

### Existing sector priorities and major programmes

Key and major policies that are useful in the housing sector include the National Housing Policy (revised draft), the Malawi Land Use Planning Policy, and Malawi National Land Policy. The National Housing Policy advocates equitable access to good quality housing by all Malawians as such affordable and good quality building standards are being promoted. As an attempt to address risks caused by dif-



ferent disasters such as floods, earthquakes and windstorms, construction guidelines have been developed for use in both rural and urban areas. Use of these guidelines has been piloted in TA Makhwira in Chikhwawa District through construction of one safe haven and eight demonstration houses under the Living with Floods Project. The idea is to roll out the project ideas and lessons learnt to all disaster prone areas.

In line with the National Land Policy, land in Malawi is in three categories: Government land, public land and private land. Government land comprises land acquired by Government and privately owned by Government. Public land is land held in trust and managed by Government or Traditional Authorities and openly used or accessible to the public such as National Parks and forest reserves. Private land is land that is occupied under freehold tenure, customary tenure and leasehold tenure. Currently, government is in the process of registering all land in all tenure categories to ensure land titling for ownership. Much of the land in the affected area is customary land and households do not have title to land yet. As regards Land Use Planning Policy, the policy seeks to ensure sustainable utilization of land by putting it to specific uses according to its optimum requirements for present and/or future purposes.

Basically, emphasis on building standards, land use planning and titling of land is mainly done in urban areas and little is done for rural areas. The proposed relocation of the flood disaster affected households in

TA Mlolo would provide an opportunity for promotion of such programmes in rural areas also.

### Challenges

The major challenges of the housing sector are those related to financial and human resources. House construction and resettlement demand substantial amount of financial investment in the short term, medium term and long term intervention. In addition, house construction is usually viewed as a personal endeavor, as such; there is usually limited external financial support to individual house developers. In addition, settlement in rural areas is done locally and haphazardly without seeking guidance from physical planners. Institutionally, there is wide gap in both numbers of personnel at all levels and in knowledge and skill related to disasters affecting housing and land use planning.

### Key objectives of recovery and resilience building in this sector

The key objective is to reduce the impact of disasters on housing and human settlement currently and in the future: this would be achieved through mapping of flood prone areas, land use planning of the relocation site and use of safer and better construction guidelines

### Needs estimation

In order to manage the impact of the flood disaster on the affected households there is need to address issues of recovery, reconstruction and DRR which has been estimated at a total cost of MK 1,524, 703.00. The most critical requirement is on reconstruction

whereby MK 1,501,240,000 is being estimated to cover the Construction of 1 safe haven and 7 demonstration houses and Support reconstruction of better and safer houses for 2887 affected households.

In construction, a model three roomed house (10.0m X 5m) is estimated at total construction cost of MK 1,300,000.00 each. However, there are number of suggested options to support house reconstruction for the affected households which may vary the financial requirement. The proposed options are as follows: (a) allow the affected meet the cost on their own; (b) provide 40% financial support ; (c) provide soft house loans ; (d) provide over 50% financial support the most vulnerable households, elderly, female, child and poor headed households.

Furthermore, there is an urgent need to conduct training of artisans, Site planning for relocation of affected people to safer site and awareness on safer site location and safer and better house construction guidelines.



Table 50: Housing Recovery, Reconstruction and DRR Needs

Subsector needs by province	Recovery needs	Reconstruction needs	DRR needs	Total
<b>TA MLOLO</b>				
provision of temporal shelter for child, elderly and other needy headed households				
100 Tarpaulin	495,000			495,000
20 household tents	1,705,000			1,705,000
2 Rectangular tents	110,000			110,000
10 shelter kit	183,000			183,000
50 plastic rolls	100,000			100,000
Construction of 1 safe haven and 7 demonstration houses			12,600,000	12,600,000
Support construction of better and safer houses for 2887 affected households		1,501,240,000		1,501,240,000
training of artisans			1,350,000	1,350,000
production and distribution of construction guidelines			1,500,000	1,500,000
site planning for relocation of affected people to safer site			1,060,000	1,060,000
awareness on safer site location and safer and better house construction			3,300,000	3,300,000
mapping of flood prone areas			1,060,000	1,060,000
	2,593,000	1,501,240,000	20,870,000	1,524,703,000



## Strategic initiatives

Key programmes /projects/initiatives have been proposed in line with the identified need as note in the table 51 below.

Table 51: Key Housing Sector Initiatives and Rationale

Identified Key projects/initiatives	Rationale
Provision of temporal shelter for child, elderly and other needy headed households	Rain season is approaching and the need for provision of shelter to the homeless
Construction of 1 safe haven and 7 demonstration houses	Provision of long term practical lessons in construction
Support construction of better and safer houses for 2887 affected households	Aid the needy with technical and financial support
Training of artisans	Impart knowledge and skill to key players in construction
Production and distribution of construction guidelines	Provide reference material to artisans and local community
Site planning for relocation of affected people to safer site	Guide settlement patterns during relocation
Awareness on safer site location and safer and better house construction	Provide civic education to the affected community and relevant players
Mapping of flood prone areas	Establish safer zones for settlement

### Methodology

To come up with this chapter, information was collected through officers at Nsanje District Council offices and some NGO's, from a certain building construction contractor, Civil Rights' Protection Committee, a Member of Parliament and traditional leaders. The actual locations where the flood disaster occurred, the victims were camping and people

are relocating were also visited.

Nevertheless, during the data collection, the following challenges were faced: limited time, lack of some baseline data and low quality data. The data quality was due to the fact that specific sector experts, especially the housing sector were not involved during data collection after the disaster and that it also took six

months after the disaster for the PDNA to be conducted. It was also discovered that disaggregated data on the housing sector could not be found anywhere may be due to probable oversight of the attention it deserves by the enumerators.

Finally, an action plan was developed based on the identified needs as per table 3.

Table 52: Housing Sector Needs Prioritization

NEED	COST (Mk)	PRIORITY LEVEL	PRIORITY LEVEL JUSTIFICATION	TIME FLAME
Provision of temporal shelter for child, elderly and other needy headed households	2593000	1	Urgently required to accommodate homeless vulnerable groups (elderly, child and poor headed households as rainy season is approaching .	Short Term
Site planning for relocation of affected people to safer site	1,060,000	2	Urgently required as the affected are already relocating to the new site and some have started house construction. Hence the need to provide guidance on settlement patterns and proper land use.	Short term
Awareness on safer site location and safer and better house construction	3,300,000	3	Provision of useful information to the affected households is vital throughout the relocation and house reconstruction period	Short term- medium term
Training of artisans	1,350,000	4	Artisans are key to the reconstruction process as such there is an urgent to equip them with the necessary knowledge and skill for safer and better house construction	Short term
production and distribution of construction guidelines	1,500,000	5	These guidelines will go along with the training of artisans and the awareness campaign.	Short term
Support construction of better and safer houses for 2887 affected households	1,501,240,000	6	As the affected are engaging in reconstruction of the houses there is need to support them financially bearing in mind that most of them will be building completely new houses while they are still suffering from the shock of the flood disaster	Medium term
Construction of 1 safe haven and 7 demonstration houses	12,600,000	7	Provision of long term practical lessons in construction	Long term
Mapping of flood prone areas	1060,000	8	Very necessary to establish safer zones for settlement but might be taken care of by the Integrated Flood Risk Management Plan for the Shire Basin	Medium term

Table 53: Housing Sector Recovery Plan

Challenge in Sector	Need	Current Roadblocks (e.g. Information, Institutional Capacity etc)	Activities - What has to be Done to Resolve the Need and to Overcome the Roadblocks	At What Level Should this Activity be Undertaken	Estimated Cost	Responsible	Existing Initiatives and Partners to be leveraged	How Will this Intervention be Different in Delivering Impact	Indicative Timeframe
1.provision of safer settlement sites in Nsanje in the next 2 years	Provision of temporal shelter for child, elderly and other needy headed households			GVH	2,593,000	Ministry of Lands and Housing, Ministry of Local Government and DoDMA			Short term
	1A. Ensure mapping of all flood prone areas	1. Limited human resource skills to do mapping.	training of personnel in mapping at all levels	National and District level	400,000	Ministry of Lands and Housing, Ministry of Local Government	UN-Habitat, CCODE, Christian Aid	long term solution to floods disaster	Medium term
		2. Insufficient financial resources	develop project proposal for external funding and conduct mapping exercise	National and District level	660,000	Ministry of Lands and Housing, Ministry of Local Government	UN-Habitat, CCODE, Christian Aid	availability of baseline data	Medium term
	1B. Awareness and education on risks regarding settlement in flood prone areas and better house construction guidelines	1. Limited financial resources to carry out awareness on risks for settling in flood prone areas; limited human resources, knowledge and skills to conduct awareness campaigns on better and safer house construction	Mobilize financial resources and conduct awareness campaigns; conduct training of trainers (ToT)	National and District level	3,300,000	Ministry of Lands and Housing, Ministry of Local Government and DoDMA	National Initiative for Civic Education, Malawi Red Cross Society	community empowerment on disaster risk reduction and preparedness	Short- medium term
	1C. site planning for relocation of affected people to safer site	1. Limited financial resources to carry land use planning of the new site	Mobilize financial resources and conduct the planning exercise	National and District level	1,060,000	Ministry of Lands and Housing, Ministry of Local Government and DoMA	World Bank, UN-Habitat, Christian aid	community empowerment on disaster risk reduction and preparedness	Short term

Challenge in Sector	Need	Current Road-blocks (e.g. Information, Institutional Capacity etc)	Activities - What has to be Done to Resolve the Need and to Overcome the Road-blocks	At What Level Should this Activity be Undertaken	Estimated Cost	Responsible	Existing Initiatives and Partners to be leveraged	How Will this Intervention be Different in Delivering Impact	Indicative Timeframe
2. provision of disaster resilient houses in the next 2 years	2B. Construction of disaster risk resilient houses.	1. Lack of trained artisans in better and safer house construction	train local artisans in safer and better house construction and production and distribution of construction guidelines	National and District level	1,350,000 & 1,500,000	Ministry of Lands and Housing, Ministry of Local Government	World Bank, UN - HABITAT, DoDMA, Malawi Red Cross Society, TEVETA	pilot project	Short term
		Lack of funds to support affected vulnerable households in construction of better and safer houses	Support construction of better and safer houses for 2887 affected households	TA and GVH level	1,501,240,000	Ministry of Lands and Housing, Ministry of Local Government		introduction of Disaster risk resilient houses	Medium term
		Lack of standard house for demonstration of better and safer construction practices	construct one safe haven at TA level and 7 demonstration house in each of the seven GVHs	TA and GVH level	12,600,000	Ministry of Lands and Housing, Ministry of Local Government and DoDMA	World Bank, UN - HABITAT, DoDMA, Malawi Red Cross Society, TEVETA, Habitat for Humanity	model structures	Long term

# Disaster Risk Reduction

## Nsanje Historical Hazard Risk

Shire River basin is the poorest and most vulnerable region in Malawi, which is regularly ravaged by floods and droughts. In Malawi 23 flooding events have occurred in 29 years (1979 – 2008) which cumulatively affected 1.9 million people (Hay & Phiri, 2008). The highest flooding frequency in Malawi is in the Lower Shire valley due to flooding from Shire River and other notorious rivers and streams in the Shire basin. Further to flooding, drought is another hazard which is also problematic in the basin. The six drought episodes occurring in 29 years (1979 – 2008) cumulatively affected 19.7 million people (Hay & Phiri, 2008).

Flooding adversely affect Chikwawa and Nsanje districts, which are located in the lower section of the shire basin. In Nsanje 70% of the people are affected by the floods and in Chikwawa 40% of the people and floods somewhat affect Mangochi district which is located in the upper section of the shire basin. This has resulted into higher poverty and vulnerability levels in these districts. The overall poverty headcount shows that Nsanje and Chikwawa have the highest proportion of households classified as ultra poor in the country (Shela, et al., 2008). Two-thirds of the economically active population is engaged in subsistence farming which is yearly severely affected by either floods or drought.

Furthermore, documented information several analyses conducted show that from 1970s flooding in the basin occurs once in every 2 - 5 years. Every flooding year is followed by a drought year exacerbating the vulnerability situation in certain areas. With this trend in mind, climate change vulnerability assessment indicates that Malawi (and more importantly the Shire basin) will experience both extremes of floods and droughts that would increase in frequency as well as intensity, within a short period as the next 10 years.

The main sources of flood in the area are Shire and Ruo and other small rivers / streams in the basin. Heavy flooding occurs at the confluence of Ruo and Shire Rivers affecting Chiro-mo area, in Nsanje District. Makhanga area, which is located between Muona and Makhanga, is affected by the flooding from the same Ruo River which adversely ransack Mchamcha James village and Makhanga Trading Centre and up to Fatima. In Chikwawa District, the areas which are affected by the floods include Islands in the Shire river and Elephant marsh, settlements along the Mukumbedzi river – Ndakwera zone and Sekeni (Nchalo) zone, the Mukumbedzi / Mwanza rivers – Tomali zone (TA Chapananga), the Mwanza river – Bereu zone, the Nyakamba / Shire (west bank) rivers – Makande / Ngabu zone, the Nsangwe – John area by Chidyamanga

– Nsangwe zone, along Lalanje river – Lalanje zone, and settlements along the Shire river (east bank) with flood waters from 11 east bank rivers – Changambatuka – Masenjere zone.

## Existing Institutional set up and challenges

The DRR stage in Malawi is populated with numerous players. The stakeholders are divided into three groups, viz., Government Line Ministries, Donor (UN Agencies, International Aid Organisations and in some cases International Non Governmental and Faith Based Organisations (NGOs and FBOs) and Civil Society (viz., NGOs and FBOs that receive funding from Donors and do not themselves independently raise funds for distribution).

The DPR Act of 1991 provides the legal and institutional framework for addressing disasters in Malawi. The Act stipulates the establishment of institutional functions required for disaster management. The office of the Secretary and Commissioner for Disaster Management Affairs, the National Disaster Preparedness and Relief Committee (NDPRC) and Civil Protection Committees (CPCs) were created through the Act for the coordination of disaster response programmes and activities in the country.

In recent years, disasters have been identified as a key hindering factor to Malawi's growth and poverty reduc-

tion efforts in major policy documents including the MGDS. Combining DRR and Disaster Management concepts, Disaster Risk Management (DRM) was adopted as one of the core focuses in the MGDS. This thrust requires a shift from ‘disaster response culture’ to ‘integration of disaster risk into sustainable development planning and programming’.

#### Gaps and challenges in DRM

- Slow progress in shifting the mindset set from emergency response to disaster risk management.
- Limited mainstreaming of DRM in development programs, policies and plans
- Weak instruments to ensure effective rolling out of the DRM – e.g. financial provision, poor coordination mechanism, disjointed operations in the implementing area.
- Limited information access to critical people for DRM operationalisation eg. poor people, women, the elderly, children, people with disabilities and people living with HIV and AIDS
- Weak capacity at all administrative levels in the engagement of the DRM.
- Local and national levels to effectively carry out DRM activities;
- Insufficient coverage and depth of

- disaster reduction activities;
- Lack of an updated and upgraded risk assessment system for early warning;
- Limited investment in knowledge and education for disaster risk reduction;

Deducing from the challenges above, although contact exists between the various organizations on national and provincial / local level, it is very clear that an institutionalization of a Multiple Stakeholder Platform (MSP) for disaster risk preparedness, response and management is required at basin level. Possibilities should be checked how to effectively bring together on periodical basis all the stakeholders in the basin to map out, iron out and discuss issues relate to flood and drought in the basin. Furthermore, the sustainability of this platform should be considered in terms of financial, social and political setting, equity of participation and voice, and management.

In view of the challenges highlighted above, the following strategies should be implemented to ensure effective rolling out of DRM in Malawi:

- Strengthening DRM policy (which has been developed) and relevant institutional frameworks;
- Ensure effective financial provision for implementation of DRM

activities

- Mainstreaming DRM into policies, strategies and programmes;
- Strengthening DRM coordination mechanisms among stakeholders
- Enhancing capacity on the use of space information and technologies
- Developing an integrated national EWS and conduct survey to identify potential national and across border risk
- Promoting awareness, access, distribution and utilization of reliable and relevant DRM information; and
- Incorporating DRM in all school curricula.

#### **DRM STAKEHOLDER ANALYSIS**

There are a number of stakeholders that are involved in the implementation of disaster risk management initiatives in TA Mlolo. These include government ministries and departments, nongovernmental organisations (NGOs), civil society organisations (CSOs), community based organisations (CBOs) and development partners providing funding for the implementation of the initiatives. Table x shows the stakeholders and the interventions they are involved in: **REDUCING RISKS**

Given the alternate recurrence of





Table 54: DRM Stakeholder Analysis

Name of Organisation / Stakeholder	Area of Operation	Activities being implemented	Cost of Project	Donor	Time Frame
Total Land Care (WALA)	3 Group Village Heads namely Osiyana, Mchacha James, Chitseko	<ul style="list-style-type: none"> <li>• Train 60 volunteers in water treatment, sanitation and hygiene promotion techniques</li> <li>• Conduct one general hygiene sensitization in the flood affected area</li> <li>• Conduct one general hygiene sensitization in the flood affected area</li> <li>• Provide Chlorine, buckets &amp; soap (bathing and washing soap) to 1,000 households</li> <li>• Distribute seeds to 1,000 households for replanting</li> </ul>	MWK 13,750,000	USAID	6 February 2012 –5 March 2012
Churches Action in Relief and Development (CARD)	3 GVHs Osiyana, Mchacha James, Kalonga,	<ul style="list-style-type: none"> <li>• Relief food distribution</li> </ul>	MWK 15,000,000	DANIDA/ DCA/Act Alliance	March to June, 2012
	GVH Osiyana. Villages for this project include even some in TA Mbenje	<ul style="list-style-type: none"> <li>• Sanitation project, construction of sand plats</li> <li>• Training of health committees</li> <li>• Distribution of ITN's</li> <li>• Development and distribution of posters and other information materials on water and sanitation</li> </ul>	MWK 60,000.00	DCA/ European Commission Humanitarian Office (ECHO)	From February to July 2012 officially. Have requested for a no cost extension from the 24 <sup>th</sup> of July to September, 2012
Action Aid Malawi	GVHs Kalonga, Osiyana, Gundani, Chipondeni, Chapinga and Chitseko.	<ul style="list-style-type: none"> <li>• Village Savings &amp; Loans promotion</li> <li>• Participatory Vulnerability Assessment</li> <li>• Seed systems development</li> <li>• Small scale irrigation</li> <li>• Enterprise development</li> <li>• Livestock development</li> <li>• Policy work</li> <li>• Early warning systems</li> <li>• Conservation agriculture</li> <li>• Agri-forestry and watershed management</li> <li>• Water, Hygiene and Sanitation</li> </ul>		DFID	5 years period from April 2012

Organisation/ Stakeholder	Area of Operation	Activities being implemented	Cost of Project	Donor	Time Frame
Malawi Red Cross society	Kalonga, Osiyana, Clemence, Mchacha 58, Chiponndeni, Mphwiri, Chambuluka, Alfazema, Gatoma, Mchacha James,	<ul style="list-style-type: none"> <li>• Awareness and sensitization</li> <li>• Capacity building on emergencies</li> <li>• Provision of first aid during emergencies</li> <li>• Provision of relief items Non Food Items</li> <li>• Water, sanitation and hygiene promotion</li> <li>• Provision of emergency shelter</li> </ul>	EURO 93,940	Malawi Red Cross Society	January to June 2012
Agriculture	All 14 GVHs	<ul style="list-style-type: none"> <li>• Soil conservation</li> <li>• Conservation agriculture</li> <li>• Irrigation agriculture</li> <li>• Promotion of drought tolerant crops</li> <li>• Agricultural extension services</li> </ul>	MWK 25,000	Ministry of Agriculture	Monthly
Forestry Department	All 14 GVHs	<ul style="list-style-type: none"> <li>• Afforestation</li> <li>• Environmental rehabilitation</li> <li>• Afforestation awareness and sensitization</li> </ul>	MWK 25,000	Forestry Department	Monthly
Ministry of Gender, Child Welfare and Community Development	All 14 GVHs	<ul style="list-style-type: none"> <li>• Human rights awareness and sensitization campaigns</li> <li>• Capacity building / trainings in human rights</li> </ul>	MWK 25,000	Ministry of Gender, Child Welfare and Community Development	Monthly
Ministry of Health	All 14 GVHs	<ul style="list-style-type: none"> <li>• Sanitation and hygiene sensitization and awareness</li> <li>• Provision of HTH / chlorine</li> <li>• Public health awareness</li> </ul>	MWK 25,000	Ministry of Health	Monthly

floods and droughts in Mlolo, it will be critical for the Government to strengthen its disaster risk management strategy. The January 2012 flood offers an opportunity to review lessons learned from previous disasters and mitigation projects. Coupled with the calculated costs for response it is clear the DRR programs need to be implemented in accordance with the Draft DRM Policy objective. However, the early recovery decisions will depend largely on the level of safety

deemed acceptable for the affected district and minding the difference between normal development and recovery activities.

The following 6 main policy priority areas have been identified to reduce disaster risk in the country:

- Mainstreaming disaster risk management into sustainable development
- Establishment of a comprehensive system for disaster risk iden-

tification, assessment and monitoring

- Development and strengthening of a people-centred early warning system
- Promotion of a culture of safety, and adoption of resilience enhancing interventions
- Reduction of underlying risks
- Strengthening preparedness capacity for effective response and recovery

These categories follow the priorities of the Hyogo Framework for Action.

### **Mainstreaming disaster risk management into sustainable development**

It is important to consider and integrate DRM into all sustainable development and planning processes at all levels in the country. This would include the Early Recovery phase.

One major challenge in the mainstreaming of disaster risk management in the country is lack of effective and appropriate institutional and legal frameworks. While Malawi drafted the Disaster Risk Management (DRM) Policy in 2011, it needs to be enacted to catalyse the implementation. In addition the 1991 National Preparedness and Relief Act needs to be reviewed to ensure DRM roles and responsibilities are in line with the policy.

Similarly at the district level there is a clear need for a District Disaster Risk Management Plan that will guide both the response at this level, as well as the mitigation options. This document will also inform the development and in particular the mainstreaming of DRM into the District Development Plans in a sectoral manner.

Institutional capacity building at district TA and village level is another necessity to ensure policy implementation at these levels. This shall be accomplished through the sensitisation of CPCs on their roles and responsibilities and by including communities. Communities need to know what CPC can add to their benefit under different circumstances such as in preparedness as well as response and mitigation situations. Some communities need to form or revamp CPCs. Government will need to develop a standardised DRM Training Manual for CPCs to ensure that all CPCs at

the different levels and in different geographical areas are performing their duties in a similar manner.

For districts to act as is currently practised mainly at National level, the districts would need to have funds for implementation of the policy. Currently there is no budget line for either Disaster Management (DM) or Disaster Risk Reduction (DRR) activities. Even for basic monitoring of NGO and development partners, funding lacks. A need for high level advocacy to establish a budget line for DRM at the district council is urgently required.

### **Establishment of a comprehensive system for disaster risk identification, assessment and monitoring**

The establishment of a system to effectively identify, assess, monitor and map disaster risks is an essential first step towards developing and implementing evidence-based sustainable development and planning processes that are focused on reducing disaster risks. The system must have the capacity to track hazards, monitor, regularly update, document and disseminate disaster risk assessment information and to develop integrated risk maps to identify areas and communities at risk. Hazard and vulnerability mapping is key to early recovery and shall be conducted in by community participatory means as this method has proven its value in other parts of Malawi.

### **Development and strengthening of a people-centred early warning system**

An integrated and people-centred early warning system is necessary for effective disaster preparedness and response. When individuals, communities and organisations that are threatened by hazards have access to timely and meaningful early warning information, it enables them to act

timely and appropriately. This reduces the possibility of injury and loss of lives and livelihoods, and enables them to take measures to limit damage to property and the environment. For TA Mlolo a community driven early warning system (EWS) should be laid out and will enable the communities to warn each other while government at a later stage will develop a more comprehensive and automated EWS. The rivers that are targeted for the community based EWS are the Ruo, the Tangadzi and a third as of yet unidentified river. More consultation will be required to identify the third most appropriate river system.

### **Promotion of a culture of safety, and adoption of resilience enhancing interventions**

Promotion of a culture of safety entails the use of practices that promote disaster mitigation and preparedness through the use of education, knowledge and innovation. Raising awareness and understanding of disaster risk reduction amongst the population at large nurtures changes in behaviour that will contribute to building a culture of safety and resilience.

One elevated demonstration house shall be built in each of the 7 GVH's in the low lying areas with one demonstration evacuation centre per TA that can also be used for other purposes, such as meetings, a nursery etc. The development of these structures will simultaneously train local artisans of each GVH on how to build according to accepted building standards. Details are given in the Housing Section.

### **Reduction of underlying risks**

Reducing underlying risks involves improving building safety and the protection of critical lifeline infrastructure; wise management of the environment and natural resources;

and aligning disaster risk reduction to climate change adaptation. It aims at increasing the resilience of the poor and most vulnerable to disasters and is the responsibility of government, civil society organisations, development partners and other stakeholders at all levels.

Limited investments on mitigation hamper development and brings major and recurrent setbacks for TA Mlolo. Some immediate risks need to be addressed such as the inadequate flood-control infrastructure that can be mitigated through a combination of riverbank stabilisation and river dredging. To prevent further deterioration and strengthen riverbanks, afforestation is required along the banks with at least 5 year after-care. DRR awareness programs targeting communities and their environments through various media will be part of these interventions. For the relocated community a market shall be planned and constructed.

Village savings and loans programmes will be introduced to help the affected communities increase their own resilience and will enhance the growth rate of private businesses on top of the normal farming activities. Details are given in the Agricultural Section.

### **Strengthening preparedness capacity for effective response and recovery**

Disaster losses can be measurably

reduced by integrating disaster risk reduction into sustainable development policies and planning processes and by strengthening the institutional basis for building resilience. However, not all disasters can be predicted nor can their magnitude be predetermined. When a disaster occurs the response operation engages the participation of a diverse range of stakeholders and experience has shown that a rapid and effective response relies on the optimal application of resources. This can only be achieved through an effective disaster preparedness system.

As the District Commissioner for Nsanje said: *“Financial resources to support emergency relief operations at district level are provided late. This delays the provision of relief assistance to affected people. Imagine that it took four weeks after floods occurred in Traditional Authority Mlolo for the Department of Disaster Management Affairs to provide funding to the district council for disaster response to support the relief operation we were undertaking to assist people who were affected by the floods. Having a budget line for disaster risk management at the district council would address this problem.”*

Disaster preparedness and contingency planning at district and TA level are below par. Plans need to be developed and/or reviewed and preparedness strengthened through field simulations with many stakeholders from

the communities as well as the CPCs and the district officials.

Disaster risk management such as the Civil Protection Committees exist at district, area and village levels to undertake preparedness, response and recovery interventions. Adequate resources to support the implementation of the activities has been the limiting factor for implementation of interventions.

A district contingency plan was, for example, developed to assist the district council to be in a state of preparedness to respond to different hazards. The plan is, however, not reviewed annually due to lack of resources. In addition, resources for the operationalisation of the plan are also not available. These two factors deteriorate the relevance of the plan.

### **The PDNA and the Integrated Flood Risk Management Plan for the Shire Basin**

The framework below fleshes out some of the key recommendations of the PDNA with respect to DRM. As a next step, it is recommended that future resilience building initiatives such as the Integrated Flood Risk Management Plan for the Shire Basin review this framework to identify activities that could be taken up or leveraged by such programs where synergies exist.



Table 55: Disaster Risk Management Action Plan

Challenge in Sector	Need	Timeframe	Priority	Current Roadblocks	Activities - What has to be Done to Overcome the Roadblocks	At What Level Should this Activity be Undertaken	Estimated Cost (MK)	Responsible	Existing Initiatives and Partners to be leveraged	Suggested Indicator of Output Progress	Suggested Indicator of Outcome Success
Lack of a District Disaster Risk Management Plan	Develop an Area Disaster Risk Management Plan	Short-term	5	Lack of resources - human, financial; hazard and vulnerability assessment not yet done	DRM consultation meetings at village (14) and area (1) level	DCPC	560,000	DCPC		No. of CPCs trained	Number of CPCs that regularly meet and plan for DRR activities
				CPC members at all levels not aware of their roles and responsibilities	Sensitization of CPCs on their roles and responsibilities and communities on the importance of CPCs-meetings at district, area and village (14)	District, Area and Village. DCPC members sensitize ACPC and VCPC	771,580	DCPC	NGOs (Goal, Action AID, CARD, CRS, TLC, River of Life, Malawi Red Cross, MSF).	No. of CPCs trained	Number of CPCs that regularly meet and plan for DRR activities
					Conduct regular follow-up and mentoring visits to CPCs at all levels - ADDRMO and some DCPC members visiting ACPC & VCPCs	National, District, Area and Village	734,700	DCPC	Cross, MSF. Development Partners (WB, UNDP, MCC, JICA)	Number of follow-ups visits to CPCs at all level	Number of CPCs that regularly meet and plan for DRR activities
Limited institutional capacity	Institutional capacity building	Short-term	2	CPCs at all levels do not have appropriate equipment to support their operations	Mobilize communities/villages to form or revamp CPCs - 4 VCPCs to be revamped	National, District, Area and Village	100,000	DCPC		Number of CPCs formed	number of communities with functional CPCs
					Procure and distribute relevant equipment (push bikes, whistles, reflectors, protective wear, torches)	National, District, Area and Village	3,936,800.00	DoD-MA		Number of CPCs formed	number of communities with fully functional CPCs

Challenge in Sector	Need	Timeframe	Priority	Current Roadblocks	Activities - What has to be Done to Overcome the Roadblocks	At What Level Should this Activity be Undertaken	Estimated Cost (MK)	Responsible	Suggested Indicator of Output Progress	Suggested Indicator of Outcome Success
Inadequate funding for DRM at district level including disaster response	Establish a budget line for DRM at district level	Short-term	1	No decentralization of DRM funding	Advocate for the need to establish a budget line for DRM at the district council	National	0	Do DMA	budget line established	budget line used
Inadequate risk assessment	Hazard and vulnerability assessment	Long-term	4		Community based hazard and vulnerability mapping based on 60,000 USD per district	National, District, Area and Village	5,400,000	Do DMA	Hazard Maps available	Hazard and vulnerability Maps developed
Inadequate emergency preparedness	Strengthening emergency preparedness capacity	Short-term	3		Contingency planning review meeting, undertake simulations	National, District, Area and Village	3,321,920	Do DMA	Contingency plans developed, simulation exercise written	Simulations conducted
Inadequate early warning systems	Strengthening early warning systems	Medium-term	6		Catchment to Floodplain protection @ 1,200,000 per river, assumption 3 required; awareness, transport, equipment, infrastructure	National, District, Area and Village	3,600,000	Do DMA	Plan developed	Protection in place
Limited investments on mitigation	Risk mitigation investments	Long-term	7	Inadequate flood control infrastructure	Afforestation along riverbanks with 5yr care incl@275,500 MKW/ha + awareness programs	National, District, Area and Village	4,120,000	Do DMA	Plan developed	Protection in place
Total							22,545,000			

