## 4.0 DROUGHT/FLOODS

In Southern Africa Development Community (SADC) region, Zambia is one of the countries highly impacted on by severe weather and extreme climate events. Studies in the Sub-region suggest that losses due to flooding have increased in frequency over the past two decades and have adverse effect on Communities and the economy of the Sub-region. In fact, in Zambia it is estimated that 75 percent of all disasters are attributed to weather conditions. Causes of disasters include fire, floods, pests, drought and storms

### 4.1 Concrete actions taken and progress made in implementation

1. The setting up of the Disaster Management Technical committee (DMTC) and Vulnerability Assessment Committee (VAC) of the Disaster Management and Mitigation Unit (DMMU) under the Office of the Vice – President.
2. Development of effective drought and flood warning system to maximize the opportunity for the implementation of response strategies aimed at enhancing the safety of life and property and reducing avoidable flood damage.
3. The operation of the *in situ* monitoring and measuring instruments, for both rainfall and river level that use the current and forecast information to provide estimates of future flood levels.
4. The provision of accurate weather and climate forecasts by Zambia Meteorological Department (ZMD) to DMMU, policy makers, the media and public has reduced significantly the impact of these events.
5. The lead-time of alerting these events resulting in quick mitigation and responses to disasters has improved. The development of the national early warning flood and drought system will allow for the generation of and dissemination of real-time data and products at national, provincial and district levels.
6. Interaction of DMTC members before and during the events has improved..
7. Cross-training and cooperation of meteorologists, hydrologists and disaster managers in the science of hydrometeorology that forms the basis of flood detection and prediction is being undertaken.
8. Flood and drought prone areas identification process in place.

### 4.2 Lessons learned

1. An integrated national early warning system, supported by an integrated information system, will indeed be a major contribution to realizing the socio-economic benefits to be derived from a wide range of products and services of ZMD, with special consideration to protection of life, livelihoods, property, health and well-being.
2. The total system includes elements of monitoring, prediction, interpretation, message construction, communication and protective behaviour.
3. In Zambia DMMU, NGOs, individuals, industry, the community at risk and the media, are primarily concerned with access to the information being provided, its accuracy and knowledge and understanding of the actions they need to take.
4. They also expect information on the length of time inundation can be expected to continue, whether or not follow-up events can be expected and specific areas of inundations, especially in relation to key services (such as power, water supply, sewerage, etc.

5. When incorporated in flood plan management, users also require advance information on areas and services at risk of flooding so that they can more appropriately undertake effective land use.
6. That a balance between structural and non-structural measures aimed at “living with floods” should be promoted.
7. That provision of information will vary from situation to situation, but could include facsimiles, phone calls, SMSs, e-mails, radio, television, radio and internet (RANET) and word of mouth. The delivery mechanism will depend on the characteristics and location of the community at risk, the amount of lead warning time required, and the capabilities and limitations of the early warning system. Consultation and communication are therefore the key elements in determining the optimum delivery mechanism in each case. This must involve discussions and input from all of the responsible authorities and stakeholders, and in particular the community at risk itself.

### 4.3 Recent trends and emerging issues

1. The implementation of a regional flash flood guidance system, in the SADC region in collaboration with World Meteorological Organization to aid in determining the near-term of a flash flood in small streams and basins..This system is designed to be used along with other available data, systems, tools, and local knowledge.
2. Implementation of Flood Forecasting and Early Warning for Zambia to empower individuals and vulnerable communities threatened by floods to act in good time and in appropriate manner to reduce possibility of personal injury, loss of life and damage to property and the environment.
3. Sustained involvement of the media and local leadership play a significant role, in terms of both warning and community education and preparedness as well.
4. Use of pamphlets, fridge magnets, school education programmes, drama groups, television shows, community groups, etc., to deliver community awareness.
5. There has been growth in the use of the internet as both an information source and a service delivery mechanism.
6. There has been a realisation that settlement in flood prone areas will always be affected by seasonal flood disaster. To reduce the loss of property and livelihood a programme on human settlement for displaced persons has been developed to promote permanent settlement on higher lands.

### 4.4 Major constraints and challenges

1. A shared understanding of the risk by both providers and users, including the recognition that floods occur during the rainy season, but that there can also be long periods between the occurrence of floods when awareness can decline;
2. Maintaining the operational capability of ZMD and DWA and ensuring that users understand the importance of the sustainability of these systems;
3. Ensuring that users are aware of and understand the implications of the capabilities and limitations of the warning system;
4. Understanding the specific requirements of users in each situation and determining the key trigger points and what actions can be taken and when;
5. Recognizing that with growing populations and economies and also the possible implications of climate change, the community at risk may be increasing and therefore that problems can arise in new areas;

6. Understanding that the total system will only be as strong as its weakest link and that components must therefore be regularly reviewed and examined;
7. Maintaining contact, as most users, ZMD and DWA have other roles and responsibilities, which implies that interaction and coordination must be formally set in place and regularly reviewed;
8. Gaining recognition that advances will require an investment in research to improve scientific and technical capabilities;
9. Gaining recognition that there is no one specific solution for all situations; that even within a 'community' vulnerabilities differ; that different approaches will be needed for effectively warning each group; and that social and cultural issues must therefore also be considered;
10. Recognizing the important role of the media in the provision of services and how to optimize this under current arrangements;
11. Establishing adequate feedback and event review mechanisms; and
12. Understanding that failures will occur and ensuring that resilient community structures are in place to learn from such failures, while minimizing possible impacts through the application of risk management approaches.