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# Flood Disaster Management in South Africa: Legislative Framework and Current Challenges

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## Abstract

In South Africa, the annual risk of flooding is 83.3 % and the population vulnerability is high due to economic factors and geographical location. Before 1994 the Civil Protection Act No. 67 of 1977 governed disaster management, but its framework was inadequate as demonstrated by 104 deaths in Lainsburg floods of 1981. Thus a major push came towards improvement of institutional capacity and the legislative framework to deal with disaster management after 1994. The 1996 Constitution of South Africa defined the law-making powers and the responsibilities at the national, provincial and local levels of government. The Disaster Management Act No. 57 of 2002 constitutes the institutional capacity at all levels of government. Response to flooding occurring between December 2010 and February 2011 is used to examine the functionality and drawbacks of the current disaster management system. Impacts included damages to drinking water infrastructure, potential for cholera outbreaks and material losses. The response was adequate at the national level, but district municipalities struggled due to skills shortages and lack of disaster management structures. Remedial strategies are proposed using the current novel legislative tools. Research into vulnerabilities and risk must be strengthened.

## 1. Introduction

South Africa has semi-arid to arid climate and a total land area of 1.2 million square kilometres [1]. It spans between latitudes of 35° and 22° South [2] with a population of 50.5 million inhabitants [3]. Around 38 % of the population is concentrated on 2 % of land area in mainly urban centres [4] and the growth of the urban population places excess pressure on public services [4]; [5]. This potentially decreases disaster resilience of households [6]. The country ranks among the bottom 30 nations from around the world with respect to the population's ability to provide satisfactory food and shelter at the household level and the Health Adjusted Life Expectancy stands currently at 48 years [7]. Vulnerability of the population is further indicated by the minimum living level [8]. Using the dependency ratios, the highest vulnerability is found in provinces of

the Eastern Cape, KwaZulu-Natal, the North-West and Limpopo [6]. There have been 77 flood disaster events in South Africa between 1980 and 2010 [9]. A total of 1068 lost their lives in floods with the maximum of 506 in 1987 [9]. Based on these statistics, the risk of a flood occurring in a given year can be calculated at 83.3 %. In the context of climate change, the above mentioned facts pose problems in disaster management. Therefore the current legislative framework, examples of responses to recent disaster and suggestions for improvement in flood disaster management are presented in this paper.

## **2. National Disaster Management System of South Africa**

### **2.1. Legal Framework**

Prior to 1994, disaster management activities were governed by the Civil Protection Act No. 67 of 1977 [10]. However, its framework proved inadequate as demonstrated by 104 deaths in Lainsburg floods of 1981 [11]. This resulted in the legislative and organisational efforts for system improvement and integration in disaster management. The 1996 Constitution of South Africa in Part A Schedule 4 defines that the role of the national, provincial governments and local governments [12]. The first integrated policy on disaster management was the Green Paper on Disaster Management which was published as an extension of the Civil Protection Act [13]. Next was the White Paper on Disaster Management which enshrines the cooperative, proactive and integrated approach to disaster risk management, training and awareness through participation of all relevant stakeholders [14]. Specific goals of the White Paper included creation of the National Disaster Management Centre, improvement of disaster prevention in the poor and disadvantaged areas, creation of an adequate funding system; and information channels to communities [14]. The guiding principles of disaster management were then summarised and responsibilities defined in the Disaster Management Act No. 57 of 2002 [15].

According to the DMA, President of the Republic of South Africa establishes the Intergovernmental Committee on Disaster Management (IGCDM) as stated in chapter 2 section 4 paragraph 1a [15]. According to chapter 1 section 3, the President appointed the Minister of Cooperative Governance and Traditional Affairs to be in charge of the disaster management at the national government level [15]. Other members of the IGCDM include the National Ministers of Water and Environmental Affairs, Health, Defense, Finance, Presidency, Justice and Constitutional Development; Defence; Education; Police; Provincial Ministers in charge of disaster management; representatives of the South African Local Government Association (SALGA). The IGCDM is accountable to the cabinet which it advises on disaster management according to chapter 2 section 4 paragraphs 2 and 3 [15]. At present, a surrogate, namely Joint Disaster Management Committee covers the main responsibilities of the IGCDM [16]; [17].

The National Disaster Management Centre (NDMC) is established in terms of chapter 3 part 1 section 8 of DMA [15]. Its functions include monitoring of disasters, mobilisation of resources and coordination and response to disasters; maintaining a repository of information on disasters, and database of relevant stakeholders (see chapter 3 section 15 paragraph 1 of DMA) [15]. Section 20 in chapter 3 describes that role of the NDMC in prevention and mitigation of disasters [15]. The NDMC is required to publish annual reports on its activities and submit this to the Minister, who passes them onto the parliament within 30 days (according to chapter 3 part 1 section 24 of

DMA) [15]. All organs of state must submit disaster management plans to the NDMC according to the guidelines developed by the centre (see chapter 3 part 1 section 19 of DMA) [15]. Regular reviews and updates of these plans are mandatory and any update must be communicated to the NDMC [15]. The NDMC is preparing the GIS-linked and web-accessible indices to predict risks from floods.

Role of the Provincial government in disaster management by chapter 4 of the act; and it generally mirrors the structure and responsibilities of the national structures inside the particular province [15]. Premier of a given province puts one Provincial Minister in charge of disaster management in that province (see chapter 2 section 4 paragraph 1b; DMA, 2002). At the municipal level of local government, disaster management is governed by chapter 5 of DMA [15]. District municipalities must have a disaster management committee/centre, while local municipalities should appoint a disaster officer [12]. As with the provincial structures, the municipal disaster management structures and their responsibilities are analogical to the national counterparts, but have different jurisdictions. As of March 2011, most of the district and local municipalities from around South Africa have not yet implemented disaster management structures as mandated by the DMA [12]. The National Department of Water Affairs (DWA) is responsible for the management of the water resource over 49 % of the total land mass of South Africa, with special attention paid to the Vaal and Orange River systems [18]. Coordination of the activities during flood disasters takes place in a central command centre at the DWA, i.e. the Flood Room [18]. Management of flooding and overall quality of water resources has been conducted by the governmentally-funded organisation such as Working for Wetlands and Working for Fire [19]. These decrease the risk of disease outbreaks during flooding.

## **2.2. Involvement of Civil Society and NGOs**

National Disaster Management Advisory Forum (NDMAF) is convened and appointed by the Minister in term of chapter 2 section 5 of the Disaster Management Act [15]. Mandatory members of the NDMAF include the Head of the NDMC who serves as Chair, high-ranking officials from all relevant government departments which are part of the IGCDM, municipal officials chosen by SALGA and representatives of provincial departments responsible for disaster management (see chapter 2 section 5 paragraph 1) [15]. Other members can be appointed by the National Minister of Cooperative Governance and Traditional Affairs from the Chamber of Mines, the business community, trade unions and NGOs (see chapter 2 section 5 paragraph 1e) [15]. The NDMAF provides a platform for input from all stakeholders; and serves as a consulting and advisory panel to the Intergovernmental Committee on Disaster Management. This mandatory forum has been in existence since 2007 [20]. The national government published the Disaster Management Guidelines for Municipalities as the Government Gazette Notice as No. 1689 of 2005 [21]. These guidelines allow local government to set up volunteer units to assist with disaster management and govern the rules and scope of possible duties [21]. These pieces of legislation and structures defined in them provide an avenue for the participation of the NGOs in disaster management.

## **3. Flood disaster response in South Africa**

Between December 2010 and February 2011, widespread floods hit South Africa. The total damages were estimated at approximately 1.1 billion USD [22] with 103 fatalities occurring [16]. The

particular impacts included the following [18]: flooding of water pumping infrastructure in the provinces of the Free State, North-West and Kwazulu-Natal, waterborne diseases in the North-West Province, washing away of pump motors in the Free State Province, blockage in the pumping of raw water for treatment into the water treatment works in the Free State Province and the possibility of the cholera outbreak in the Limpopo Province. Dams at the main river systems in the country were reported to be 92-115 % of their capacity [18]. To deal with the floods and their impacts, the National Minister of Water and Environmental Affairs released 488 000 USD from the Ministry's Emergency Relief Fund to effectively manage dam levels; raise awareness and to funds to relief operations [22]. To address the humanitarian needs, the National Department of Social Development provided 43.2 million USD from the Social Relief of Distress fund, the Emergency Relief Fund, the Disaster Relief Fund and the National treasury allocation [22].

The Flood Assistance Scheme was activated by the Department of Agriculture, Forestry and Fisheries; and 3.4 million USD was released for damage assessment and agricultural relief to farmers [17]. Departments of Public Works and Defence and Veterans Affairs built 12 low-cost bridges [22]. The IDT Programme has allocated 31.2 million USD for building of mud schools and road repair round the disaster affected areas [22]. The National Government Disease Outbreak Monitoring by the Department of Health was used to monitor drinking and surface water quality, while 18.8 million USD spent on emergency housing by the National Department of Human Settlements [22]. Therefore the national government response was deemed adequate. However, research into understanding the risks of flooding is still limited and must be strengthened [23]; [24]. Focus must be placed on investigating the risks and vulnerabilities during storm surges/coastal flooding [25] and implications from the acid-mine drainage [23]. Dissemination of the disaster-related information must also be improved at the national level [25].

Major problems exist in disaster management at the local government level [16]. In 2011, 50 % of local municipalities in South Africa lacked the disaster management structures, while 68 % of local and 25 % of district municipalities did not have the disaster management advisory forums [12]. Disaster management roles were often assigned to existing civil defense structure in local municipalities [12]. Thus the fire-and-rescue services and police become overburdened, i.e. diminishing the efficiency of the flood response. At the same time, the stakeholder involvement was also not possible due to the lack of the advisory forums and volunteer units. Constitution of the mandatory disaster management structures must be made a priority by provincial and national governments. Training of local officials by SALGA and other relevant institutions will also have to be strengthened. Where this is not feasible the disaster management advisory forums and volunteer units should be established and made operational as a priority. Local municipalities have been urged to implement a variety of early warning systems for disasters [26].

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