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Post-disaster Navigation and Allied Services over Opportunistic Networks

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Chapter 1
Introduction

Over the last couple of decades, countries across the globe, both developing and developed, have witnessed a significant number of disasters. A disaster is an unanticipated disastrous event that severely disturbs the normal functionality of a community or society and causes heavy casualties as well as enormous damage to property. Typically the entire region is not affected by the disasters uniformly. A few portions are harshly hit owing to their topography. Such portions are called affected areas in disaster management vocabulary [1–3]. Disaster management refers to organizing and managing the resources and liabilities in order to mitigate the influence of disasters. It is further subdivided into two: pre-disaster management and post-disaster management [4]. Pre-disaster management involves the works done in advance of disasters to reduce the severity through prevention and mitigation, as well as improve response through preparedness and planning. Post-disaster management involves the works done in disaster aftermath to reduce human casualties and restore normal social activities in the affected areas with the help of response and recovery. In a post-disaster scenario, normal human activities are severely impaired. As a result, different disaster response agencies mobilize their resources such as human resources, aid, etc. to the affected areas in order to expedite the process of disaster management.

1.1 Disaster Management Cycle

The disaster management cycle demonstrates the continuing practices by which the governments, disaster response agencies and civil society plan for disaster response operations and react after a disaster has occurred. Figure 1.1 illustrates the modern disaster management cycle involving four phases, such as mitigation, preparedness, response and recovery [5–7]. The aforesaid four phases of disaster management are defined by Coppola [8] as follows.

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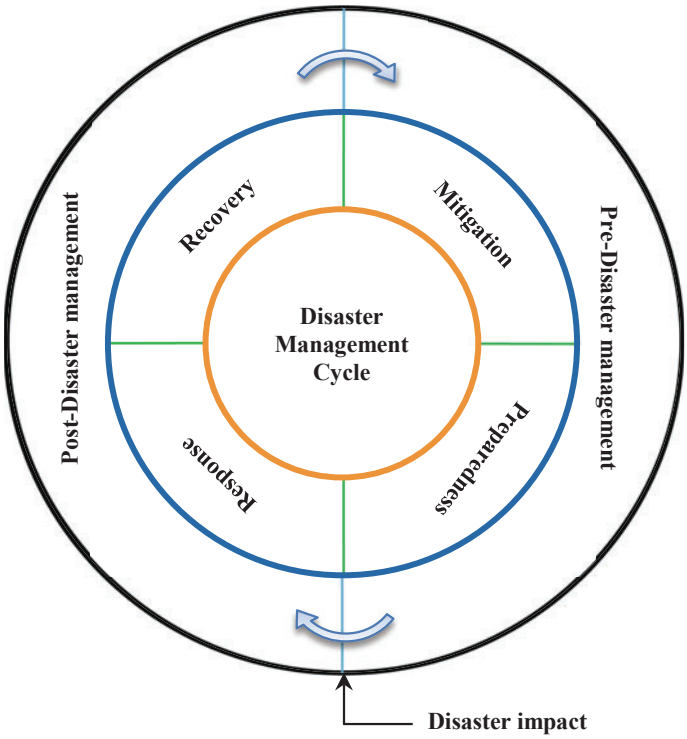

Fig. 1.1 Disaster management cycle

1.1.1 Mitigation

Mitigation is a proactive phase aimed at reducing the number of casualties as well as the loss of properties by diminishing the impacts of disasters. This phase reduces or eliminates the impacts and consequences of a disaster through proactive and pre-determined measures, which include an assessment of hazards and recurrent problems, building a plan to mitigate such problems and adopting subsequent actions to implement the plan. The mitigation phase primarily involves three activities, such as risk analysis, risk reduction and risk insurance. The mitigation measures help the community to prevent severe damages to their assets and help them remain operational in the face of disasters.

1.1.2 Preparedness

Disaster preparedness typically refers to the actions taken in the pre-disaster scenario in order to ensure adequate response and relief in a post-disaster scenario. This phase