

CHAPTER 1

INTRODUCTION

The main issues addressed in this chapter are about terms and activities related to the background of research, problem formulation of research, the objective of the research, scope of research and systematics of research. Background of research will be explained in section **1.1** , while problem formulation of research will be mentioned on section **1.2**, the objective of the research will be explained in section **1.3**, the scope of research clearly mention on section **1.4**, and systematics of research clearly mention on section **1.5**.

1.1 Background

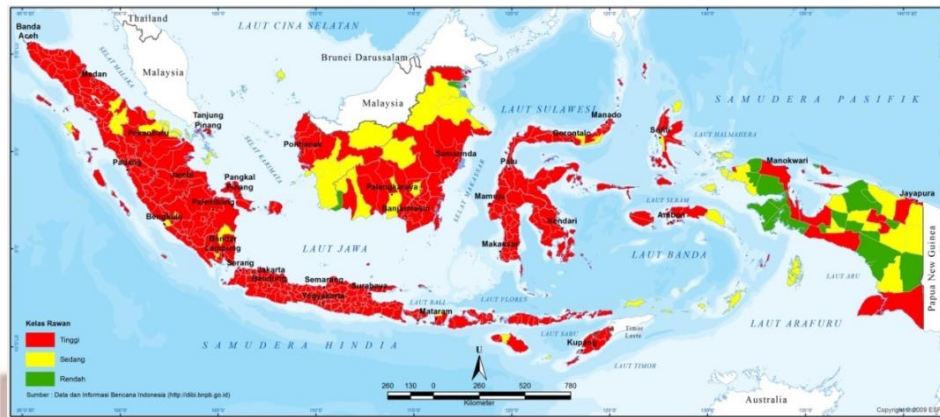
Based on Constitution number 24 of 2007 on disaster management, a disaster is an event or series of events that threaten and disrupt the lives and livelihoods of people caused by natural factors and/or artificial factors and human factors that made disruption of human lives, environmental damage, property loss, and psychological impact.

According to Constitution number 24 in 2007, there are some types of disaster, which are: landslide, earthquake, tsunami, flood, and hurricanes. Landslide is one type of mass motion of soil or rock, or mixing both of them, down or out of the slopes resulting from the disturbed stability of the soil or rocks which create the slope. The other type is an earthquake, which gives the worst disaster impact in any country. Earthquake destroys buildings which give a severe impact on the victims. The other type of disaster mentioned on Constitution number 24 on 27 is tsunami. This type of natural disaster can be regarded as the most dangerous disaster throughout history in every region. The worst tsunami disaster in Indonesia was Aceh tsunami on December 26th, 2004. After tsunami, flood disaster also be the list on Constitution number 24 in 2007. Flood disaster occurs on high

intensity of rainfall so it can destroy drainage system consists of natural rivers, drainage channels, and canal because they are not able to accommodate the accumulation of overflows of rainwater. Based on those data, disaster mitigation needs to be done to minimize the number of alleviating victims due to the disaster.

Disaster Management and Government Regulation number 21 of 2008 on the implementation of disaster mitigation aims to ensure the implementation of disaster management in order to do planning, coordinating, and comprehensive manner of disaster management to protect the community from the threats, risks, and impact of disasters. One of the solutions that can be implemented for the above objectives is to develop an integration program of disaster risk reduction. Therefore, it is necessary to assess the vulnerability of disasters of each region (provincial and district/city) (Badan Penanggulangan Bencana Nasional, 2011). Based on disaster vulnerability index data from National Disaster Management Institution (Badan Penanggulangan Bencana Nasional, BNPB) most provinces in Indonesia lie in high disaster vulnerability areas mentioned in Figure 1.1





Vulnerability Classification	
Red: High	
Yellow: Middle	
Green: Low	

Figure 1. 1. Maps of Disaster Location in Indonesia
Source: (BNPB 2011)

Figure 1.1 shows that almost all provinces have high vulnerability, while the other have medium and low vulnerability classification attacked by a disaster. This map is supported by the position of Padang, West Sumatra is in 10th for city and province rank in vulnerability index, all along 494 cities in Indonesia, with score 119 and high category.

Padang becomes the highest city disaster vulnerability index in West Sumatra province, as well as being the 10th highest disaster-vulnerability country in Indonesia, under Sikka district, East Nusa Tenggara, it can be seen on Appendix A. (BNPB, 2011). The worst disaster occurred in Padang for the last 5 years was flood disaster in Koto Tangah sub-districts in March 2016. This flood occurs due to the high intensity of rainfall and at the same time, the sea water level was tide. At the disaster, Koto Tangah sub-district as a water catchment area was flooded for several days, the victims of the disaster were not supplied sufficient clean water within a few days because their well was full of mud and destruction of PDAM's water treatment plant and water distribution network. Since water become one of the basic needs

of human life, every problem that occurs related to clean water supply will cause a tremendous impact on human life. Water for sanitary and consumption should have good quality and comply with drinking water standards in Indonesia, namely Government Regulation number 82/2001 and Ministerial Degree or well known as Keputusan Menteri number 907/2002.

Level of Padang's logistics indicators preparation in logistics planning and distribution for disaster relief in Padang is at level 1, which is mean there is no logistics planning and distribution for disaster condition. Logistic planning and distribution appear in urgent condition (Emetia, 2011). Therefore, flood contingency plan owned by BPBD Padang should clearly prepare all the plans related to flood disaster including preparation relief item fulfillment planning for disaster relief item. It is important to develop relief item fulfillment planning for disaster relief to minimize the number of suffering victims during the emergency phase in disaster relief. Hence, good mitigation and preventive planning is needed to increase the number of suffering victims. Based on that background it is important to do a relief item fulfillment planning during the emergency phase on disaster relief so the number of suffering victims can be alleviated and the number of human losses can be minimized.

1.2 Problem Formulation

Emetia's research, conclude that readiness of Padang to face disaster should be improved. One of the solutions is to improve disaster relief logistic planning. Disaster relief logistic planning consists of planning of item needed procurement of relief item, warehouse and inventory system, distribution planning, transportation, and delivery relief item. Those planning are intended to solve the problem related to increase victim's service level and to decrease item movement. Therefore, the problem of this

research is how to develop a water distribution model in disaster relief during the emergency phase response in Padang, West Sumatra.

1.3 Objective

Based on experience, there was no planned on amount of delivery item and scheduled to delivered item to the victims. It causes low satisfaction, due to the delay in water distribution and low service level for them. So, this proposed model is used to maximize service level and minimize item movement during the emergency phase response in Padang, West Sumatra.

1.4 Scope of Research

Scopes of this research are:

1. Specific item and certain demand
2. Certain trip of the vehicle
3. As much as possible demand should be fulfilled during the emergency phase.
4. Using homogeneous vehicle
5. One trip one delivery item

1.5 Systematics

This research will be reported in several chapters, which the systematics as follows:

CHAPTER I INTRODUCTION

The preliminary chapter includes reasons to do this research. This chapter contains backgrounds, problem formulations, objective to be reach, scope of problems, and systematics of writing a research report.

CHAPTER II STUDY LITERATURE

This chapter contains all of the explanation of basic concepts and theories which support this research.

CHAPTER III RESEARCH METHODOLOGY

This chapter gives a systematic explanation and the steps undertaken in this study by showing the flowchart of the research methodology.

CHAPTER IV MODEL FORMULATION

This chapter contains data that have been collected and related to the research and will be completed by getting an optimal result. This chapter also contains the method to validate and verify the optimization result to make sure this solution is having the capability to solve the problem.

CHAPTER V SENSITIVITY ANALYSIS

This chapter gives an explanation of the sensitivity analysis of the model

CHAPTER VI CONCLUSION AND RECOMMENDATIONS

This chapter contains conclusions and results of research related to objectives and useful suggestions for further research.

