Study of the formation of National Logistics Cluster for Disaster Management (KLASNASLOG PB) by National Disaster Management Authority (BNPB) to streamline transport for disaster management in Indonesia

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Abstract. Activities to build information management which is conducted by establishing the National Logistics Cluster for Disaster Management (KLASNASLOG PB) in Indonesia have been carried out by the National Disaster Management Agency (BNPB) as a non-departmental government agency in collaboration with other stakeholders and humanitarian agencies since 2014. The aim of this research is to understand the activities of KLASNASLOG PB formation in Indonesia during 2014 - 2016. This research was conducted using qualitative and fishbone analysis to describe clearly regarding the KLASNASLOG PB formation activities in accordance with PERKA BNPB No. 10, 2012, "Logistics Assistance Management in Emergency Status Disaster" and PERKA BNPB No. 3, 2016, "Emergency Response Command System". BNPB has established KLASNASLOG PB for the first time in Indonesia on December 10, 2016, in Pidie Jaya Regency, Aceh Province.

1 Introduction

Indonesia is a country located in the area of 'ring of fire' which has the most number of volcanoes in the world with the high risk of natural disasters. One of the worst natural disasters in Indonesia's history is the tsunami disaster in Aceh, 2004.

The Government has strengthened the framework for disaster prevention, preparedness and response by establishing the National Disaster Management System (UU No. 24, 2007) and establishing the National Disaster Management Authority, hereinafter abbreviated as BNPB (PERPRES No. 8 Year 2008) which is also based on the experience of handling the tsunami disaster in Aceh.

BNPB is a non-departmental government agency led by ministerial-level officials, Rear Admiral (ret.) Bapak Willièm Rampangilei. This institution is directly responsible to the President of the Republic of Indonesia and has the authority in the field of coordination and mobilization in disaster management in Indonesia effectively and efficiently.

Within the framework of disaster management has been established Perka BNPB No. 10, 2012 on "Management of Logistics Assistance in Disaster Emergency Status" and Perka BNPB No. 3, 2016 on "Emergency Response Command System" which contains regarding The National Cluster of Disaster Management Logistics, thus the coordination of Logistics management can be quick and accurate implemented, integrated, accountable and no overlap.

The cluster is defined as a grouping of actors who have the equal competences from the government or regional government, non-government institutions, private sector/business entity, and community groups in the effort of disaster emergency management. It led by a coordinator from institutions with has the technical authority.

United Nations General Assembly Resolution (UN) no. 46/182 served as a reference to OCHA's mandate which means United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA), a UN agency for handling an emergency and natural disaster. UNOCHA actually has made reference to the establishment of 11 (eleven) Disaster Clusters with the description as follows: Agriculture Cluster, Camp Coordination Cluster, Early Recovery Cluster, Education Cluster, Emergency Shelter Cluster, Health Cluster, Logistics Cluster, Nutrient Cluster, Protection, Water, Sanitation, and Hygiene.

Although there were 11 (eleven) Cluster of Disasters Management in UN resolution, but according to Ir. Dody Ruswandi, MSCE - Deputy of Prevention and Preparedness of National Disaster Management Authority (BNPB) at the time, it has been decided only 8 (eight) National Disaster Management Cluster, namely: Health Cluster, Search and Rescue Cluster, Evacuation, and Refugee Cluster, Education Cluster, Facilities and Infrastructure Cluster, Displacement Cluster and Protection, Logistics Cluster and Cluster of Early Recovery.

The Increasing of the disaster incidence in Indonesia apparently requires speed and accuracy in coordination.

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While the National Logistics Cluster for Disaster Management (KLASNASLOG PB) is part of the coordination in the Supply Chain process, so it becomes an important part of the stages in the process of Logistics Management. Ineffective coordination in the handling of a multi-stakeholder response led to frequent overlapping of information and did not address the gaps. (Martin, 2011).

Definition of Supply Chain Management hereinafter referred to SCM in according to Simchi-Levi et.al. (2002) is a set of approaches which are applied to integrate suppliers, entrepreneurs, warehouses and other storage areas efficiently so that products are produced and distributed right quantity, precise location, and timing to minimize costs and satisfy customer needs.

Based on the conditions described above, the authors were interested in conducting research on the study of the National Logistics Cluster formation for Disaster Management (KLASNASLOG PB) in Indonesia with a case study of National Disaster Management Authority (BNPB). The results of this research can be utilized by the National Disaster Management Authority (BNPB) and other related parties.

2 The material and method

Data collection was conducted through a structured, semi-structured and in-depth interviews and focuses group discussion. The data analysis techniques in this study use an approach which developed by Miles and Huberman that include data collection and reduction, unfocused and too detailed data separation, in order the data can reveal its pattern or theme. Furthermore, the data displaying were conducted for the advanced analysis of an information or event. The last process was to establish the conclusion based on the pattern and theme which were analyzed. (Miles, Huberman, & Saldana, 2014) as shown in Fig. 1.

Fig. 1. Data processing technique
 Source: Miles, Huberman, & Saldana (2014)

A qualitative analysis was conducted to describe in depth how National Logistics Cluster for Disaster Management formed. This research was conducted in Jakarta and Aceh. In order to gain the credible information and in accordance with the needs of this study (purposive), the respondents in this study must have the capability and competence in the topic of this study. The main objective of this study is to know how

the National Logistics Cluster for Disaster Management, not only to save the life of the disaster's victim but also to reduce the time and cost of logistics distribution. It is necessary to interview informants who not only have academic expertise in distribution management but also actors who have the experience in Disaster Management.

This research take benchmarking on logistics cluster level area at BPBD Bantul District of Central Java. BPBD Bantul has succeeded in activating Logistics Cluster with the concept of a good organization of society, government and business world in collaboration to improve the response of Logistics field on emergency status.

As shown below, an activity that has been done by BNPB in the formation framework of the National Logistics Cluster for Disaster Management (KLASNASLOG PB) in the period of 2014 – 2016:

1. December 2nd, 2014. Workshop on Formation of FORLOG PBI (Indonesia Logistics Disaster Response Forum) for 2014-2017 service period at BNPB Office Sentul West Java.
2. February 27th, 2015. National Logistics Cluster and Disaster Relief Workshop at UNOCHA Office Jakarta.
3. March 18th, 2015. Technical Working Group Meeting of National Logistics Cluster for Disaster Management Workshop at BNPB Jakarta Office.
4. September 5th, 2015. MOU between the National Disaster Management Authority (BNPB) through FORLOG PBI with Supply Chain Indonesia (SCI), Indonesia Logistics and Forwarders Association (ALFI), Association of Express and Logistics Indonesia Express (ASPERINDO) and Indonesian Truck Entrepreneurs Association (APTRINDO) at Novotel Hotel Bandung.
5. October 22nd, 2015. Discussion for Draft Terms of Reference (KAK) National Cluster Logistics for Disaster Management tools at Grand Cemara Hotel Jakarta.
6. December 10th, 2015. Coordination Meeting of National Logistics Cluster for Disaster Management at Grand Cemara Hotel Jakarta.
7. July 19th, 2016. National Logistics Cluster for Disaster Management Meeting at BNPB Office Jakarta.
8. August 16th, 2016. The Meeting with the Indonesian Logistics Forwarders Association (ALFI) in BNPB Jakarta Office.
9. September 27th, 2016. Annual Workshop on National Logistics Cluster for Disaster Management at BNPB Office Jakarta.
10. October 25th, 2016. Monthly Meeting of Core Team of National Logistics Cluster for Disaster Management at BNPB Office Jakarta.
11. November 10th, 2016. Monthly Meeting of Core Team of National Logistics Cluster for Disaster Management at BNPB Office Jakarta.
12. December 8th, 2016. Monthly Meeting of Core Team of National Logistics Cluster for Disaster Management at BNPB Office Jakarta.
13. December 8th – 12th, 2016. Sending Logistics Response Unit (LRU) to Pidie Jaya District, Aceh

Province. The team assigned by Assignment Letter No. ST 38C/DEP.II/BNPB/12/2016.

Results of this activity:

- Meeting with Indonesia Logistics and Forwarders Association (ALFI) Branch of Aceh to coordinate customs clearance at Aceh Airport on December 8th, 2016.
- BULOG Warehouse assessment to be used as a warehouse for the storage of BNPB and ASEAN Assistance Relief Goods on December 9th, 2016.
- Monitoring of land transportation by truck from Banda Aceh to Pidie Jaya District in cooperation with the National Association of Indonesian Delivery and Delivery Companies (ASPERINDO) within the framework of the National Logistics Cluster for Disaster Management on December 9th, 2016.
- Monitoring of Customs Clearance of ASEAN Relief Goods in cooperation with the Indonesia Logistics and Forwarders Association (ALFI) within the framework of the National Logistics Cluster for Disaster Management on December 10th, 2016.
- Activation of National Logistics Cluster for Disaster Management for the first time in Indonesia on Saturday, December 10th, 2016 in Pidie Jaya District, Aceh Province.

The first meeting for the activation of the National Logistics Cluster for Disaster Management was conducted on the 2nd Floor of the Regional Office of the Ministry of Religious Affairs of Pidie Jaya Regency, Cot Trieng Meureudu Street, Rungkom, Meureudu, Pidie Jaya District, Aceh Province at 20.30 PM and attended by 11 (Eleven) existing actors, namely:

1. Johandi (Caritas Medan)
2. Suko (Karina)
3. Prastato (BNPB)
4. Ageng (SCBT)
5. Erik Nugroho (Log Cluster)
6. Dominique (Log Cluster)
7. Didiet (Log Cluster)
8. Mashuri (Log Cluster)
9. Andy (IOM)
10. Hasan (DRR Forum)
11. Fachmi (Sayangi Tunas Cilik Foundation)

Fig. 2. The first meeting for the activation of the National Logistics Cluster for Disaster Management.

The discussion above was conducted for sharing information and resources among actors to facilitate transportation and distribution of disaster relief aid items

(Fig. 2.). Meeting invitation letters are distributed among actors via SMS or WhatsApp.

The deep interview has been conducted, the respondent was Mrs. Dra. Prasinta Dewi, MAP as Director of Logistics BNPB on Tuesday, July 19, 2016. As the result was the formation information of the KLASNASLOG PB "Mapping the need for the National Logistics Cluster for Disaster Management is fundamental to the efficiency of Logistics including transportation to be established".

As shown below, the characteristics of the respondent's profile that responds to the questionnaire given. There are 35 respondents with various educational backgrounds from High School until Doctoral education level. there were 4 types of respondents age category, namely; less than 31 years old is 7 persons or 20%, then 31-40 years old is 10 persons or 29% and above 40 years are 17 persons or 51% of total respondents. Based on the gender category, the majority of respondents are men. Based work experience respondents work, less than 10 years are 14 persons or 40%, 10-20 years are 9 persons or 26% and more than 20 years are 12 persons or 34%.

Table 1. Research instrument grid

Character- istic	Causing factor	Type of causing factor	Questi- ons item
The process of establishing the National Logistics Cluster for Disaster Management	1. Manpower	a. Number of Actor	1a
		b. Actor Capability	1b
	2. Machines	a. Number of Equipment	2a
		b. Quality of Equipment	2b
	3. Methods	a. Effective & Efficient Handling	3a
		b. BNPB and Stakeholders Coordination	3b
		c. Time Creation	3c
	4. Materials	a. Data Creations	4a
		b. Appointing Letter	4b
	5. Media	a. Working Actor	5a
		b. Better workplace	5b
	6. Motivation	Appreciation for Actor	6
	7. Money	a. Availability of Handling fund	7a
		b. Fund Problem solving	7b

Source: Respondents National Cluster Logistics Disaster Management.

Referring to Table 1. in regard to Manpower category, sub-category the number of actors (1a), 19 respondents answered "yes" and 15 respondents answered "no" and subcategory actor skills (1b) 18 respondents answered "yes" and 16 respondents answered "no".

Regarding Machines category, subcategory of Equipment for the Establishment of National Logistics Cluster for Disaster Management (2a), 19 respondents answered "yes" and 15 respondents answered "no" and subcategory of equipment used in the National Logistics Cluster for Disaster Management (2b) formation, 14 respondents answered "yes" and 20 respondents answered "no".

On Methods category, subcategory of National Disaster Response for the Effective and Efficient Disaster of National Logistics Cluster (3a), 12 respondents answered "yes" and 22 respondents answered "no" and subcategory of categories There is good coordination between BNPB and related stakeholders (3b), 20 respondents answered "yes" and 14 respondents answered "no".

The subcategory "there is a definite time to establish the National Logistics Cluster for Disaster Management Establishment" (3c), 16 respondents answered "yes" and 18 respondents answered "no". regarding the category of Materials and subcategories of data, there were sufficient data for the National Logistics Cluster (4a), 18 respondents answered "yes" and 16 respondents answered "no".

While in regard to the subcategory of the existence of decree of appointment of administrators of National Logistics Cluster for Disaster Management (4b), 20 respondents answered "yes" and 14 respondents answered "no".

On Media category, subcategory of actor in National Logistics Cluster for Disaster Management still works as needed (5a), 25 respondents answered "yes" and 9 respondents answered "no" and subcategory of the actor thought work environment better if formed National Cluster Logistics for Disaster Management (5b), 28 respondents answered "yes" and 6 respondents answered "no".

On Motivation category is awarded, 20 respondents answered "yes" and 14 respondents answered "no".

On Money category, subcategory of the existence of sufficient funds for the handling of the National Logistics Cluster Logistics for Disaster Management (7a), 19 respondents answered "yes" and 15 respondents answered "no" and the subcategory of categorization the handling of funding problems of the National Logistics Cluster well (7b), 23 respondents answered "yes" and 11 respondents answered "no".

As the conclusion, the causal factor was listed as following below (Fig. 3.) :

1. The process of handling the formation of National Logistics Cluster for Disaster Management has not been effective and efficient (50%).
2. The procurement process of equipment used to form the National Logistics Cluster for Disaster Management (33%).

3. The absence of a definite time to establish the formation of National Logistics Cluster for Disaster Management (17%).

Fig. 3. Main category type diagram forming National Cluster Logistics Disaster Management year 2016

3 Result

The determination of the root cause of the problem was in accordance with the theory of Fishbone, namely is looking for a sequence of problems with the five factors as follows:

1. The problematic factors in the process of handling the formation of the National Logistics Cluster for Disaster Management have not been effective and efficient.
2. The problematic machines in the procurement process of equipment used to form the National Logistics Cluster for Disaster Management that has not been sufficient.
3. The problematic methods in the absence of a definite time to establish the establishment of the National Logistics Cluster for Disaster Management.

After determining the factors of forming the National Logistics Cluster for Disaster Management were conducted, the next stage was looking for the solution of the root cause of the problem by using Five Way Keys (Gaspersz, 2007). Researchers seek an effective solution of the root cause of the problem in the formation of National Cluster Logistics for Disaster Management. The following solutions are summarized based on field observations and questionnaire results.

Based on the results of the analysis and discussion in the study entitled "Study of the Formation of National Logistics Cluster for Disaster Management (KLASNASLOG PB) to Streamline Disaster Transport Management in Indonesia" it can be concluded as follows in table 2.

Table 2. The effective Solution or Action form for the Roots of Main Issues

Rank Main Category	Main Type Category	Main Root Problem	Action (Effective/ Solution)
(1) Methods	Handling (3a)	Because each actor prioritizes the interests of the institution or company.	Reference item (partial)
(2) Machines	Procurement (2b)	Because there is no quality standard for each equipment required.	1. All parties analysed the quality level of each equipment 2. All actors analysed the Disaster Recovery Logistics process from the stage of procurement, storage, maintenance to use and replacement of equipment
(3) Methods	Creation (3c)	Because each party has different goals and challenges.	1. All actors from the vision and mission of the formation of National Logistics Cluster For Disaster Management together 2. Each party analyzed and exposes of its advantages and disadvantages

Results and Field Survey:

1. National Disaster Management Authority (BNPB) has held the series of activities in the form of seminars, workshops, and socialization on the formation of National Logistics Cluster for Disaster Management (KLASNASLOG PB) intensively throughout the year 2014 - 2016.
2. The National Disaster Management Authority (BNPB) through FORLOG PBI has already made MOUs with other stakeholders such as Supply Chain Indonesia (SCI), Indonesia Logistics and Forwarders

Association (ALFI) and the Association of Express and Logistics Delivery Service Companies (ASPERINDO) and the Indonesia Truck Entrepreneurs Association (APTRINDO) to facilitate the transportation of disaster management in Indonesia.

3. The National Disaster Management Authority (BNPB) has successfully activated the first National Logistics Cluster for Disaster Management (KLASNASLOG PB) in Indonesia on December 10, 2016, in Pidie Jaya District, Aceh Province.

Fishbone Analysis:

The determination of the root cause of the problem was listed as follow:

1. The methods problematic factor on the handling because each actor prioritizes the interests of the institution or institution.
2. The problematic of machine factors do to there is no quality standard for each required equipment.
3. The problematic factors because each party has different goals and challenges.

Suggestions:

Based on the conclusions, the suggestions can be put forward as follows:

1. National Disaster Management Authority (BNPB) prepares the manual for implementation of National Logistics Cluster for Disaster Management (KLASNASLOG PB) in the form of the guidebook.
2. Regarding the methods for actors, an evaluation must be conducted for their existence in plans for the establishment of the National Logistics Cluster for Disaster Management (KLASNASLOG PB). Cost and profit analyses were also conducted.
3. In regard to the machines factors, all parties must do the analyses of the quality level of each equipment and the Disaster Recovery Logistics process from the stage of procurement, storage, maintenance to the use and replacement of equipment.
4. Regarding the methods, need the collaboration for all actors who is forming the vision and mission of National Logistics Cluster Logistics for Disaster Management (KLASNASLOG PB) formation, to analyze the advantages and disadvantages of the methods.

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