

# Flood coping mechanisms



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## **Adaptive Strategies of household in terms of flood coping mechanism.**

### **Introduction**

#### **Background of the problem**

#### **International and national literature related to the problem to be studied**

Floods are defined as extremely high flows of river, whereby water inundates flood plains or terrains outside the water-confined major river channels.

Flood hazard is measured by probability occurrence of their damaging values, conceived generally as flood risk, or by their impact on society, conceives usually as the loss of lives and material damage to society (Rossi et al., 1994).

Flood is natural events that can occur at any time and often able to create loss and damage that can be suffered by property, population and environment. Flood event cannot be prevented, but it can only be controlled and reduced the impact. Flood came relatively quickly, so we must have the effective strategies in order to reduce the impact from flood event.

Flood is the most damaging event in Indonesia. Of total disaster in Indonesia, 57.43% is floods. Those events cause 587,190 affected people and 68 casualties (Badan Nasional Penanggulangan Bencana (BNBP/National Coordinating Board for the Management of Disaster), 2008).

Geographically, Sampang is located in Madura Island and included as plain area because it has elevation almost the same as sea level. Due to this physical condition, Sampang, as a waterfront city, has been suffering with flooding almost every year. Combination between high intensity of rainfall

and high tide of sea, improved water discharge of Kamoning River and then inundated several areas in Sampang. The triggering factor is small holding capacity of Kamoning River.

The strategies from local community to cope the flood are mostly developed by the initiative of affected community in inundated area. For instance, they have added the floor height or the number of floor in order to avoid the water flow and save their belongings. The coping activities that have been done by local community revealed due to the disability of local community to move in safer area. Besides, those coping strategies also have uniqueness related to the physical condition of this area. It means that the strategies can be explored through several perspectives, e. g. the magnitude of flood, income, education, etc.

By elaborating the existing adaptive strategies in Sampang Regency, it is expected that the general and specific description of flood coping strategies can be obtained as an effort to establish the recommendation in case of local government policy in facing with a given flood.

## **1. 2. Statement of Problem**

Flood becomes a major issue for the local government of Sampang Regency because it is one of the most frequent and most disastrous natural events. Tremendous losses and damages as results of severe flood have been occurred. Historically, Sampang City already has been stricken severe flood in three times which were in 1921, 1991 and 2002. The most flood disaster in Sampang was in 2002, where a third area of Sampang was affected and caused more than 14 casualties, many damaged houses and public

infrastructures, and many evacuated people. The recent of flood occurrence in Sampang were in 2008 and 2009, where the flood event has a little damaged.

The flood occurrences in this regency demanded the awareness both from local community and local government for conducting disaster reduction actions. Those actions were aimed to minimize the impact of flood. One of those actions is flood investigation in terms of flood characteristics and coping strategies. The action is intended to gather information related to the characteristic of flood, how the affected community survive with flood, and the coping strategies that have been done by the local government.

The collected information about flood and flood coping strategies will be useful as an important input to arrange capacity improvement in disaster reduction process. On the other words, local community and local government will be involved in establishing the more appropriate flood coping strategies, particularly by examining flood characteristics and existing flood coping mechanism. Moreover, it can be decided whether the existing flood coping strategies are adequate or not.

There are many parts of Sampang Regency which are often stricken by flood every year, but the study about flood has not been done yet. Besides, more detail of local community's strategies in overcoming the flood is not established. Local government commonly only calculated the losses and damages without investigating the flood characteristics and coping strategies done by local community.

Find the thesis with Sampang as study area.

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**Research Objective**

General objective of this research is to identify the adaptive strategies of household to cope the flood event and local government actions in supporting the strategies. The general objective is then elaborated into four specific objectives, as follow:

To identify the characteristics of the flood.

To explore the adaptive strategies of household to cope the flood.

To recognize influencing factors of selected adaptive strategies.

To identify the government strategies in terms of reducing the flood impacts.

**Research Questions**

The main question of this research is what are the adaptive strategies of households to cope the flood event and how can local government support the adaptive strategies in reducing the impact of flood

Sub questions are:

- What are the characteristics of the flood event?
- What are the adaptive strategies of household to cope the flood?
- What are the factors that influence the selecting adaptive strategies?
- What have done by local government to cope the flood in term of reducing the impact of the flood event?

**Research Method**

\* Make the adaptations necessary to adjust the text according to your own situation:

## **Type of Research**

The type of research is an explanatory research which seeks to identify the adaptive strategies of household to cope the flood event and local government actions in supporting the strategies of household. This research will use qualitative and quantitative method.

## **2. 2. Data Collection**

### **Literature study**

Secondary data will be collected mainly from government institutions, various data will be collected is listed on the following table:

Table Secondary Data

No	Data Type	Source
1	Annual report of JFP & Perum year 2008	JFP, Perum of JFP
2	Documentation of tidal flood (picture and report)	JFP, NJM
3	Fisheries statistic year 2008	JFP, BPS, Perum of JFP, NJFA
4	Spatial Plan	NJM
5	Flood Preventing Program	JFP, NJM

### **Flood Preventing Program**

JFP, NJM

Secondary data such as (reports, articles, etc) will be collected through a literature study from (governmental agencies, private, other). The sources of secondary data are shown in the following table X; 2. 2. 2. Fieldwork Primary data will be collected through a fieldwork for (duration, time of the data collection and place (s)). The research instruments will be a combination of an (in-depth interview, survey with questionnaires, others). The choice of key respondents (government officials/ experts, others) for interviews (with semi-closed interviews, closed interviews, etc) is based on a (purposive or other way of sampling). Further, the list of respondents to be interviewed is shown in the table X1; The research population at which the survey about (perception or other issue) using (questionnaires and/or other instrument) will be applied to (citizens, NGOs, etc..) The sampling technique for selecting respondents from citizens is a (purposive, random, or other) sampling. Considering that time and finance are the main limitations of the research, the expected number of respondents is X . The dissemination of questionnaires will be done by (visiting offices, schools/campuses and association centers of respondents, by using internet or other means). The list of respondents is presented in the following table X2; 2. 3. Data Analysis How your collected data will be analyzed, techniques to be used for the analysis (statistic methods: means, percentages, frequency distribution, etc)) and for the display and organization of the collected data (tables, matrix, graphic (type)).

Unit of Analysis, Variables and Indicators

Unit of analysis of this research is the ..... Variables and indicators are summarized in the following table X3; 2. 6. Research Design In order to have a clear guidance about how to do the research, it is necessary to make a research design. The research design consists of some stages as is shown in the following figure X

The thesis report will be structured into X chapters.

Those six chapters are as follows;

Chapter 1 includes the background of the problem, problem statement, justification of study, research objectives, research questions and hypotheses.

Chapter 2 deals with literature review/conceptual framework used in the research.

Chapter 3 describes the general condition of the research area.

Chapter 4 explains the research method.

Chapter 5 discusses the results/findings of the research.

Chapter 6 is concerned with conclusions and recommendations

Time Framework

Table X; Important dates and deadlines

Budget

Table X; Budget of research

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## **Reference List**

Appendix 1; Copy of the Interview Questions to be used in the field visit

Appendix 2; Copy (s) of the Questionnaire(s) to be used in the field visit.

Appendix 3; Map of the research area.

## **CHAPTER III**

### **RESEARCH METHOD**

Research method used deals with the goals and objectives achieved in this study. It consists of pre field, data collection method and data analysis method.

#### **Preparation**

This stage has main purpose to prepare some certain materials which will be used in the field data collection. There are three main activities, which are literature review, design survey, and questioner. The literature review is a process to obtain research background justification and to formulate research questions. Then, it is harnessed as a guide in the research process. The literature review itself yields a theoretical background that provides framework analysis of the research. It also organizes such kind of research which should be accomplished in order to achieve the research objective.

#### **Data Collection**

The data needed for the research analysis are primary and secondary data. Primary data collection interview both household and contact person in particular community (government official, community leader, NGO, etc).

Questioner distribution will be held by considering the number of samples taken. In this case, the number of samples is obtained by using the following equation (Public Work Department):

$$n = \left[ \frac{N \cdot d}{1 + d} \right]$$

Where :

n = The number of samples

N = The number of population (3 Sub district 29337)

d = The level of significancy for about 10% (it represents all population)

Regarding to the equation, the number of samples used is 100 samples (see the following calculation):

$$= \left[ \frac{29337 \cdot 0.1}{1 + 0.1} \right] = 100$$

On the other side, the secondary data are gathered from literature review and previous research reports. Secondary data are the available statistical data compiled from those institutions.

The result of this fieldwork is a database containing all information related with people perception on flooding, physical aspects (structural types of buildings and building contents) and socio-economic aspects (age, gender, occupation, income, educational level, length of stay and housing status) and people's coping mechanism due to flood.

### Data Analysis Method

The method of analysis is a descriptive analysis that explores and investigates the data. Questionnaires were double checked for differences and corrected, and individual and housing records linked using SPSS software. The main variables collected from the households interviews such as : height of water level during flood, and the duration, flood history, coping mechanism, and the socio –economic were analysed.

From the analysis, it is expected to find a new integrated flood management that is possible to apply in overcoming flood hazard in Sampang Regency. The output from this analysis process will be utilized as a guide to develop a new flood management system.

Research Questions	Variables	Indicators	Data Source
			Interview Question Numbers

1. What are the characteristics of the flood event?

Characteristic of flood	2. History of Flood	Interview (using questionnaire) s) with households, and observation
	3. Cause the Flood	
	4. Flood Depth	
	5. Flood Duration	

The Impact	6. Physical	Interview
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Damage

1. Infrastruct

ure

2. House/

Building

3. Appliance

4. Furniture

5. Outside

properties (using

7. Economic questionnaire

1. Income s) with

2. Occupatio households,

n and

3. Disruption observation

in

business

of Flood

8. Social

1. Injuries

sustain

2. Illness

suffered

3. Loss of life

9. What are the adaptive strategies of

household to cope the flood?

Economic

1. ReconstructInterview

ion of

house with

the

reinforced

material

2. Preparing

place for

storage at

the higher

place

3. Storing

basic food

items such

as : rice

and sugar

(using

questionnai

res) with

households.

4. Building

dikes in

front of

house using

sand bags

5. Repairing

minor

damage of

the

appliance

6. Repairing

important

damage to

the house

7. Fixing

things

8. Continue

working

9. Purchasing

cheap food

10. Repair

ring minor

damage of

the

appliance

11. Repair

ring

important

damage to

the house

12. Saving

g money

Technologic

al/

structural

13. Construction Interview

tion of (using

house with questionnai

the res) with

reinforced households.

material

14. Closing the door and windows properly to avoid water

15. Do nothing

16. Securing house entrance to avoid debris

17. Cleaning the house by draining

18. Repairing minor damage of the appliance

19. Repairing

important

damage to

the house

20. Fixin

g things

21. Clean

ing the

canal

surrounding

s the house

22. Clean

ing the

house and

surrounding

s

23. Conti

nue

patrolling

the

neighborho

od

Interview

(using

questionnai

res) with

households.

Social

24. Helpi

ng other's

community

member in



doing work

25. Guar

ding the

house to

ensure

safety

belongings

26. Searc

hing relief

materials

27. Evac

uating the

family,

especially

children

and elderly

to the safer

place,

28. Prepa

ring

temporary

place at

friend's or

relative's

place

29. Prepa

ring place  
 for storage  
 at the  
 higher  
 place

30. Clean  
 ing the  
 canal  
 surrounding  
 s the house

10. What are the factors that influence  
 the selecting adaptive strategies?

- |          |                         |                                  |
|----------|-------------------------|----------------------------------|
|          |                         | Interview                        |
| Physical | 1. Infrastructure       | (using questionnaires)           |
|          | 2. Geographic Location  | with households.                 |
| Economic | 3. Status of Property   | Interview (using questionnaires) |
|          | 4. Income               | with                             |
|          | 5. Occupation           | households.                      |
| Social   | 6. Household' Interview |                                  |
|          | size                    | (using                           |

questionnaires)  
 7. Household' with  
 s structure  
 households.

11. What have done by local  
 government to cope the flood in term of  
 reducing the impact of the flood event?

1. Build  
 dykes, Interview with
2. Build dam, local
3. Build institutions
- Structur reservoir, which have
- al 4. Improve duties related  
 infiltration to disaster  
 of rainfall coping  
 into the mechanism  
 ground.

Interview with  
 local

Non  
 structur  
 al

5. An early institutions  
 warning which have  
 system duties related
6. Regulation to disaster  
 coping  
 mechanism

The sample was chosen from households affected by coastal erosion/flooding and the ones who knew the details of adaptation strategies. A sample of 40 households was selected randomly.