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Bottom up Approach in Developing Relief Protocol: Case from Rajang

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Abstract

The paper elucidates the objectives, methods and findings of a research project undertaken at Rajang River. The project was carried out with the intention to identify the hazards/disasters coping mechanism used by local communities. The bottom up coping mechanism was drafted and proposed to the relevant committee as three forms of relief protocols, namely for flood, fire and riverbank erosion. It is envisaged that the protocols will help to alleviate the situation faced by the riverine communities and to complement, and initiate improvement in government's disaster management programs.

Keywords: Disaster Management, Relief Protocols, Flood, Erosion

Introduction

The Malaysian National Security Council defines a disaster as "an emergency situation of some complexity that will cause the loss of lives, damage property and the environment, and hamper local social and economic activities." However, in Sarawak, floods and droughts are actually considered hazards rather than disasters as defined by the Malaysian National Security Council. Floods and droughts become disasters only when the livelihood of the local communities are affected and interrupted¹. Another common hazard and disaster faced by riverine communities is riverbank erosions. Soda (2009) mentioned a coping mechanism for environmental transformation is symbolized by the events of riverbank erosions. In the instance of riverbank erosion, protection measures alone are insufficient, as the cause of erosion is not well investigated. Often, intervention measures are ad hoc and their effectiveness is highly doubtful. Thus, it is vital to know the root causes so that proactive measures can be recommended.

This research is carried out along the Rajang basin in Sarawak, and 28 villages and longhouses along the Rajang River were selected for survey purposes. By identifying the present hazards-cum-disasters coping mechanisms used by local communities, the government's disaster prevention or disaster management programs can be improved. Through this, resources can be properly allocated.

¹ See also Button, 2010; Donovan, 2010 for other relevant cases.

Effectiveness of the program is more likely to be ensured based on effective mechanisms that are already being employed and accepted by the local communities. The research objectives are as follows:

- To examine the coping strategies and sequences of responses adopted by the local communities on disaster management; and
- To design a disaster prevention/mitigation and relief protocol through a holistic approach of identifying the root causes of natural disasters.

Method

Data collection was conducted in three phases. The first phase was carried out by informing and getting consent from the relevant authorities such as the Sibul Resident Office, Kanowit District Office and Sibul Department of Drainage and Irrigation. The relevant parties were briefed about the intention and nature of the project. The second phase was a brief survey by the main researchers (the leader and two Japanese experts) by visiting the sites. Longhouses in Kanowit division is chosen as it fits the project's requirements. On top of that, one of the researcher Dr Soda Ryoji is well versed with the area's river condition due to previous research project (2009, 2013). Professor Uchibori and the author drafted the plans and also questionnaires for interviews. The perception on 'happenings' around the livelihood of the communities were gauged through the questionnaires. The intention was to ascertain if the concept of 'disaster' (bencana) fits into the perception of the local people. The third phase was a lengthy stage whereby the lead researcher and the field assistants conducted interviews using the two sets of questionnaires at 28 longhouses. At the end of the survey fieldwork, all data was inputted and analysed. The team drafted three sets of relief protocols by incorporating the feasibility and suitability of the mechanisms. The protocols were discussed extensively and was presented and proposed to the Sibul Division Disaster Management Committee. The team is still waiting for a workshop with community leaders to discuss again on the relief protocols. The Sibul Resident Office is the organiser of the workshop which is scheduled to be held in October this year.

Figure 1. Location of surveyed villages/longhouses

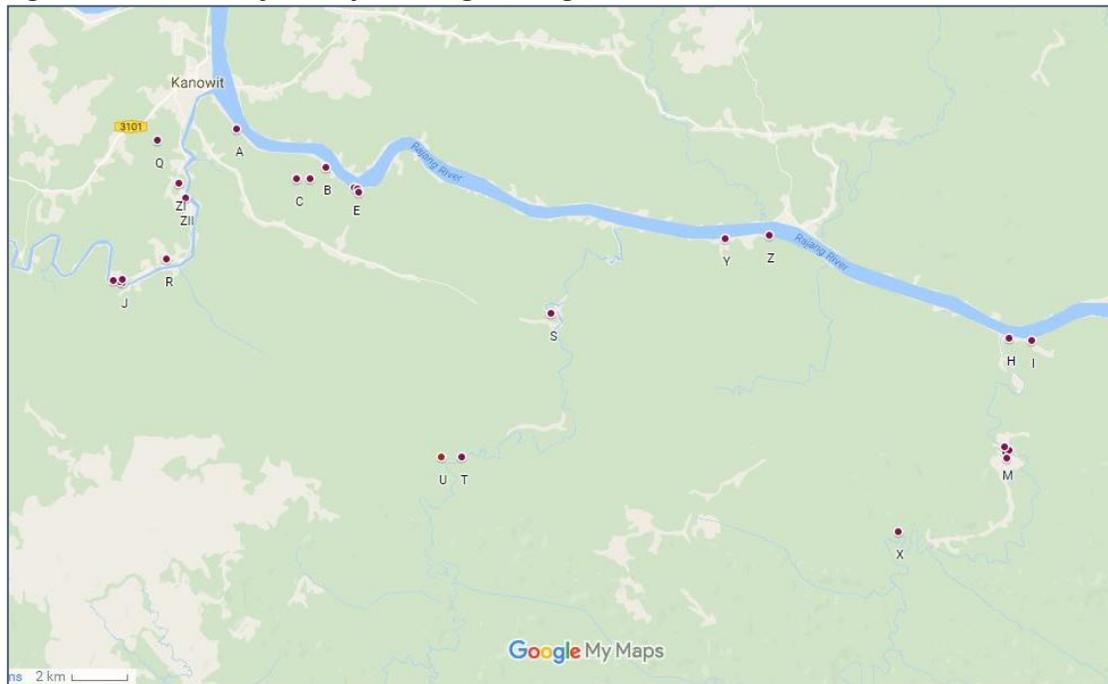


Table 1. Names of Longhouses listed in Figure 1.

Location on Map	Name of Kampung	Area
A	Kampung Bedil	Bedil
B	Rh Chua	Nanga Mam
C	Rh Vestern	
D	Rh Lolita	
E	Rh Barnabas	Batu Luking
F	Rh Johnny	
G	Rh Judit	
H	Pasar Ngemah	Ngemah
I	Rh Merom	
J	Rh Benar	Nanga Lipus
K	Rh Thomas	
L	Rh Andreas	
V	Rh Morris	
W	Rh Leo Moggie	
M	Rh Andrew	Nanga Ngungun
N	Rh Jabu	
O	Rh Seli	
P	Rh Thomas	

Q	Rh Jelani	Ranan
R	Rh Charlie	Nanga Melipis
S	Rh Meluda	
T	Rh Usop	Poi
U	Rh Muran	
X	Rh Anthony	Nanga Nirok
Y	Rh Benet	
Z	Rh Bennet Ringgit	Nanga Dap
ZI	Rh Henry	Nanga Skuaw
ZII	Rh Benjamin Angki	Rantau Kemiding

From the survey conducted, the most significant hazards or disasters affecting the livelihood of the Rajang riverine communities are floods, landslides (riverbank erosion), and fire. Other than these three, droughts are also a threat to the communities. However, no serious occurrence of drought was reported in the longhouses surveyed. The following table shows the three significant hazards or disasters affecting the Rajang riverine communities:

Table 2: Significant hazards or disasters affecting the Rajang riverine communities

Flood	
1. Rumah Chua Anak Paulus	14. Rumah Andrew Balun Anak Chabo
2. Rumah Versten Teglan Anak Peter	15. Rumah Thomas Anak Balang
3. Rumah Lolita Anak Stanley Sungo	16. Rumah Jabu Anak Tawai
4. Rumah Bernabas Anak Rovat	17. Rumah Charlie Anak Salang
5. Rumah Johnny Anak Kadok	18. Rumah Meluda Anak Ajang
6. Rumah Judit Anak Bilong	19. Rumah Usop Anak Gerinang
7. Pekan Ngemah	20. Rumah Muran Anak Kilau
8. Rumah Merom Anak Serukan	21. Rumah Anthony Anak Ajut
9. Rumah Benar Anak Guram	22. Rumah Benet Anak Jentan
10. Rumah Andreas Anak Nibong	23. Rumah Benjamin Angki Anak Kaboy
11. Rumah Johnathan Anak Thomas	24. Rumah Henry Anak Duit
12. Rumah Morris Anak Baja	25. Pasar Kanowit
13. Rumah Leo Anak Bakum	26. Rumah Jelani Anak Jegalang
Landslides (Riverbank erosion)	
1. Kampung Bedil I	4. Rumah Merom Anak Serukan
2. Rumah Chua Anak Paulus	5. Rumah Bennet Ringgit Anak Bubong
3. Rumah Bernabas Anak Rovat	
Fire	
1. Rumah Morris Anak Baja	4. Rumah Seli Anak Ukit
2. Rumah Leo Anak Bakum	5. Rumah Anthony Anak Ajut
3. Rumah Jabu Anak Tawai	

Analysis

Flood turned out to be the most significant hazard or disaster affecting the Rajang riverine communities, with 26 longhouses revealing it as the main threat to their livelihood. Flood occurs annually in this region, especially during the rainy season at the end of the year. Heavy rainfall increases the water capacity of the Rajang river and submerges the surrounding areas. To date, flood incidents have not been too serious and no evacuation has been required. From the local respondents' perspective, Bakun Dam has brought positive effects, as it conserves the water of heavy rainfall in the upper area and in a way controls the flow of water in the downstream area.

Riverbank erosion continues to threaten the livelihood of the communities as well. It is a recurrent and unpredictable phenomenon. According to the local people, logging activities in the upper area of Rajang and waves caused by tugboats transporting logs are the main factors to riverbank erosion in the area. Over time, bank erosion has resulted the declination of bank lines and widening of the river. The wave action from tugboats and express boats further aggravates the situation by washing off the surface of the riverbank, thus causing the river channel to broaden. Bank erosion threatens the safety of longhouses or houses located nearby the riverbank. Besides flood and riverbank erosion, fire was posed as the third most significant incident that worries the riverbank communities in Rajang. The recent fire incident on April 2016 at Rumah Anthony Ajut in the Nanga Nirok area left one of the longhouses with nothing. The longhouse is only accessible by four-wheel drive vehicles after taking a longboat journey. The perplexing transportation problem has led to the inability of Fire and Rescue (BOMBA) to act accordingly.

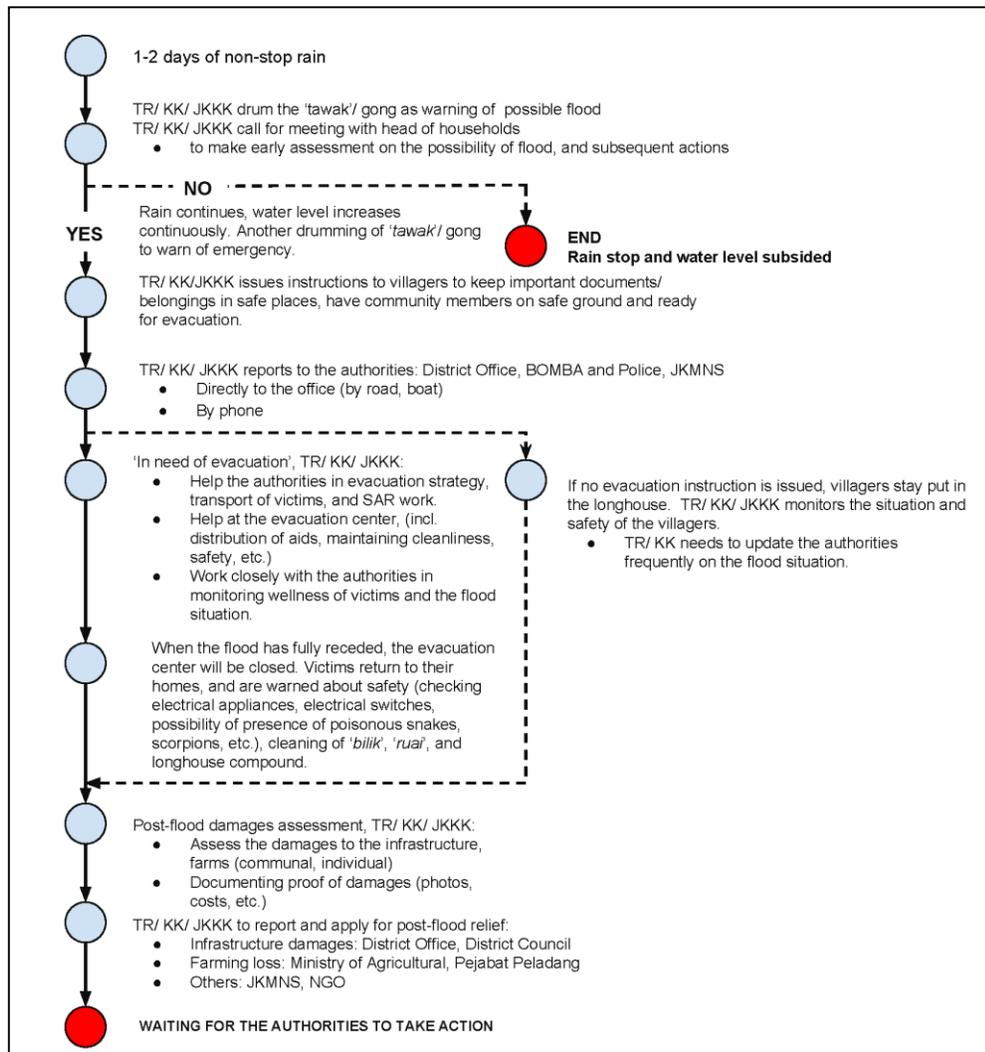
Relief Protocol for Flood

From the survey, the riverine communities in Rajang are of the opinion that a high occurrence of flood correlates with the rainy season at the end of the year. Whenever rain persists for a day or two, the *Tuai* and the JKKK committee in charge stay alert of the situation. As precautionary step, TR/KK/JKKK drum the '*tawak*'/gong as a warning of possible flood. The Headmen (TR/KK), with the cooperation of the JKKK, call for a meeting with every head of household to monitor and assess the possibility of flood. Household heads are told to stay alert and to prepare family members in the event of a flood.

If the rain stops and the water level subsides, then the probability of flood is less imminent. However, precautionary steps and monitoring should continue.

When rain continues and the water level in the river continues to rise, then the possibility of flood is imminent. TR/KK, with the assistance of the JKKK, beat the '*tawak*'/gong to alert the villagers. A new briefing is conducted to inform villagers about the situation, instruct them to keep important documents and belongings in safe places, and to keep them on safe ground and be ready to evacuate. Once the villagers are alerted and prepared, TR/KK/JKKK should lodge a report to the authorities involved, i.e., the District Office, BOMBA, the police, and the welfare department (JKMNS). Report via phone is the fastest approach in such occurrence. However, in case of network failure, the report should be lodged by going directly to the relevant authorities' offices.

Figure 2: Relief protocol for flood



Upon assessment by the authorities in charge, if evacuation is unavoidable, then TR/KK/JKKK will assist the authorities in the evacuation strategies, transportation of victims, and SAR work. At the evacuation center, TR/KK/JKKK will help and work together in distributing aid and in maintenance of cleanliness, hygiene, and safety of the villagers. Monitoring the flood situation and the wellbeing of the villagers are ongoing tasks and authorities should be updated on the status of these items.

When the flood has fully receded and the official announcement is made, briefing on safety precautions is conducted before villagers return to their longhouse. Upon arrival at the longhouse, TR/KK/JKKK assist in safety awareness instruction, such as checking electrical appliances (electrical switches) and also the possibility of poisonous snakes, scorpions, etc. The longhouse committee organizes a clearing and cleaning session of the longhouse's surroundings after household members have cleaned the '*bilik*', '*ruai*', and the longhouse compound.

On the other hand, if no evacuation instruction is announced, the villagers will stay at their longhouse until the flood recedes. TR/KK/JKKK monitor the situation and the safety of the villagers. The flood situation is reported and updated frequently for the relevant authorities.

During the aftermath of the flood, TR/KK/JKKK assess the damages to the infrastructure and farms, both communally and individually. Following the assessment, proof and costs of damages are

documented for records and reporting purposes. Such information is then submitted for post-flood relief aids to the relevant authorities, such as:

- Infrastructure damages: District Office, District Council
- Farming loss: Ministry of Agricultural, Pejabat Peladang
- Others: JKMNS, NGO

While waiting for aid to arrive, the longhouse community may also seek aid from other sources such as philanthropists, politicians, etc.

Relief Protocol for Riverbank Erosion

Riverbank erosion could vary from non-serious level; unnoticed and non-threatening, up to life-threatening, serious incident. The response protocol therefore varies as well, pre-determined by the level of emergency of the incident.

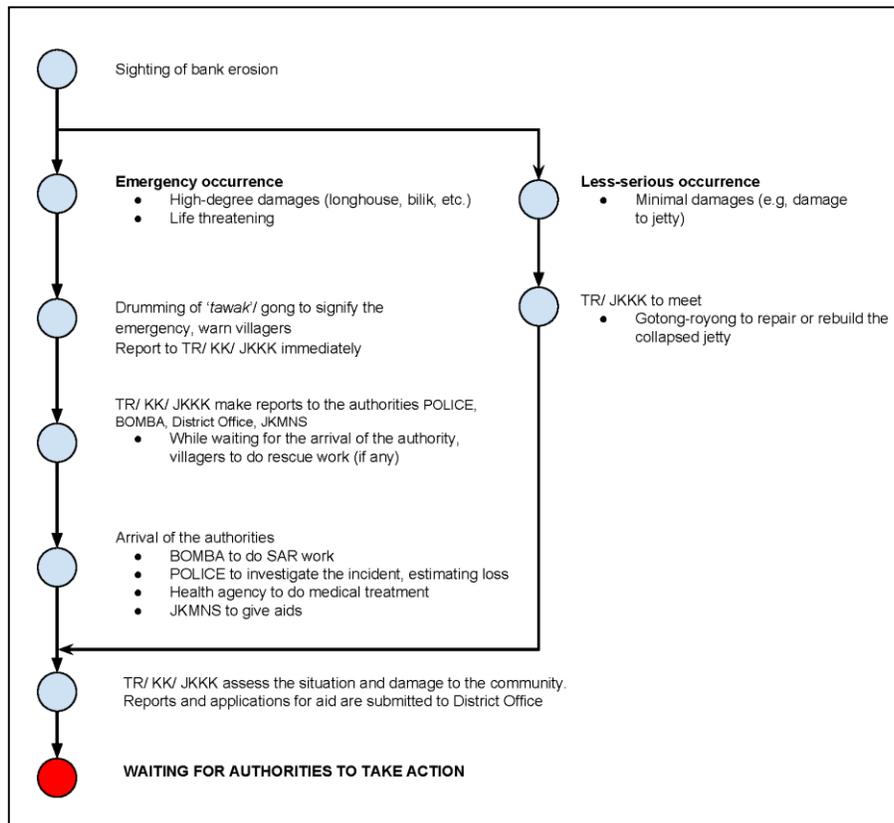
An emergency occurrence of riverbank erosion may involve high degree of damages such as collapse of buildings and life-threatening occurrences. The first person who noticed the first sign of collapse should immediately sound the '*tawak*'/gong to notify the community. The person who has sounded the '*tawak*'/gong should then report the happening to TR/KK.

TR/KK/ JKKK should immediately lodge a report to the authorities (District Office, Police and BOMBA, health agency and the welfare JKMNS) While waiting for the arrival of the authorities, villagers under the guidance of TR/KK/JKKK could conduct necessary rescue works should there be casualties. If the entire or partial of the longhouse is perceived as unsafe, TR/ KK with the help of JKKK's guide and assistance would carry out the evacuation exercise by gathering villagers and moving them to a safe place.

Once the authorities have arrived, the headmen should brief them on the situation immediately. KK or JKKK should assist other authorities such as BOMBA and police on the SAR work. TR/KK/JKKK should provide detailed information for reporting and investigation purposes to the authorities. Cooperation and assistance should be provided to all parties involved such as the health agency, or JKMNS in provision and distribution of temporary aid.

For less-serious or trivial erosion incidents such as those of non-emergency and none life threatening such as landslide on uninhabited area or damage to jetty, TR/ KK should call for meeting with JKKK and villagers to discuss on the erosion incident. Community could decide on matters such as 'gotong-royong' to repair the damaged jetty, to establish sheet pile walls or to plant certain vegetation to reduce rate of erosion.

Figure 3: Relief protocol for riverbank erosion



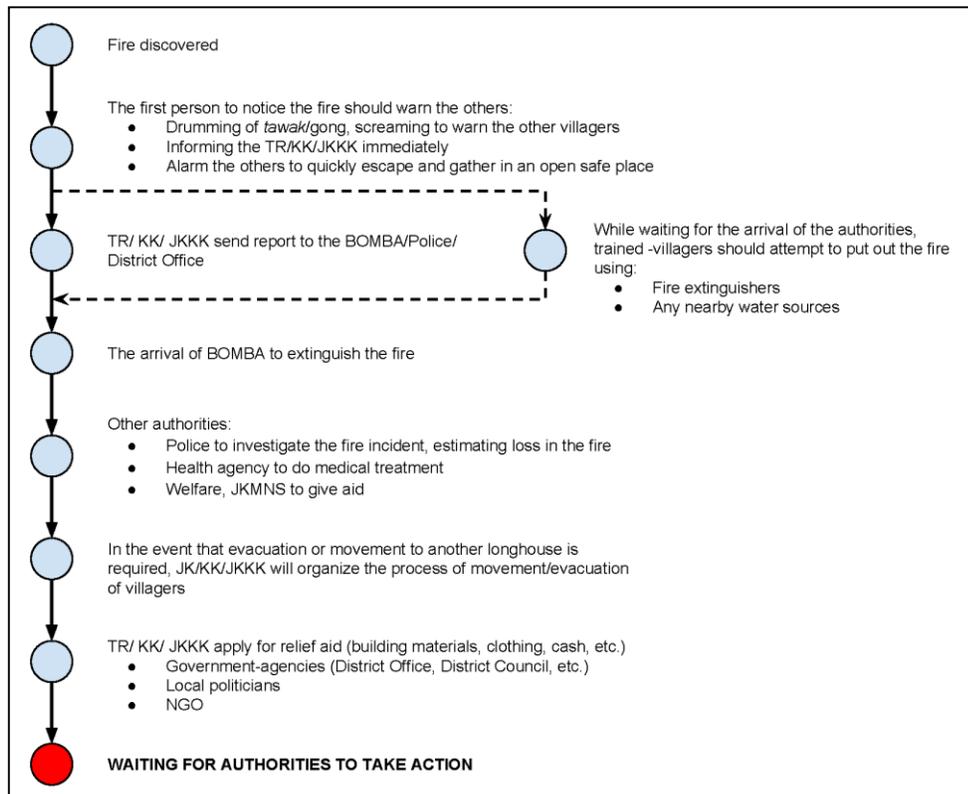
After any riverbank erosion incidents, whether serious or trivial, assessment of the situation should be submitted to the District Office by the TR/KK. Provision for relief aids should be submitted together with a report of the incident and assessment of the damage to the community. While waiting for the authorities to take action, TR/KK and JKKK assist and guide in recovery strategies from the incident.

Relief Protocol for Fire

In case of fire hazard, the first person to discover the fire should instantly warn the other villagers using the traditional local warning system of drumming the 'tawak'/gong or a more spontaneous response of screaming aloud to alert the others. In the meantime, TR/KK should be immediately informed about the incident if they are not within or near the vicinity. Villagers must evacuate the longhouse immediately and make sure no one is left behind. Children, older people, and women should be assisted by the men. TR/KK or JKKK should notify BOMBA and the police at once. The District Office should be alerted as well.

While waiting for the arrival of help, if the fire is not life endangering, trained villagers should try to extinguish the fire by using the fire extinguishers. However, safety is most important. If the fire spreads too wide or big, no one should get any closer to it. Firefighting should only be initiated by the JKKK in charge. Other attempts to put out the fire should be used too, such as spraying water. Spontaneous attempts to extinguish the fire are crucial, as longhouses are located far away from assistance, and the nearest fire brigades might take a bit more time to arrive.

Figure 4: Relief protocol for fire



Once the BOMBA has arrived, the task of extinguishing the fire should be taken over by them immediately. Members of the longhouse should assist if need arises. Assistance and cooperation should be rendered to other authorities such as the police, medical personnel etc.

In the event of longhouse being totally razed, evacuation strategies should be executed. If the authorities have identified an evacuation center, villagers should move to the designated center under the guide of TR/KK or JKKK. If no evacuation center has been designated, villagers should listen to the instruction of TR/KK or JKKK on which area or neighboring longhouses they should move to.

After the fire has been totally put out, TR/KK or JKKK and also household heads should assess the damage and loss incurred. A formal assessment report should be submitted to the District Office. Application of aids such as food, clothing, or building materials etc. should be submitted to the relevant agencies or local politicians or NGOs. Following the report and aids application, longhouse community anticipates authorities to take action.

Conclusion

The project has come up with a bottom up coping mechanism from the local communities in the event of fire, flood and riverbank erosion. The relief protocols will assist the government and the relevant authorities in coming up with better and more effective disaster management programs. The social, economic impact of disaster towards riverine communities could be reduced as the protocols is based on experiences of the communities.

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