

INITIAL FINDINGS ON DELAY FACTORS IN THE POST-DISASTER HOUSING RECONSTRUCTION: LOCAL AUTHORITIES AND NGOS PERSPECTIVES

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Abstract

Disaster loss is on the rise with serious consequences for the survival, pride and livelihood of individuals, particularly the poor and hard-won development gains. The time scale of reconstruction is shorter than the normal construction, but it often deals with uncertainties and the scale of the construction activities required is relatively high. Moreover, the reconstruction process is a complex, dynamic and chaotic in nature due to many encounters. After a disaster impacts a country, many governments, institutions and aid organizations cooperate involved with the reconstruction process and it also increase of global concern due its impact and actions. As a result, policies can be applied and programs designed to remedy the weakness in development policies, infrastructure and institutional arrangements. This paper reports a part of an on-going research on delay issues in post-disaster housing reconstruction in Malaysia. There are extensive literature reviews and pilot test were undertaken to establish the factors that contribute to the delay issues in the post-disaster housing reconstruction process. Accordingly, this paper is takes the viewpoint of recovery from non-government organization (NGO) and local authorities which doing as providers of social services, builders of infrastructure, regulators of economic activity and managers of the natural environment. This is important on how those resolutions are made, who is involved in the decision-making, and what the impact of this decision.

Keywords: Post-disaster housing reconstruction, Procurement method, Delay issues, Malaysia flooding, Post-disaster mechanism, Pilot test.

1. Introduction

Malaysia had faced serious flooding on December 2014 which had a negative impact on several states, mainly on the economy and to society in common. Due to increasing of disaster, many governments, institutions and aid organizations cooperate and involved with the reconstruction process. However, post-disaster reconstruction (PDR) is slightly different process from the normal construction because it is a complicated project, which requires multi-sectoral involvement, very significant resources and a wide range of skills that influenced by the policies, strategies, and rules. Furthermore, the time scale of reconstruction is shorter than the normal construction, but it often deals with uncertainties and the scale of the construction activities required is relatively high [1]. It is very important to evaluate and understand these to accomplish the most appropriate reconstruction. So far, however, there have been a few discussions about the recovery planning after the disaster in Malaysia. Based on the several studies, project can be defined as a great or important item of work, involving reliable expense, personnel, and equipment a one-time endeavor, with a specific result or end-state envisioned, with a proper plan [2]. The reconstruction count on government grants, insurance companies and contributions to cover the cost for rebuild [3]. Therefore, reconstruction project may differ from country to country or even within countries due to the culture, needs and other circumstances.

In order to accomplish a timely reinstatement of the affected community, effective methods in term of design, technology, materials and construction methods need to be adopted. There is very few researches were carried out in PDR focusing on factors that contribute to the project delay on post-disaster housing reconstruction in Malaysia and hardly any which are endorsed and can be followed by humanitarian agencies or aid projects [4]. This paper is to identify the answer by concentrating on investigating the factors that influence to the project delay in post-disaster housing reconstruction which from the perspective of NGO and local authority and the strategies can be developed in the future. Once the factors are identified, the opportunities to improve project performance can be done and the research will determine the relevance of these factors in NGO and local authority in reconstruction after a disaster.

2. Method

Here is the initial finding in the pilot stage of an on-going research on delay issues in post-disaster housing reconstruction in Malaysia. Qualitative approach has been used because it is suited to be conducted due to the minimal involvement of practitioners in Integrated Project Delivery (IPD) in the Malaysian construction industry [5] and there is a limited number of IPD project that have been done or are currently underway [6]. Moreover, it is very expected using this approach because the researcher will make use of qualitative data and a variety of methods to collect these data in order to find alternative explanations for the situation [7].

An interview was conducted targeting to investigate the factors that contribute to the project delay on post-disaster housing reconstruction among NGOs and local authorities in the east of Malaysia. Therefore, the main objective of this interview is to determine the key contributing factors that have influence to the time delay in post-disaster housing reconstruction project. According to this

interview, there are 40 factors that be listed from the various study. However, the result shows that only 20% from the list influence to the time delay on the post-disaster housing reconstruction in Malaysia from the perspective of participants. The participant allows answering more than one factor because there are many factors that can lead to delay in reconstruction projects.

The detail of participant organizations and working experience is shown in Table 1 and some criteria were used for the selection of the participants in this interview. This interview needs participants that have knowledge and experience on post-disaster housing reconstruction. As a result, non-probability sampling, which is expert sampling is the most suitable to achieve the research objective. This implies that most post-disaster reconstruction projects are a recent phenomenon in Malaysia.

The participants are from expert sampling so that they can construct historical reality and describe a phenomenon. Other criteria that can be considered are a person who has experience on post-disaster reconstruction process.

Viewpoint from NGO is important for this research because Malaysia also using donor-driven approach in housing reconstruction for post-disaster reconstruction after the flood affected Malaysia on December 2014.

Table 1. Participants profile.

Name	Job designation	Working experience	Company/ Discipline	Location	Gender
R1	Humanitarian/ Motivator	15 Year	Consultation	Eastern	Male
R2	General Manager	13 Year	Public Work Department	Eastern	Male

3. Data Findings

This study is to determine key contributing factors to the delay issue in post-disaster housing reconstruction. The reconstruction program, especially housing reconstruction is the most crucial project because survivors need to come back to their normal life as soon as possible. From the fact that United Nations charter of human rights (Article 25 of the Universal Declaration of Human Rights) stated that, each person has the right to a regular of living adequate for the health and well-being of himself and of his family, including food, housing, clothing, and medical care and necessary social services [8]. For example, NGOs is one of the stakeholders and can be considered critical to the project's completion such as major donor or a regulatory body [9]. It is important to have the both perspectives to investigate the problem and then create a solution for the better in future. Comparing the two results, it can be seen that there also has contrast statement from the perspective between local authorities and NGOs.

3.1. Factors of time delay

3.1.1. Bureaucratic and institutional problems

For this factor, it is happened to the government side because they have to refer with many people before they make any decisions and this agreed by 1 participant

(1 out of 6). However, for P3 and P4 they do not face this situation even from the government side because this participant from the upper management of headquarters which can make the decision much faster than the local branch like participants P2.

The housing reconstruction project conducted in Malaysia affected by bureaucratic problems. The spending disbursement for the community followed their own organization allocation and procedure. The disbursement of funding from government also found a big barrier, along complicated bureaucratic process. Besides that, the main source of funding come from the government budget, the procedure had to follow the government bureaucracy process.

However, NGOs can make it as simple as possible without leaving the accountability. As NGOs, they help others by approaching community and then give help to them. The NGO in the east of Malaysia did not experience the bureaucracy problems, as per said by P1, *“we as NGO doing directly approach to the community until handover the house to them. But, we do inform to the public about our program and share the information to seek for help in term of financial and also human resources”*. This bureaucracy creates a bottleneck in the reconstruction effort and this is agreed by P1 and this bureaucracy also happened during the process in finding the availability of land where the participants need to face the challenging in the standard of operation (SOP). There is a barrier when facing the political differences and participants have to refer with many people in charge in different department to clarify the matters. Besides that, there also have a difference in law of the land at the east of Malaysia and as per said by P3, *“We have to deal with so many process with the state and federal authorities to buy the available land for the community that has no land but the process is not easy since the state law didn’t give any permission for outsider buy the land and we need help from the state and also federal to make it possible”*. This factor was happened before the project begins and this also contribute to the delay in the reconstruction project stage and the next factors will be explained when the project been started. The bureaucratic problem can link with the payment for the contractor that hired by the government and this will explain further in the next factor which is contractor’s failure.

3.1.2. Contractor’s failure

The failure of the contractor to lead the project to be a success project can give a big impact to the client. However, this factor was agreed by 2 participants out of 6 and this statement is from the participants from the government side. They claimed that contractor’s failure such as financial problem, failure in evaluating the site or design could delay the reconstruction process. The available site for relocation is in the rural area and the clearance of site has been done before building the infrastructure. However, the contractors need to have a strong financial background so that they can handle the project successfully because the payment from client will be paid after a few stages in project is done and the contractor need to upfront their money for the project. As the main objective for housing reconstruction is to build back better, following the requirement for disaster resistant (especially in flooding) houses is necessary. This agreed by the P2 *“we using the bid-build approach where we open the tender and the contractor will bid with the reasonable price for the project, but after that, a*

few projects was delayed and we found that the contractors have a financial problem”.

The contractor is responsible to have made a practical anticipation of the requirements of the project. Moreover, contractor, subcontractors and material suppliers who perform work or send materials to the project have connection with the progress of the project. Most of the housing reconstruction in Malaysia after the disaster happened at the end 2014 failed due to the contractors' failure and this agreed by majority of the participants. Changes to one or more of the schedule, the scope of work and project conditions can affect the budget and the time of completion. Thus, it is necessary to the contractor aware of the causes of project schedule delays, their frequency and the extent to which they badly affect project delivery.

According to the P4, *“The riskiest latent condition in construction projects is the unknown sub-surface. The sub-surface or the latent physical conditions at the site may differ materially from those that have been shown by the contractor or the contractor may encounter unknown or unusual physical condition differing sharply from those usually encountered..... besides that, failure from contractor side such as financial deficiencies, economic problems, unavailability of equipment, poor supervision, construction mistakes, poor coordination on site, and changes in specifications also can cause to the project delay”.* This failure also has a relationship where the prices of construction material is getting higher after the disaster happened and cause burden to the contractor to get the resources.

3.1.3. Fluctuation price

The participant claims this factor effect to the project duration and the total participants agree are 2 participants out of 6 participants. With increased demand after a disaster, prices will rise and here is a link between the lack of construction material and price after the disaster happened. When the demand is high but the stock is declined, the price will be high. Cost escalation of both construction materials must be monitored closely and budgeted for accordingly. If not, people who lead the reconstruction process; they have to spent more to buy the construction material. Besides that, they also need to wait for the material construction. However, this happened because of the reconstruction project is concurrent at the same time. As a result, the stock declined. As per P1 said, *“The supplier of construction material need to buy from somewhere else due of the stock at their place was damaged and been varnish swept by the flood and the waiting time is high”.*

However, for the project that handle and lead by the government, they are not facing this situation because the budget of the project allocated with the same amount. As a solution, the authority centralized the material. According to P2, *reconstruct the house especially for the group house, we need a lot of construction material and our headquarter handle by material as for control the allocation, so the price will be the same as before the disaster happened.*

When the price is getting higher than before, the builder facing with the shortage of construction material and need to be wait for the material where can decelerates the project progress. This will be explaining further in the next subtopic.

3.1.4. Lack of construction material

The total participants that supported this factor lead to the delay issue is 2 participants out of 6 and the rest not facing this factor during the project reconstruction especially for those who is from NGOs or volunteer, they only reconstruct the house when the allocation and material is enough. When the disaster struck up the Malaysia, most of the houses destroyed swept away and causes the reconstruction process delay due to the lack of construction material. When too many houses need to build, the material declined and causes to the delay project. Moreover, the flood that happened in the east of Malaysia causes the damages to the road and not only to the houses. As a result, the construction material failed to deliver to the site. This admitted by P2, ***“When the disaster happened end year 2014, many houses we need to build back and the demand of construction material is increasing but the stock is declined and the price goes up. We have to pay more and waiting for the stock”***. When the resources failed to fulfil, there will be a long waiting time and this not only can cause to the delay but also the cost from waiting period also getting higher. However, this factor also from the impact of the next factors and cause to the rebuilder to find the alternative solution for overcome this situation.

3.1.5. Lack of road access

There are 2 participants that agree with this factor can interrupt the reconstruction process out of 6 participants. The road is important to the reconstruction process for delivery the construction material and to people access with the other places too. At the end of 2014, the major disaster that happened in Malaysia causes a substantial amount of damage; not only the building but also the access road also been demolished by the flood. The worst case, the bridge that become a connecting road also been swept away by the torrent and make them unable to deliver the construction material. According to P1, ***“We can’t deliver the construction material to the site because of no road access, we failed to access by 4wd vehicle and we have to use manually by carrying the material”***.

As a result, the constructor need to provide the new road access to the site construction and this can cause other problem such as the current road unable to repair and need to make a new access which increase the project budget and also need to deal with the owner of the land property if the new access crossing the private land. As mention by P1, ***“budget can be reduced by the involvement of the community because they are well known with the surrounding and also because of discretionary of land owner, we manage to make a new road access without any payment”***.

Surprisingly, from the NGOs perspective, process for decision-making is shorter because of involvement of the community that already known to the local people where they can ask for helps. Interestingly, the communities vary broadly in their capacity to mobilize and organize themselves for undertaking projects [10]. P1 stated that, ***‘We have difficulties to access the location and have to use alternative ways by crossing the private land (plantation area) to supply the building material. Moreover, we asked help from plantation worker to use their tractor for material supply’***

3.1.6. Land acquisition and availability

Total participants that said this factor give an effect to the project duration is 5 participants out of 6 participants. Land acquisition and availability is the most influential to the delay issue in post-disaster housing reconstruction in the East of Malaysia. The issues related to land acquisition also happened in Sri [11] study found that the land issues crippled many donor-driven programs but had a very marginal impact on owner-driven program. Besides that, land is one of the key types of asset should be considered after a disaster because the housing reconstruction program need both the availability of a 'safe' building site and security of tenure because this is particularly essential when resettlement is part of the housing agenda [10].

According to P1, this problem had extremely influenced the housing reconstruction project. P1 state that, *“besides geographical factors, we have a problem with the land ownership where some people do not have any land to reconstruct their house after the disaster”*. This statement strongly supported by P2, explains that the land issue causes the housing reconstruction process is longer, and takes time for decision-making. As a result, to expedite the process, the government relocated the site for housing reconstruction in grouping it is stated by P2, *‘This group homes for victims who have no land. We will create a new settlement where land is still missing, but it will take time to find the suitable location’*. This problem also strongly agreed by P3, *“For those who have no land, we provide the group house for them and find the new location and land but to the process to find the land are not easy and we have to face a lot of stage with the state and federal. If we manage to find the land, the location might be far or rural area and the site condition is quite poor. We have to spend more to provide the infrastructure like road access, electricity, clean water and others. This is an example like in Dabong and Manek Urai (Kampung Peria)”*. This land issue can lead to other problem such as failure to the construction machinery to access the site, difficulties to clearing the site and others.

3.1.7. Logistics and supply chain

Total participants supported this factor contribute to the delay progress is 2 participants out of 6 participants. The mean by logistics in this research is transportation to bring the construction material to the construction site. This delayed delivery of material from suppliers can affect to the project progress. According to the P1, this can cause the completion time to drag longer because during the project that they handled, they faced the difficulties situation where no suitable construction machinery to bring the material to the site which located in rural area and they have to carry manually the material to the location. There are additional issues from post-disaster housing reconstruction [12] and logistics is central to rely housing reconstruction program especially on ability to procure, transport and receive supplies at the point of need and inadequate provision of resources [13]. As mention by P1, *“Supposedly, the house can be completed within 1 month but because of we do not have suitable transport, the time delay takes 2 months for us to complete the house”*.

Besides that, NGOs need to develop better construction knowledge and understanding to build complete their capacity to procure external resources and

manage their supply chains. Moreover, they also need staff with professional expertise, such as architects, engineers and consultants who have a direct influence in selection of appropriate housing type and resources. For prevent problems such as problem, of design iterations, poor construction management and rework, the construction experts should be involved at an early stage. This factor also affects from the below factor where the unsuitable site can lead to the failure of supplying the material.

3.1.8. Poor data base system

From the above discussion, it appears that the problem of databases, from the availability of the initial data to the way it is compiled needed to be considered during the housing reconstruction process and was supported by 2 participants out of 6 participants that this factor contributes to the difficulties to the project and lead to the project delay. The first problem in identifying the damage category or beneficiaries' identification is the poor data base system of housing database. It is hard to have the precise number of the existing houses and their owners. This is the initial data that is going to use by authorities when going into the community to check the damaged category. In addition, the damage assessment is also important to observe the level of destruction and this activity is sometimes carry out simultaneously with the victims' identification. The damage category is consisting into three groups: heavy damage, medium damage, and light damage. However, the damage assessment at certain places in the east of Malaysia was not hard to be categorized because the houses were swept by flood, and as a result, most of the houses can be clearly categorized as heavily damage or destroyed.

Moreover, the system in combining and compiling all data gathered from the field is not well organized. As explained by P3, Malaysia faced some difficulties during the damage assessment exacerbated. As a result, there was also an overlap and confusion created when compiling the database. As noted P3, *"We are facing some difficulties to help the victims especially in part to help them to reconstruct back their house where actually they staying at people properties and no documentation that shows they allowed doing so."*

The problem regarding the database in the east of Malaysia was also admitted by P1, *"Data for validation is a bit confusing and we need to go the site to recheck the situation and which category the level of destruction the house fell. As a result, this will drag the time to help the community"*. However, by created together with the community and this can set clear eligibility criteria and can save the time to give help to the victims.

This factor need to identify because the success or failure might depend on the issues that occurred and need to be overcome by findings the right solution. The researcher has reviews the evidences of the delay factors and the recommendation for solving the time delay by investigate effectiveness of the current approach is needed to overcome the situation.

4. Conclusions

It is apparent that the data from the initial stage yields some contrasting views between the NGO and the local authorities within the issue of post-disaster housing reconstruction. Perspectives of other party involved in post-disaster housing reconstruction should also be included so that a robust conclusion on this

matter can be drawn upon. By identifying possible problems that might arise in the future, and creating solutions to deal, the recommendation to implement the suitable procurement method in post-disaster housing reconstruction can help to overcome the delay issue in the reconstruction process. As a developing nation, Malaysia has many limitations in dealing with disaster mitigation and recovery, thus any strategies that could improve the post-disaster project delivery will be vastly helpful, in avoiding unnecessary costs in critical times. Besides that, this paper review on the perspective by respondent and mostly said that land issue is the major causes to the delay issue and expected that the outcome will be delivery of high quality housing reconstruction projects which meets beneficiaries' expectations and needs, and can be delivered on time within the budget given using the suitable procurement method.

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