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## Key Lessons and Guidelines for Post-Disaster Permanent Housing Provision in Kelantan, Malaysia

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### Abstract

In Kelantan, those who have experienced flood almost every year are reluctant to leave their homes due to land ownership matters. It is not guaranteed that they are able to secure their homes from flooding in the future. It was reported that the houses should be built on stilts, which can withstand certain levels of impact during flooding. Unfortunately, until today no specific guidelines have been available to assist homebuilders to rebuild post-disaster homes in Malaysia. In addition, there is also no clear operational procedure to monitor the progress of the construction work. However, at the international level, many guidelines have been prepared that have been found to be suitable for post-disaster housing. This research was an attempt to understand recent national disaster mechanism experiences in the housing sector that best describes the situation in Malaysia and that are in line with international practice. The overall objective is to know how to better support humanitarian responses in flood prone areas through post-disaster resilient house construction in flood prone areas. Eighteen key lessons (from 3 steps) emerged from the review process and data analysis, and these have been developed and presented as guidelines. The findings of this research provide insights for enhancing the coordination of responsibility between and within government bodies on the provision of post-disaster permanent housing.

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**Keywords:** Post-Disaster; Housing; Reconstruction; Guidelines; Malaysia

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## 1. Introduction

Malaysia still does not have specific guidelines for building housing after a disaster especially in disaster-prone areas [1]. Currently, the only related reference is the Policy and Mechanism on National Disaster and Relief Management to determine the kind of actions to be taken to minimize the effects of major disruptive events. In this policy, there are no specific requirements for permanent post-disaster housing provision. In general, allocation for physical post disaster recovery is categorized under infrastructure development, which is the responsibility of the Public Works Department and the post-flood recovery work led by the Department of Drainage and Irrigation [2]. However, the legislation on urban planning, such as the Planning Act and Building By-Law states that the local authorities have the authority to approve plans for public and private buildings.

In Kelantan, flood victims who have actually experienced flood almost every year are reluctant to leave their homes due to their ownership of land. It is no guarantee that they will be able to secure their homes from flooding in the future. It was reported that the houses should be built on stilts, which can withstand certain levels of impact during flooding. Unfortunately, until today no guidelines are available to assist homeowners to rebuild their homes. In addition, there is also no clear operational procedure to monitor the progress of this construction work. This research is a review of recent national disaster mechanism experiences in the housing sector. This research is also an effort to promote resilient housing; safety and security; and secure tenure in a flood prone area. At the end of this study, key lessons emerged from the review process and data analysis that illustrate key lessons and influence the emergence of broader guidelines. These key lessons point to the need for best operational and technical guidelines and can be compared to other International cases that are adapted to national situations. The guidelines are prepared in accordance with aspirations within the prevention phase of a disaster. The overall objective is to support humanitarian responses to environmental disaster and conflicts through this example of resilience house construction in a flood prone area.

### *1.1. Post-disaster housing provision after the 2014 Kelantan flood in Malaysia*

Kelantan has been repeatedly affected by environmental disasters such as storms and flooding. Although prone to flooding every year, many authorities in Malaysia have not yet addressed the risk of floods to housing. Many houses were damaged and destroyed. Families already stricken by poverty were unable to reconstruct their houses and left it to the authorities to look after the matter. The authorities also encountered a number of obstacles in providing this housing [3]. The reasons included a lack of relevant national and state policies and action plans; existence of regulations on urban planning and environment which have not been adjusted to manage flood; slow response to flood disasters due to lack of capacity and resources; and a lack of public awareness of flood variability and flood-induced hazard mitigation [4].

Even where the country has an abundance of rules and regulations in providing housing, these are only applicable to the formal type of development or housing [5]. Many housing units in Kelantan were identified as informal housing especially in villages that were constructed free from obligation to these rules and regulations. As a result, it is not surprising that many houses hit by the floods were washed away. In addition, some of the projects initiated and monitored by responsible agencies also fail to protect disaster victims' rights. Figure 1 shows examples of the ineffectiveness of post-disaster housing provision by the appointed agencies. These images show that even though the design has been approved and budgeted for by the agencies, the allocated building collapsed and contributed to the delays of appropriate housing provision for targeted residential areas.

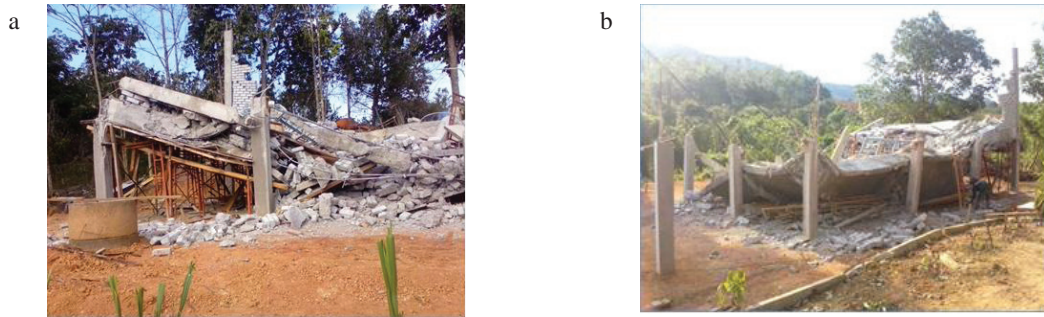


Figure 1. (a & b) Building collapsed. They were designed by and awarded for construction through the contractor by JKR in July 2015.

Post-disaster housing is put up after disasters by governmental and/or private institutions. There are two types of housing built after a disaster: one is principally a shelter put up for immediate relief purposes, and the other is more permanent housing for long term settlement purposes [6]. For the purpose of this study, only permanent housing provision was analysed though it is recognised that the process of housing needs to also be understood across the spectrum of temporary to permanent constructions in order to study the full extent of successes of housing programs. Permanent housing, which is the last stage of housing recovery, aims to be a final solution post-disaster to provide housing individually, which would fulfil the needs of the inhabitants in relatively much longer period of time. They aim not only to serve as housing units or for basic protection but also to satisfy all necessary living requirements.

The cabinet of Malaysia had agreed to build permanent houses worth RM48,000 each for victims whose homes were destroyed. Meanwhile, the government also agreed to provide aid of between RM5,000 and RM10,000 for houses which sustained partial damage. Victims who previously lived in squatter homes would be provided a new settlement and permanent houses from the state government. However, the question inevitably arises regards the control over the buildings that are considered as dwellings on private land owned by the victims of the disaster event. It also not clear as to the design and technology of housing that should be provided. For Malaysia, the existence of guidelines for the construction of houses in flood-prone areas is necessary for at least to mitigate the effects of housing that is destroyed by flooding and to make preparations to face both the small-scale and larger scale flooding impacts.

### 1.2. The problem with post-disaster housing

Many of the difficulties encountered by agencies' shelter and housing work are frequent across the sector. Shelter and housing work is the "least successful form of aid when compared to other humanitarian intervention sectors" [7]. While some of the problems noted by ALNAP are generic to all humanitarian projects, others are more specific to the shelter and housing sector.

Housing provision as part of relief efforts typically leads to a rehabilitation divide and confusion as to its objectives and responsibility [8]. Other than some specific authorities, few donors and NGOs are willing to fund housing work outside of an emergency context. As such post disaster emergency presents one of the few opportunities available for upgrading the quality of vulnerable housing. The Government is responsible for ensuring safe housing for their citizens, but this otherwise often becomes in reality an unorganized action by NGOs and local agencies as international funding mounts within a disaster affected area. In many cases, the role of government in rebuilding houses becomes muddled.

## 2. Description of methodology

This research was first based on an analysis of evaluation reports and existing guidelines from recent post-disaster housing work. This desk research involved the summary, collation and synthesis of existing information rather than primary research. A cross-referencing exercise of the secondary data was carried out to identify key

aspects of these texts that could form the basis for a reinvigorated post-disaster housing literature applicable to the study region. Extracting key advice from the text was a process used to decipher the main focus of guidelines to date [9]. This enabled a better definition of the research problem through gaining information about post-disaster housing procurement (institutional influences), flood disasters (environmental influences), effects of disaster related concepts (socio-economic influences) and post-disaster housing types (technical influences).

The second phase consisted of interviews with field based staff including those of the Works Department (JKR), *Syarikat Perumahan Negara Berhad* (SPNB), state authorities/ agencies (*Majlis Agama Islam Kelantan*), State Economy Development Corporation (SEDC) and representatives from the aid agencies responsible for constructing the houses. The respondents were selected based on their experiences in disaster response particularly relating to housing provision. This complimented the findings from the first stage assisting in understanding how international and national practices impacted in this area. Both quantitative and qualitative methods were used in this stage based around the basic framework presented in Figure 2.

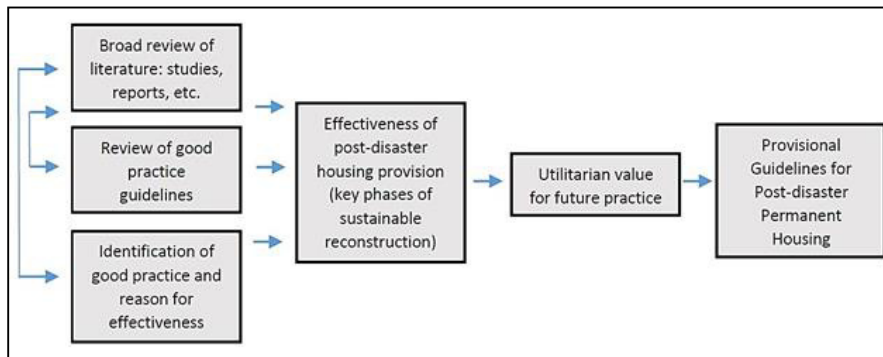


Figure 2. Methodological framework.

Sampling was based on a the rationale of no restrictions to who could be included the Disaster Management systems of Malaysia. In total, 67 respondents participated in this interview. These were the implementers of disaster management across each of the departments of the Disaster Management institutions in Malaysia. They included managers, clerical staff members, technical staff members and officers involved in disaster management, especially in the role of providing emergency housing.

### 3. Findings and discussions

The reconstruction process, which has the following organizational set up of partners (Figure 3), depends on whether the project will be located in a new area or not and whether the beneficiaries want to implement an official design or custom made designs. It was found that the process was initiated and controlled by 1) the Prime Minister's Department (*The Unit Pemulihan Pasca Banjir* with National Security Council as moderator), and 2) the Public Work Department at the federal level working hand in hand with the state committee (the state secretary and state director of economic planning unit and the-land office representative, district officers and other related officers). Later, private firms, builders, other designers and beneficiaries all participated in the project. At the state level, the private firms appointed, who designed the houses, communicated only with the state committee. The various partners in the house building process each have a specific role to play. Current practices of the Post Disaster Housing Provision in Kelantan can be summarized as in Figure 4.

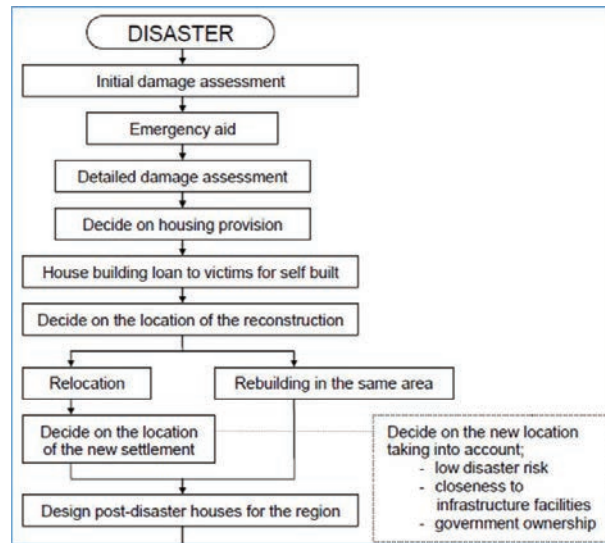


Figure 3. The process of reconstruction project.

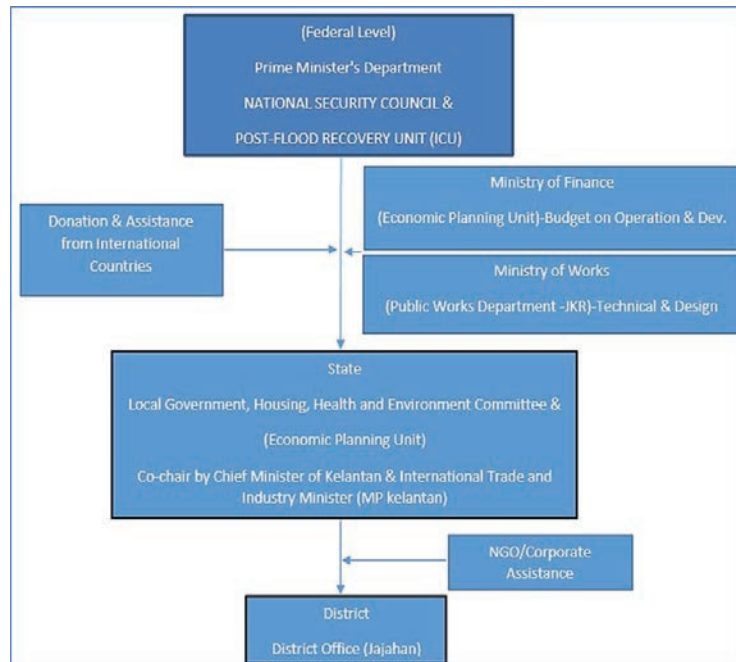


Figure 4. Current practices of the post disaster housing provision in Kelantan, Malaysia.

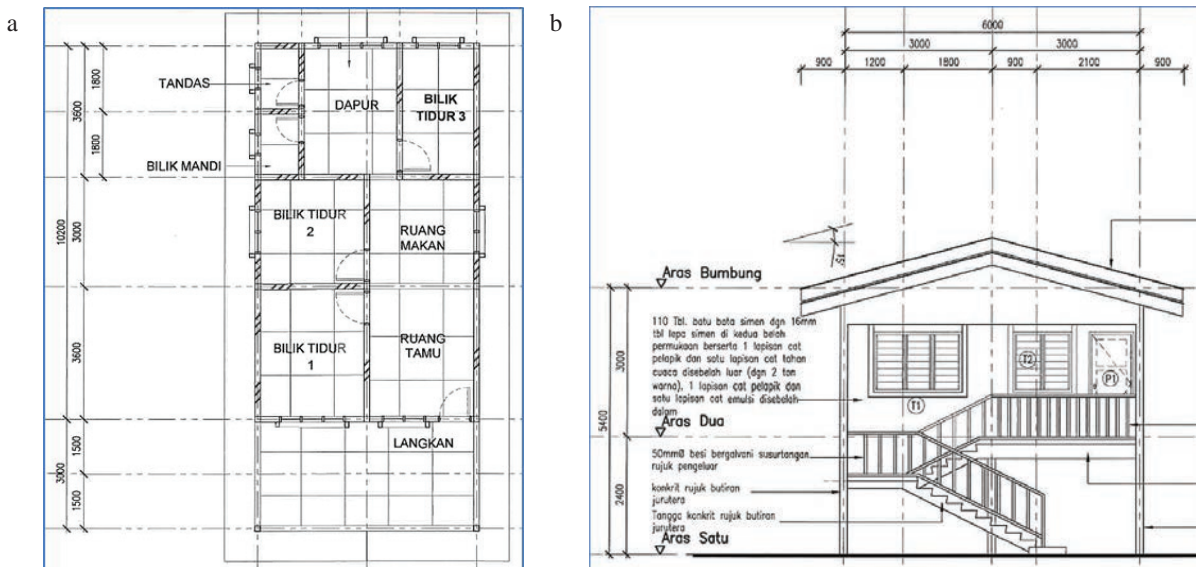
The findings from the questionnaires showed that these respondents in representing their institutions had broadly little knowledge of implementing any guidelines or Standard Operating Procedure (SOP) available. There appeared to be a negative perception reflecting a negative awareness of current practices. They were unsure about their reactions towards the implementation of permanent housing provision. They knew very little about implementation and suggested they needed to know more about any future project initiative.

Only a few actors (11.1%) agreed with the idea of implementing such a scheme. These cited that the Malaysian National Security Council (MNSC) Directive and 20 and other guidelines of post-disaster reconstruction are formulated for good reasons such as to help in the realization of a ‘caring society’; this would promote and develop self-esteem in actors and disaster victims; and is in line with the national philosophy of equal opportunities. However, most of actors (82 per cent) still wanted to see changes at the department level before the implementation would go ahead, even though some of them were against the implementation happening at all. The most cited suggestion was that these actors should be given in-service training, the department should be articulate on the rationale of implementation and all departments involved in any programme should be provided with appropriate physical resources and working equipment.

At the present stage in the MNSC Directive 20 and other related guidelines’ implementation, the main issues were: actors not receiving enough information about the programme; the introduction of implementation increasing their workload due to misunderstanding; not enough resources; disaster victim involvement; and actors themselves not being ready due to lack of training. Respondents suggested that the key actors should be given in-service training and engage more with the rationale of the MNSC Directive 20/SOP implementation. This would include survivors of environmental disasters forming groups towards promoting a mutually ‘caring feeling’. It was also asserted that information about the programme should be more specific and not simply as a general approach.

3.1. Technical

Currently, designs are controlled by the Public Work Department of Malaysia. However, there were some designs chosen by other agencies including NGOs and state agencies to be constructed during the emergency period. However, at the federal level only one design of building has been acceptable for post disaster housing in Kelantan and other states (Figure 5). Detailed drawings provided by JKR (of only one typical design) of the *Cawangan Arkitek, Ibu Pejabat Jabatan Kerja Raya Malaysia* on 28 February 2015 for all federal government post-disaster housing reconstruction are as follows:



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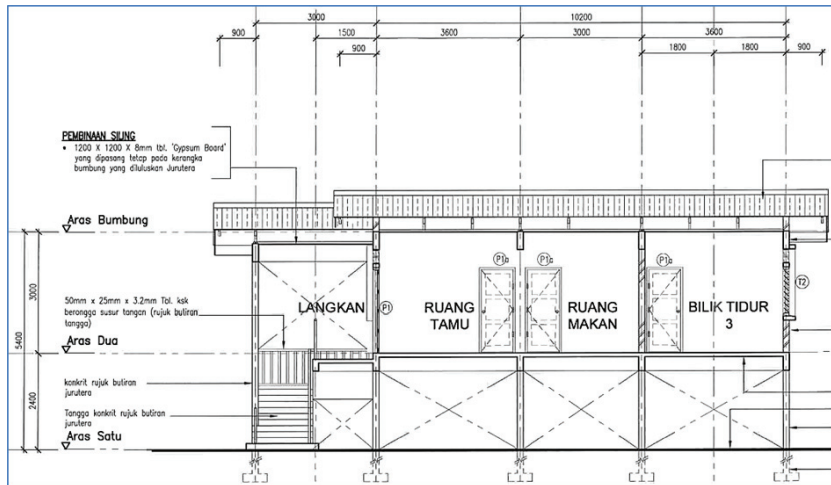


Figure 5. (a) Floor plan; (b) Front elevation; (c) Side elevation.

### 3.2. Socio-economic and environmental

Results showed that land, employment, infrastructure, and access to the means of reconstruction were the key priorities in this area. Therefore the needs identified by the affected groups point to more long-term strategies of rebuilding, and of the creation of capacity for their involvement in the post-disaster rehabilitation. Results also show that the involvement of local organizations and government, and the empowering of the affected communities, is much more effective than the transplanting of outside organizations to deal with the problems. This is also closely connected to the concern over the creation of dependency on the donors in the affected society. The building of capacity, through the involvement of the affected groups in their long-term rehabilitation must be a guiding principle in any post-disaster reconstruction programme. Past experience indicates several needs:

First, an institution must be established to collect, organize, and analyze the necessary sector by sector information, from profiling existing baseline data to superimposing damage and losses assessment with a unified and comparable approach. The team should be multidisciplinary and inter-institutional, with clearly designated focal points to compile and present the data in a comparable manner, so that they can be summarized and factored into a macroeconomic scenario exercise. Each focal point should have common terms of reference. The global analysts (e.g. macroeconomists, environmental economists, gender experts) can then proceed to use the emerging data of damage and losses to: contrast the disaster scenarios with the non-disaster trend; make environmentally related damage and losses visible; and differentiate men and women's circumstances and impacts with the post-disaster process. Second, a deadline would be established to submit the final report deadlines for submission of sector data (quantification in standardized format with agreed common criteria) with accompanying descriptive text depending on the final deadline. Third, a deadline must be set for completion of other relevant institutional procedures that form a part of the housing provision, and this deadline would be discussed and made compatible with a strategic reconstruction proposal.

Further suggested guidelines are that each sector team should consult and exchange information with each other to avoid duplication, share data of common interest or of interest in more than one sector, and identify information gaps or lack of information. The sector specialist would not only gather information on baselines and the disaster impacts on them (i.e. damage and losses), but on reconstruction needs in the form of sectoral strategic responses. These can be used as input to develop an overall reconstruction strategy and possibly project proposals.

The strategic proposal would include a framework for action, based on pre-existing policies or development strategies, focusing on adaptation of the latter to the needs of reconstruction, to prioritize and sequence the process, with defined resource gaps to be filled from government, private and external sources, together with profile execution processes in which affected populations and other stakeholders can play key roles in reconstruction.



### 3.3. Provisional guidelines of post-disaster permanent housing

Achievements of immediate objectives in planning for the post-disaster programme are the inputs that have reached the target group and the client and beneficiaries satisfaction with the outputs. However, the success of any new settlement project/programme is based on a well-functioning management process. The guidelines are organized according to the typical main steps of a reconstruction project as adapted from Sphere standards [10] and the outcome of this research. They focus is on permanent housing. The main steps are outlined in Table 1.

Table 1. Provisional guidelines for post-disaster permanent housing.

Steps
<i>Preparation</i>
1. Assessment
2. Set-up
3. Community
4. Partners
5. Approach
6. Project definition
7. Site selection
<i>Planning phase</i>
8. Disaster preparedness
9. Site plan
10. Building design
11. Infrastructure
<i>Implementation</i>
12. Project management
13. Quality control
14. Environmentally friendly site management
15. Material banks
16. Controlled demolition
17. Reuse of debris
18. Maintenance

## 4. Conclusion

Experience shows that pre-disaster planning is usually inadequate and needs to be up-dated after the disaster in the light of actual vulnerabilities identified. No conventional procurement process is possible because there is no clear contracting client, the survivors have few resources and probably no "voice" in decision-making and resources have to be shared among several options. The case of Malaysia is rather unique because the three tier administration (level of administration) from federal, state to district requires higher level of commitment due to different political understanding. The tendency in Kelantan was for government, donors and the media to focus on the number of houses constructed as a measure of achievement. However the delay in housing provision shows ineffectiveness with a lot of room for necessary improvement. This research proposes that other organizations such as NGOs, universities, uniform based bodies and/or private firms can be involved in the earlier stage of reconstruction projects as the organizers and/or they can participate in the operations. Long term and permanent housing provision is more appropriately handled by governing authorities. In terms of implementations, it was observed that the main problem was the lack of satisfactory actions and policy frameworks in the pre-disaster phase. Therefore, although the actions in the post-disaster phases seem to be more satisfactory, implementations taking place following the floods can hardly be called a success where more permanent solutions might have been possible.

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