Importance of evaluation for post-disaster assets: a preliminary study in Aceh, Indonesia

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Abstract. Responding to the effects of the earthquake and tsunami in 2004, Badan Rehabilitasi dan Rekonstruksi Nanggroe Aceh Darussalam-Nias (BRR NAD-Nias) was assigned as the coordinating and executing agency for improving the region in Aceh province and Nias islands in Indonesia. The allocation for the projects directly implemented by the BRR was approximately USD 2.6 billion. Based on local regulation, these assets must be turned over to the Aceh government. Although most assets were already occupied, neither an appropriate handover nor external project evaluation was conducted. This preliminary study surveyed opinions from building users regarding building quality, the need for building evaluation, and the general opinion for occupying assets with no appropriate handover process in a post-disaster context. The samples included a school, health center, and a sub-district level government office in Banda Aceh city. This study used descriptive methods and a quantitative approach. Results showed the majority of respondents doubted the quality and condition of the assets and agreed with the importance of conducting asset evaluation. However, they are uncertain whether occupying assets before an appropriate handover was appropriate because the post-disaster situation required assets to be functional as soon as possible.

1. Introduction
In the history of disaster management in Indonesia, the central government first formed a temporary but powerful agency that aimed to respond to the effects of the massive earthquake and tsunami disaster on 26 December 2004. Aceh and Nias Rehabilitation and Reconstruction Agency, named Badan Rehabilitasi dan Rekonstruksi (BRR) Nanggroe Aceh Darussalam (NAD) or Nias, was formed by the Indonesian government on 16 April 2005. BRR NAD-Nias (BRR) was based in Banda Aceh (the capital city of Aceh province), to be “close to the action” and to be responsive to the local context. A total of USD 2.6 billion was given to the BRR for the implementation of programs or projects [1]. Four years later, in 2009, BRR completed 94.7% of the total key performance indicators (KPI) [2]. This achievement was considered a high record [3].

However, negative issues were raised regarding corruption and the delivery of poor reconstruction quality. GERAK (Anti-Corruption Movement) and Indonesian Corruption Watch (ICW) discovered Indonesian rupiah (IDR) 23.8 billion worth of the total project had problems [4]; included mark-up, unauthorized selection, corruption in at least five major BRR departments such as the publication of reports, appointment of staff, procurement of office equipment, illegal subcontractor practice, non-targeted donation, aid cutting, and non-specification-based project implementation [5]. Another
problem left by the BRR is that reconstructed assets directly built by the agency were not transferred “legally” to the Aceh government [6]. Problems in assets that were found included no documents, unclear ownership, unclear maintenance budget, damaged assets, no asset found, not functional, unfinished, and still ongoing projects.

The Aceh government already occupied most of the assets and faced problems alone because most donors have left and the BRR has been dissolved in April 2009. Therefore, this study aims to obtain the perspective of building users regarding the necessity of evaluation despite their occupying of those buildings, the condition of reconstruction assets during occupancy, and the decision of the Aceh government to occupy the assets even without a proper turnover. The importance of this preliminary study maps the state of mind of the beneficiaries and serves as basis in conducting proper post-disaster asset evaluation in the future.

2. Evaluation In Post-Disaster Project
Post-disaster projects have short periods of construction. On the one hand, the reality is more complex when there is a responsibility to return things back to pre-disaster state, and not to compromise survival on the other hand [7]. Practical action promotes a holistic and integrated approach to post-tsunami reconstruction, which demonstrates options for better building projects [8]. By integrating evaluation processes into post-disaster project designs, and by carrying them out both during and at the end of the project, the problems identified can be overcome earlier, and lessons can be learned for facing future post-disaster reconstruction. A focus on evaluation creates a legacy of useful lessons for future post-disaster projects.

![Post-Disaster Reconstruction Cycle](image)

**Figure 1.** Post-Disaster Reconstruction Cycle [9]

The Organization for Economic Cooperation and Development (OECD) states that the aim of evaluation in post-disaster is to determine the relevance and fulfillment of objectives, developmental efficiency, effectiveness, impact, and sustainability [10]. An evaluation should provide credible and useful information that enables the incorporation of lessons learned into the decision-making process of both recipients and donors. One of the seven guiding principles for conducting a post-disaster project by the Habitat International coalition with the UN is the transparent and effective monitoring of the recovery process [11].

3. Point of view of building users
Direct feedback from building users captures information concerning areas where effective improvements can be made, and what measures can be used to lead to greater cost-efficient projects [12]. Therefore, the affected community and the local government should participate in their maximum capabilities. There is no accomplishment if a post-disaster project claimed to be successful
did not benefit the target beneficiaries because of its poor results. The accountability for public buildings can only be claimed from the funds coming from aid grants if endorsements from both parties, the donors and the users, are obtained [13].

According to Kernohan et al. [14], people who really know about buildings are the people who use them as they are the experts in what buildings can do. They are true informants on questions of building use and serviceability. User requirements to be applied in buildings should be considered while finalizing the overall requirements. The users include people who will occupy the buildings on completion and people who are likely to occupy the buildings successively during the rest of the life of the building.

4. Methodology
This study used two stages: the first stage was cluster random sampling, which categorized under building types each sampling cluster as a government office, school, and community health center in sub-district level. The second stage was simple random sampling without replacement. The building that will be evaluated is a public building built by the BRR using government funds. The area of study was Banda Aceh, where there are 50 buildings. The building samples are:

- For the school, the evaluation object is Sekolah Dasar (SD) for elementary school level, Sekolah Menengah Pertama (SMP) for junior high school, and Sekolah Menengah Atas (SMA) for senior high school.
- For the health center, the evaluation object is Pusat Kesehatan Masyarakat (Puskesmas) or the community health center.
- For the government office, the evaluation object are kantor kecamatan or a sub-district government office, and kantor desa/lurah or a village office.

![Figure 2. Scope of the Study](image-url)
The research uses the quantitative approach and measures the evaluation objective based on respondent judgment. This study uses description methods and descriptive statistics, including median and mode, for each variable. Finally, the analysis was compiled from each variable for the final output. Descriptive measurement assesses the program participants and considers the ideas of building users regarding post-disaster asset evaluation. Frequencies are used to measure each variable.

5. Analysis

5.1. Background of Buildings and Respondents
In the first stage of cluster random sampling, from 50 buildings, this study managed to cover 45% of the buildings comprising the government office, school, and community health center built in Banda Aceh at a sub-district level. The government office represented 39% of the buildings, the school represented 67% of the buildings, and the community health center represented 60% of the buildings. The total value of the selected buildings is USD 1,727,954. For the building status, 88% of the buildings were completed and occupied. The research participants or respondents were building users. The majority of the respondents were above 25 years old, male, and Acehnese, which was defined as being born in Aceh and or staying in Aceh for more than 10 years. From 50 target respondents, only 27 returned the questionnaire for a response rate of 54%.

5.2. Doubt for the quality and condition of post-disaster assets in Aceh
Table 1 shows the percentage output for research statement number one. In total, 72% of respondents disagreed with the questionnaire statement. Only 20% of respondents agreed, and 8% of respondents remained neutral. Therefore, majority of building users doubted post-disaster building quality and condition.

Table 1. Reconstruction assets quality and condition

| Description        | Frequency | Percentage |
|--------------------|-----------|------------|
| Strongly Disagree  | 4         | 16%        |
| Disagree           | 14        | 56%        |
| Neutral            | 2         | 8%         |
| Agree              | 4         | 16%        |
| Strongly Agree     | 1         | 4%         |

Based on previous research with the same buildings, the three most important aspects that building users said were in poor condition were building materials, sanitation, and building construction strength [13]. Hence, the findings of this study supported another study with its user uncertainty with the reconstruction quality. With this finding, there is a possibility that post-disaster buildings could suffer quality issues in general. This point can also further assume that the reconstruction process was not conducted well. Poor quality of assets may indicate that there was poor operational and maintenance management during occupancy. However, determining whether the poor quality of buildings had any direct relation with inappropriate handover needs further study.

5.3. Need to conduct asset evaluation even the buildings are already occupied
Table 2 displays the percentage output for research statement number 2. Overall, 92% of respondents agreed that asset evaluation must be conducted even if a building has been occupied for several years. Only 4% of respondents disagreed, and 4% were neutral. This finding clearly shows that the majority of users endorsed building evaluation.
Table 2. Necessity conducting assets evaluation even Aceh government occupied the asset

| Description     | Frequency | Percentage |
|-----------------|-----------|------------|
| Disagree        | 1         | 4%         |
| Neutral         | 1         | 4%         |
| Agree           | 17        | 68%        |
| Strongly Agree  | 6         | 24%        |

The Aceh Institute (AI) recommended an independent institution to assist in the transition process and to perform asset mapping, asset verification, and asset evaluation [6]. In 2008, the World Acehnese Association (WAA), with its headquarters in Denmark, demanded to the audit of the BRR [15]. However, BRR rejected the idea of external and independent evaluation but decided to do the handover process with only internal verification [1].

5.4. Occupying assets that have no proper handover and external project evaluation

Table 3 shows the finding for the last research statement. The results are divided into two big groups, and 44% respondents disagreed, and 48% of respondents agreed, while only 8% of respondents remained neutral.

Table 3. Aceh government-occupied assets where there was no evaluation by an independent committee during handover

| Description            | Frequency | Percentage |
|------------------------|-----------|------------|
| Strongly Disagree      | 6         | 24%        |
| Disagree               | 5         | 20%        |
| Neutral                | 2         | 8%         |
| Agree                  | 10        | 40%        |
| Strongly Agree         | 2         | 8%         |

In the context of a state of emergency in post-disaster periods, there are doubts about whether the Aceh government should receive the assets even without an accurate handover and an evaluation by an independent committee. These measures must be implemented because project evaluation takes time even when assets are urgently needed to resume operations at Aceh after the disasters. Government assets are important for the basic needs of the communities as well as the presence of the government. Although time constraints will be always critical during post-disaster, the sustainability of the project should not be neglected. Based on the Ministry of Finance Regulation of Indonesia Numbers 62/2008 and 134/2009, these assets must be turned over to the Aceh government. Unfortunately, in the final report of transition team under the Aceh Governor Transformation Programme (AGTP) funded by the United Nations Development Programme (UNDP) in 2009, none of the Aceh provincial reconstruction assets was transferred to the Aceh provincial government [16].

6. Conclusion
As a preliminary study, we captured the point of view of building users regarding the quality of reconstruction assets, the necessity for conducting evaluation during occupancy, and the decision of the Aceh government to receive assets without proper handover. Most of the users doubt the quality of the buildings and support building evaluation even though they have already occupied the buildings. Doubts on building quality can be the starting point for an external and independent evaluation even during occupation periods. Meanwhile, the decision of the Aceh government to accept assets without
an unclear handover process separated building users according to the users who agreed and disagreed. The consideration is the urgency to utilize these assets as soon as possible after post-disaster. Changing the past is impossible, but meaningful lessons could be learned from the enormous efforts on disaster reconstruction in Aceh. Perhaps conducting an external and independent evaluation during project handover can result in improvement in the future.

Further studies based on this survey need to focus on post-disaster evaluation during the occupancy period. These studies should concentrate on what type of evaluation is suitable, and what procedure should be followed during post-rehabilitation and reconstruction in Aceh.

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