Reconstruction with community participation after natural disaster in developing countries

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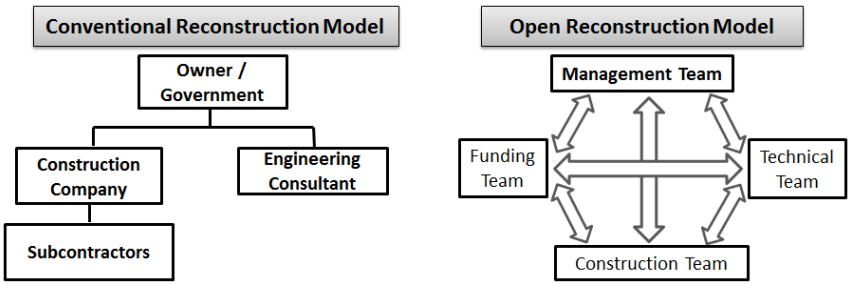
1. Introduction

On 25th April 2015, earthquake hit Nepal taking lives of more than 8,800 people and completely destroying more than 600,000 houses. The research team of Shinshu University conducted survey for a month in Lisankhu village, Nepal to study the impacts of earthquake and progress of reconstruction process. The study found that in developing countries like Nepal the government alone is inefficient in effective reconstruction process. Therefore, in this research open reconstruction model is proposed to aid reconstruction process apart from government in disaster area. Open reconstruction model is model where ordinary people and community from around the world can help in reconstruction in disaster affected area. The proposed open reconstruction model is executed in the construction of multi-purpose gymnasium in Lisankhu village Nepal. In this research, the merits, demerits and the applicability of the open reconstruction model is discussed.

2. Open reconstruction model

Whenever there is disaster, the reconstruction process is mainly conducted by the government. In the developed countries like Japan, the government is self-sufficient for the reconstruction. However in developing countries like Nepal, the government is inefficient in reconstruction process. Therefore open reconstruction process is proposed to aid the reconstruction process. The Fig.1 (a) shows the conventional reconstruction and Fig.1 (b) shows the open reconstruction model.



(a) Conventional Reconstruction Model (b) Open Reconstruction Model

Fig. 1 Reconstruction model

In the conventional model, the government is responsible for reconstruction. In the open reconstruction model, all the reconstruction is process is conducted by the ordinary people or the community around the world. In this model, the reconstruction is carried out with the collaboration of 4 different teams. 1) Management team: It is responsible for the overall project management. It coordinates between the other teams for the smooth running of the project. 2) Funding team: It is responsible for raising the fund necessary for the construction project. The funding team members are usually from places other than the disaster hit area. 3) Technical team: It is responsible for design and other technical support for the construction. Professional engineers, university professors and students consist of the professional team. 4) Construction team: It is responsible for the overall construction project. In this team, members mainly consist of the local villagers of disaster affected areas. These four team of ordinary people and community work together to execute various

necessary reconstruction tasks.

3. Construction of multi-purpose gymnasium applying open reconstruction model

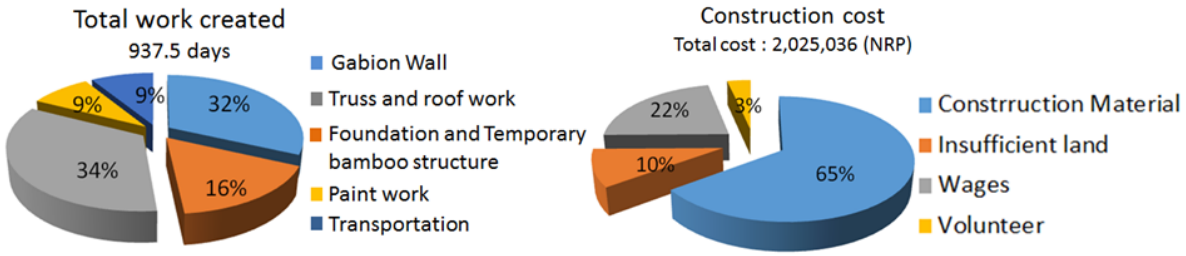
The open reconstruction model is applied to build milt-purpose gymnasium hall in Lisankhu village as a part of reconstruction work after earthquake. Four different teams were created as shown in the Fig. 2 and each team carried out their respective activities. The funding team consists of local people from Nagano and students from Shinshu University. The technical team consists of the engineering students and civil engineers and architects. Management team consists of headmaster of government high school, former mayor of village, leaders and some members from all the teams. Mainly the villagers in disaster affected areas are in the construction team.

(a) Funding team (b) Technical Team (c) Management Team (d) Construction Team (e) After construction

Fig. 2 Construction of multi-purpose gym with open reconstruction model

4. Analysis of application of open reconstruction model in Lisankhu village

As shown in Fig. 3 (a), the reconstruction work created 937.5 days of work for disaster affected people. As shown in Fig. 3 (b), the new model eliminated the cost of planning, designing and construction management. This helped in the maximum utilization of fund for the buying materials and reconstruction work.



(a) Construction cost (b) Total work created

Fig. 3 Construction cost and total work created

5. Conclusion

The model is successfully applied in the construction of the gymnasium hall in Lisankhu village.

1. The overall construction management cost was greatly reduced because the planning and designing were conducted with volunteers.
2. All fund raised was used for buying the materials and construction works.
3. The construction work created jobs in the disaster affected areas.
4. The structure of the model created transparency and effective execution. It helped to create motivation in the volunteers.
5. Problems of communication are seen among various teams due to distance and in frequent meeting.

6. Acknowledgement

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