

Socio-technical module in assistance: Promoting resilient reconstruction in the wake of a disaster

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ABSTRACT

Disasters every year proclaim life of thousands and destruct infrastructures worth billions worldwide. Moreover, the developing countries are more prone to hazards as they are found to be lagging in early preparedness regarding the consequences of disaster. Nepal, in the wake of the 7.8 magnitude 2015 Gorkha Earthquake had to face devastating effects as the country lost nearly ten-thousand lives and structures accounting 6.69 billion US\$ (NRA, 2016). Private Housing, one of the subordinates of social sector, faced the colossal damage, making the dwellers bound to take shelter under the makeshift tents. To that end, government has adopted owner driven approach for reconstruction and it is advancing in an amplified way. Since the rural terrains with low strength masonry had to face shattering effects, the reconstruction demands their construction with incorporation of seismic resistant components. The technique of construction since significantly differs than the primitive way, diverse modes of assistance is required by house owners to make their buildings codal compliant, which is also linked with obtaining subsidy. Not only reconstruction is a technical process, rather it is also a blend of economic, social and cross cutting issues. Having said that, the paper aims to study a multidimensional approach of socio-technical assistance (STA) through the study of different cases of ongoing post-earthquake reconstruction. The paper studies the impacts of socio-technical assistance being provided at various earthquake affected areas to understand what aspects of socio-technical assistance are aiding in the current reconstruction process. In conclusion, the paper identifies the core areas of socio-technical assistance that is required in the aftermath of a disaster and how the current institutional structure can be modified to enhance the quality of socio-technical assistance being provided through various government and non-government agencies.

Keywords: Socio-technical, Awareness, Resilient, Reconstruction

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INTRODUCTION

Nepal is expediting a way forward in reconstruction being foreseen by National Reconstruction Authority under the cordial efforts of various stakeholders. The country has delved itself into huge campaign of resilient reconstruction, which is replicated as a good learning from experiences of countries like India, Pakistan and other ones which had to face similar disastrous events. Among various approaches of post disaster reconstruction implemented in several counties, owner driven approach, in which the sole responsibility of reconstruction of private houses is given to the house owner himself, has been implemented in Nepal (NRA, 2016). Under an owner driven approach in housing reconstruction, national and international organizations supporting the reconstruction provide direct assistance to the house owner for the rebuilding of their damaged houses (Owner Driven Reconstruction Guidelines, International Federation of Red Cross and Red Crescent Societies). Notably, this approach ensures the full participation of community in decision makings as a result of which it promotes in sustainability of new technologies that are endorsed in construction approaches. However, a continuous assistance is required in order to facilitate

the beneficiaries in this process as the method of restoration alters from the previous construction process. It is necessary to ensure that the rebuilt dwellings should be strong enough to withstand future earthquakes and ensure life safety of occupants. Not only this, it is also important that similar trend also need to continue after the post disaster reconstruction and should replicate in other areas too which can be devastated by future disasters. Anticipating reconstruction as a technical process only will not be enough in the current case. Rather than this, reconstruction moreover is a social/communal issue, where the addition of technical knowledge broadens the dimension and delves in formation of a resilient community. A home when constructed has affections and attachment adhered with it. The dimensions, location and appearance of buildings moreover are determined by the need and the practice transferred upon by our ancestors. Hence, a blend socio-technical assistance comprising the notions of the dwellers can only fulfill the reconstruction in a safer and better way (Gauli et al., 2019).

The results are interpreted based upon the learnings derived in the course of implementation of Baliyo Ghar Program, a post 2015 Gorkha Earthquake housing reconstruction technical

assistance project. Further, the paper studies different levels of socio-technical assistance interventions done by various national and international organizations in the earthquake affected areas and their impact in the progress of reconstruction. The paper also analyzes the data obtained through Building Compliance Survey conducted as part of Baliyo Ghar Program, implemented by the National Society for Earthquake Technology Nepal (NSET) in earthquake affected districts to shed light upon the change in rate of compliance in the absence and presence of socio-technical assistance.

SOCIO-TECHNICAL ASSISTANCE IN POST-EARTHQUAKE RECONSTRUCTION

The term socio-technical assistance in post-earthquake reconstruction refers to a consortium of one or more activities directed towards the enhancement of awareness and capacity of communities to undertake reconstruction efforts. As such, several activities have been undertaken by different government and non-government organizations working in the earthquake affected communities in Nepal to support the ongoing reconstruction. A comprehensive socio-technical assistance primarily focusses on the following components,

1. Alleviating the level of awareness among the stakeholders towards disaster risk and its mitigation,
2. Providing support for capacity enhancement of communities to carry out appropriate measures and actions towards disaster risk mitigation and,
3. To enhance institutional capacities to promulgate appropriate regulations and policies for disaster risk

mitigation.

As such, the National Reconstruction Authority has identified seven major thematic activities under the socio-technical assistance being provided by different government and non-government organizations in the earthquake affected areas.

1. Short training – for masons, technical personnel, social mobilizers, carpenters etc.
2. Vocational training – for masons, carpenters, plumbers and other construction workers.
3. Community based orientations – for earthquake affected communities
4. Information Centers – at specific locations as a center to information to earthquake affected beneficiaries
5. Door to Door Technical Support – technical support provided to beneficiaries at their construction sites
6. Demonstrations – construction of demonstration models, small scale or large for technology and knowledge dissemination
7. Community Reconstruction Committee – facilitation for the formation of CRC and mobilization of communities for reconstruction activities (Core Socio-Technical Assistance Package, 2017).

However, it is notable that not all earthquake affected areas have been able to access all the seven components of socio-technical assistance as stated above. The level of coverage of socio-technical assistance activities varied widely among different areas, primarily depending upon the number of organizations working in a certain community and the scope of

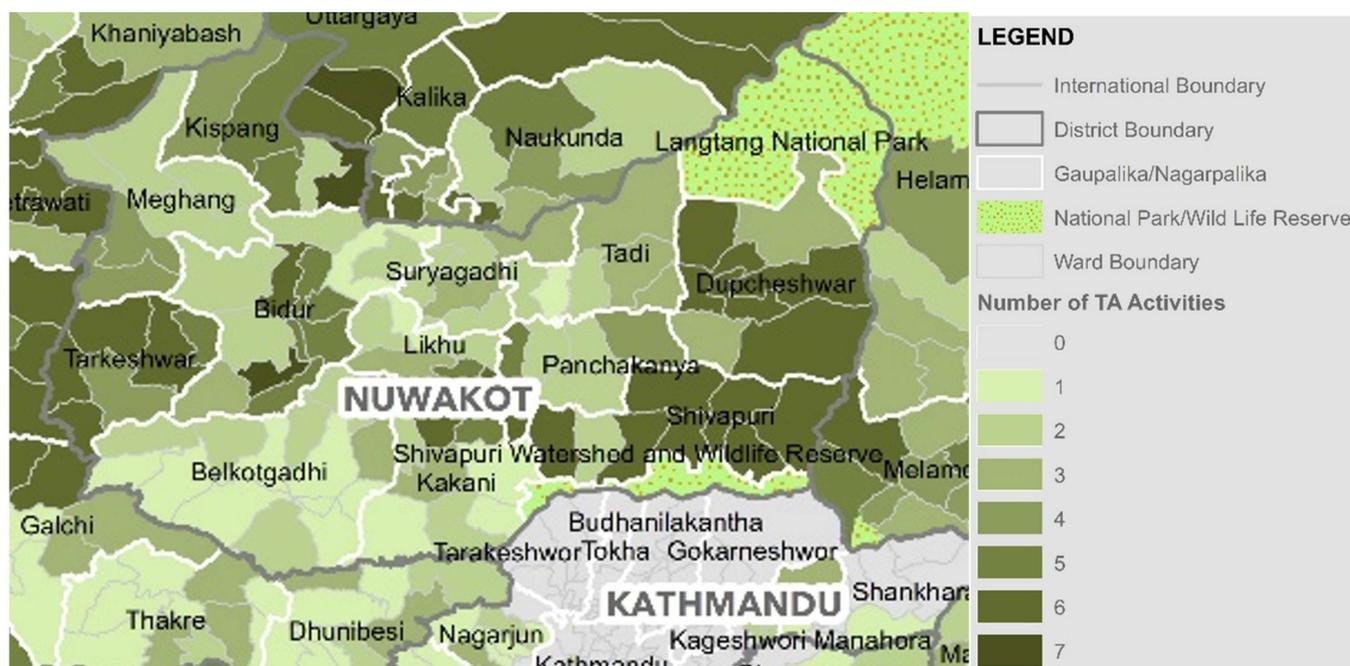


Fig. 1: Map Representing coverage of different modes of assistance in the Nuwakot District. The highlighted parts represent wards with greater number of assistance (Source: HRRP).

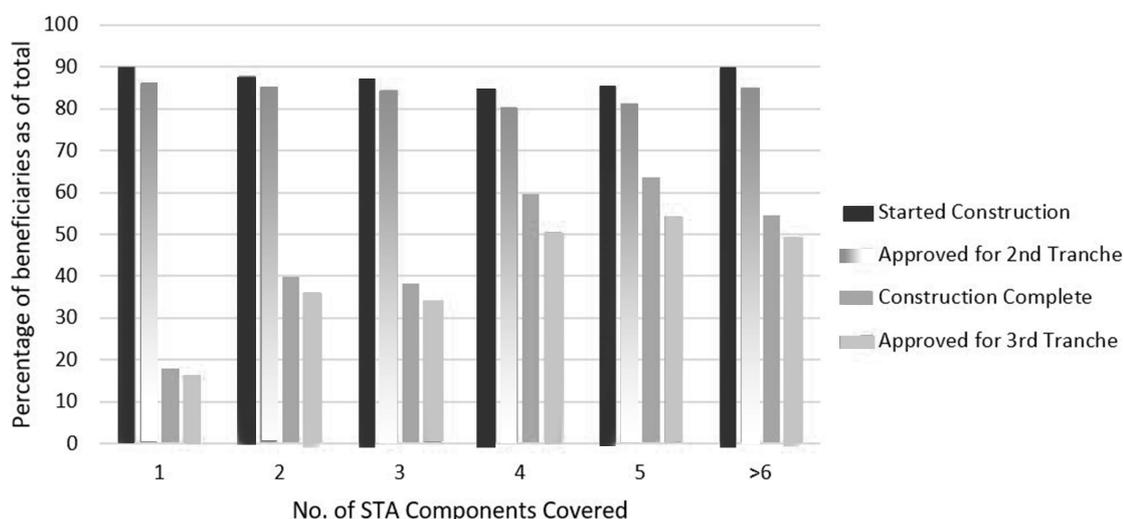


Fig. 2: Comparison of progress of reconstruction in different previous Village Development Committees of Nuwakot as per the coverage of socio-technical assistance components (Data source: NRA/DLPIU (Building) Nuwakot, Oct 2 2018 & HRRP)

the project that is being implemented. Hence, different earthquake affected wards of different districts have varied coverage of socio-technical assistance as evident from the map in Fig. 1.

Fig. 1 illustrates the extent of coverage of socio-technical assistance (STA) in the current reconstruction in Nuwakot District. As seen in the map, several municipalities such as Belkotgadhi, Suryagadhi and Taadi have up to 3 out of the 7 socio-technical assistance activities being conducted while Shivapuri and Tarkeshwar have more comprehensive coverage with up to 6 socio-technical assistance activities. The outcome and impact of the level of coverage of socio-technical assistance activities can only be studied through the analysis of the progress of reconstruction and code compliance of reconstructed houses. Analyzing the heat map in Fig. 1, of the total 72925 listed beneficiaries in Nuwakot, the percentage of beneficiaries having access to one, two, three, four, five and six components of technical assistance are 4, 37, 18.8, 4.8, 12.2 and 23, respectively.

In that regards, Fig. 2 as an exemplary case illustrates the progress of housing reconstruction in different areas in the Nuwakot District as per the availability of technical assistance components. A comparative study of the progress of reconstruction in these areas shows that the percentage of beneficiaries that have started construction and received the second tranche is much similar in all the program areas, however, a significant difference can be seen in the completion and third tranche distribution trend. As seen in the graph, the percentage of beneficiaries that have completed construction and have been approved for the third tranche by the NRA/DLPIU (National Reconstruction Authority, District Level Project Implementation Unit (Building)) is much lower in the areas with up to 3 STA components as compared with areas that have higher number of STA components covered. Keeping this in mind, it is evident that availability of comprehensive socio-technical assistance

package has a direct positive influence in the overall progress of reconstruction and can expedite towards the construction completion.

Notably, after the implementation of socio-technical assistance in post-housing reconstruction, there has been an amplification in the compliance rate of constructed buildings. As depicted by the results, the compliance of buildings that were constructed immediately after the earthquake prior to deployment of technical personnel were found to be having low compliance rate of 22%. However, after implementation of various socio-technical assistance activities under Baliyo Ghar program the rate was intensified by multiple folds with more than 80% of the buildings under the scope of code compliance (Fig. 3). That said, a comprehensive module of assistance which comprises multiple aspects that can adopt to the dynamically changing scenario in reconstruction is required for bringing desired results.

IMPORTANCE OF SOCIO-TECHNICAL ASSISTANCE IN POST-EARTHQUAKE RECONSTRUCTION

To amplify the progress in Housing Reconstruction

In many situations the communities being deprived from lack of adequate information as well as availability of resources are unable to initiate the process of reconstruction. Since the method of construction considerably differs than the previous ways, it is evident that people get confused regarding the technical and policy guidelines. In this regard, the exacerbation in level of awareness helps untie the knots and promote seismic resistant reconstruction. Then again, such assistance is required from the entire phase of relief and rescue towards the

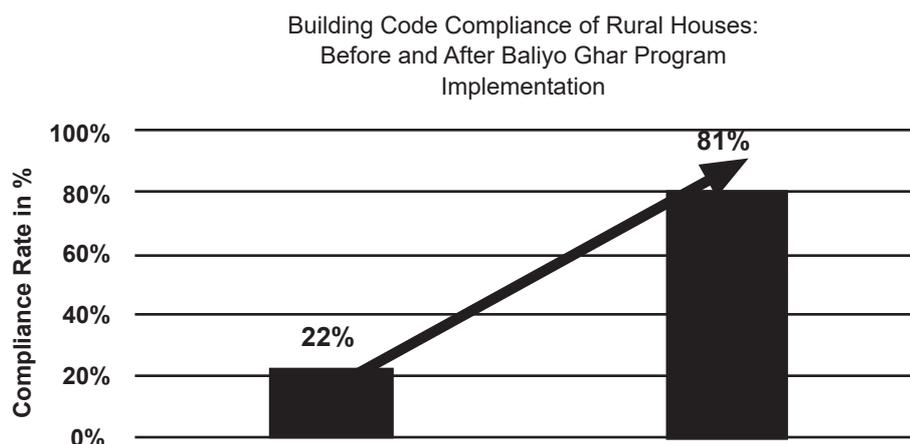


Fig. 3: Change in Compliance Status before and after implementation of NSET’s Baliyo Ghar Program in Dhading, Dolakha and Nuwakot Districts. (Source: YSN Case Study Submitted by NSET)

reconstruction in order to guarantee that communities have learned the process, are capable enough to replicate the process.

For increased compliance rate of building

Enhancing the level of awareness and capacity of construction workforce/ stakeholders are prime objectives which can increase the level of codal compliance of building byelaws. As such, ensuring that reconstructed houses are compliant to the codal provisions and technical specifications promulgated at the national level, appropriate approaches and strategies must be implemented at the grass root level. It is necessary that ranging from grass root level (community and construction workforce) to the implementing agencies (government, technical personnel and authorities) multi-dimensional approach of trainings and capacity enhancement techniques are to be covered in order to boost the compliance rate and well as sustain it in future.

For institutionalization

This part sheds light upon institutionalizing the efforts made during the reconstruction period to successfully mitigate and reduce the effects of future disasters. Thus, it is essential to ensure that the policies, approaches and lessons during the reconstruction period are transferred permanently such that they can be embedded in the policy level and its further implementation. Institutionalization in any government framework can be done by engaging community members in entire process (Rotimi and Zuo, 2009). Hence, communities engaged in reconstruction currently must be able to understand the importance of such endeavor and accept the policies and approaches. Moreover, capacity of both the communities and government along with all concerned stakeholders must be enhanced. All this is only possible through an integrated socio-technical support during the reconstruction period. With

continuous deliberations in communities and local government regarding the importance of disaster resilient construction during technical support, it will be much easier for institutionalizing the efforts of reconstruction for the mitigation of future disasters.

Conceptual Framework of Socio-Technical Assistance

The framework illustrated in Fig. 4 exemplifies the concept of socio-technical Assistance through an integrated approach of building inspection, socio-technical support and livelihood support. As per provision of recovery guidelines, a technical team shall be deployed by Reconstruction Authority for purpose of compliance check and inspection. There are such teams in municipal levels and in addition to this socio-technical support can be delivered by a team of an Engineer and a Social Mobilizer. Such team will be able to complement each other’s efforts for effective reconstruction. The engineers in the technical assistance team can be hired through Partner Organizations (POs) or Community Based Organizations (CBOs) whereas, Social Mobilizers can be hired through the local level municipalities which will ease for the coverage of technical support. The Community Reconstruction Committee (CRC), which is one of the components of reconstruction program as per enacted by NRA Reconstruction Act, can play a significant role in the mobilization of communities towards exacerbating rebuilding.

The CRC can, in fact, work towards the solution of a wide range of social issues that have been hindering reconstruction, especially of vulnerable communities. The CRC should play an active role in discourse with the technical inspection and assistance teams as well as the ward and municipality offices to work for probable solution of the issues. In addition to socio-technical support, support for the enhancement of livelihood of communities is also vital. This can be achieved through a wide range of activities like trainings, subsidies, preparation of business development strategies and

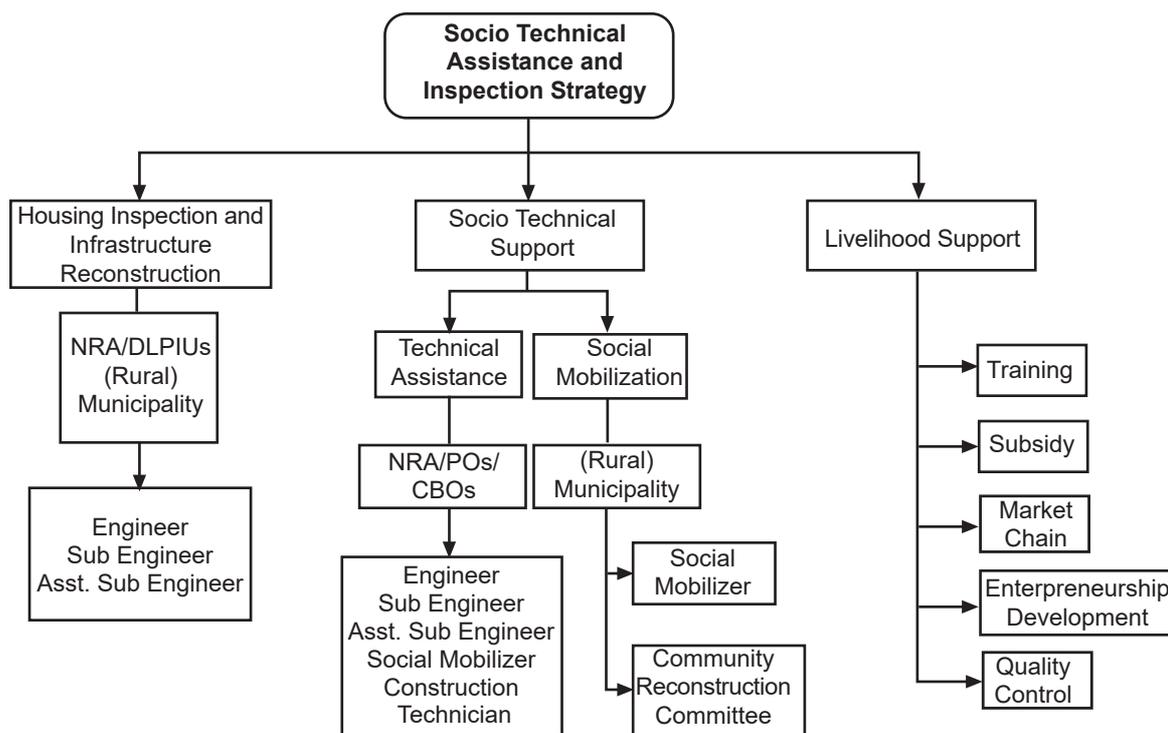


Fig. 4: Conceptual framework for socio-technical assistance and inspection

market chain development. These activities can be performed via POs or Local government bodies. Further, enhancement of communities in construction, stone cutting, wood/carpentry and production of construction materials such as concrete blocks through entrepreneurship development can be done. A widely accepted and successful approach is the formation of consumer groups and cooperatives in communities that empowers communities to be involved in livelihood activities.

CONCLUSION

Coupled with the challenges, the implementation of reconstruction is not an easy process. The process is dynamic and a multitude of aspects need to be taken into consideration, especially in a developing country like Nepal, where mere formulation and enactment of policies alone does not sufficiently demand implementation at the community level. Hence, the need arises for effective and efficient mobilization of socio-technical assistance, at different tiers and through different and significantly unique approaches that cater to the needs of individual communities. In addition, comprehensiveness in the socio-technical approach, which covers a wide range of aspects and activities must be implemented by those organizations, government or non-government, national or international who are providing assistance to earthquake affected communities. The involvement of communities themselves, through reconstruction committees or through elected representatives is also vital, to resolve several underlying issues that cannot be foreseen during policy formulation.

In the restoration process it is necessary to comprehend that the demands change continuously. Not only a safe and permanent dwelling sequentially have people also sought for livelihood opportunities in the course which will aid in the process of rebuilding to make it quick. Having said that, this is the crucial and demanding period where in one part the reconstruction is to be completed in a resilient manner and in other portion a milestone of early preparedness should be there considering the future period. To that end, in a short term period significant trainings and workshops should be organized to enhance and aware the community members as well as authorities. Identified assorted sectors that are linked with the safer construction practices should be enhanced in order to intensify rebuilding at full fledge. More intensified study needs to be performed at an extensive level to understand the impacts and understandings of socio-technical assistance in Nepal as well as learnings from other countries who had adopted same mode in aftermath of disaster. Further, although broadness of socio-technical assistance is necessary, learning from the current reconstruction also demands analyzing results of socio-technical assistance. Additional research, to understand which socio-technical activities are more impactful than others, can be fruitful in future disasters during project formulation.

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