

Building Back Better in Japan – Lessons from the Indian Ocean Tsunami experience in Sri Lanka

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Building Back Better (BBB) is a key concept in post-disaster reconstruction and recovery activities, which implies the need to take the opportunity presented during the post-disaster phase to improve a community's physical, social and economic resilience along with reconstruction and recovery efforts. Eight principles have been identified to describe BBB: Improvement of Structural Designs; Land-use Planning; Social Recovery; Economic Recovery; Stakeholders; Legislation and Regulation; Community Consultation; and Monitoring and Evaluation.

The Indian Ocean Tsunami disaster in 2004 is comparable in nature to the Great East Japan Earthquake and Tsunami event in 2011 which were both triggered by earthquakes of 9.0 magnitude on the Richter Scale followed by destructive tsunami waves. Sri Lanka, the second worst affected country by the Indian Ocean Tsunami was chosen as a case study to understand the precursors which led to widespread damage by the Tsunami; the recovery and reconstruction process; its successes and failures; and its long-term impacts. Information from reports on the Tsunami recovery operations and data collected during a research visit in 2011 from semi-structured interviews with a range of stakeholders involved in post-Tsunami recovery operations and current disaster management practices in Sri Lanka have been used for evaluation.

Key Words : *Build Back better, Post-Disaster Reconstruction, Recovery, Indian Ocean Tsunami, Sri Lanka, Great East Japan Earthquake and Tsunami*

1. INTRODUCTION

The Great East Japan Earthquake and Tsunami was a result of a 9.0 magnitude earthquake which took place 100km east of Japan's Miyagi prefecture in the north-western Pacific Ocean ¹. The earthquake which was the largest ever recorded in Japan, also caused a large tsunami wave with a maximum height of 17m which flooded over 507km² of land leaving behind 26.7 million tons of debris ¹. The damage from the disaster was extensive with 15,365 deaths and 111,044 buildings destroyed across 20 prefectures ¹. The nature of the Great East Japan Earthquake disaster has similarities to the Indian Ocean Tsunami disaster of 2004, which was also triggered by an earthquake of the same magnitude followed by a destructive tsunami which swept across many countries including Sri Lanka ².

This paper will look at the reconstruction and recovery process undertaken in Sri Lanka, one of the worst impacted countries from the Indian Ocean Tsunami with particular focus on the theme "Build Back Better"; how it was embraced and incorporated in recovery; successes and failures in implementation; and long-term impacts on the country, in order to extract lessons for Japan's ongoing recovery activities.

2. THE DEFINITION OF “BUILD BACK BETTER”

The term “Build Back Better” (BBB) started to emerge in post-disaster reconstruction environments following the Indian Ocean Tsunami disaster, and is based on the concept of seizing the opportunity to improve a community’s physical, social, environmental and economic conditions after a disaster to create a new resilient state of ‘normalcy’³⁻⁵⁾. The means by which BBB can be put into practice was first officially documented by the former United States President, Clinton⁶⁾ in “Key Propositions for Building Back Better: A Report by the UN Secretary-General’s Special Envoy for Tsunami Recovery”. Other BBB guidelines include “Principles for settlement and shelter” by UNDR0^{6,7)}, “Post Tsunami Recovery and Reconstruction Strategy” by the Government of Sri Lanka⁸⁾, “Rebuilding for a More Sustainable Future: An Operational Framework” by Federal Emergency Management Agency⁹⁾, “Holistic Recovery Framework” by Monday¹⁰⁾ etc.

The guidelines listed above identify three primary areas which need consideration to achieve a successful BBB recovery: Risk Reduction, Community Recovery and Implementation, with each category containing a number of BBB Principles.

3. BUILD BACK BETTER PRINCIPLES

Risk Reduction includes two key BBB principles: “Principle 1: Improvement of Structural Designs”, where the need to improve a community’s physical resilience to natural hazards through structural design improvements has been identified^{6,7)}; and “Principle 2: Land-use Planning”, where hazard-based land-use planning is used for risk reduction^{9,11,12)}.

Community Recovery is achieved through two BBB principles as well: “Principle 3: Social Recovery”, which looks at ways of improving psycho-social aspects of the people; and “Principle 4: Economic Recovery” which looks at improving the economic climate of the impacted community¹³⁻¹⁵⁾.

Finally, the factor which determines the successfulness of Risk Reduction and Community Recovery initiatives in achieving BBB is: effective and efficient Implementation through the use of four BBB principles: “Principle 5: Stakeholders”, which identifies coordinated stakeholder functions with clear role allocation^{9,14,16)}; “Principle 6: Legislation and Regulation” which is the use of legislation and regulation for control as well as facilitating recovery operations^{6,17)}; “Principle 7: Community Consultation” where community consultation and participation is utilized to provide fitting solutions^{6,9,10,16)}; and “Principle 8: Monitoring and Evaluation”, which looks at systems put in place to monitor and evaluate reconstruction and recovery processes for sustainability and improvement of future disaster management practices^{13,18,19)}.

4. RESEARCH METHODOLOGY

In order to understand the reconstruction and recovery process undertaken in Sri Lanka a Case Study approach was utilized²⁰⁾. Data collected from reports produced containing analyses of the recovery operations as well as from semi-structured interviews conducted with stakeholders who were directly involved in post-Tsunami activities during a research visit from January to February 2011.

The profiles of the interviewees can be found in Table 1:

A study of how the implementation of BBB in Sri Lanka 7 years after the tsunami is able to portray what impacts a recovery process can have on long-term recovery of a community and how successful the implementation of changes have been in subsequent disaster experiences. The results from a long-term analysis provide a better understanding on how a BBB framework can be developed for effective performance during a post-disaster situation.

An inductive approach using Grounded Theory and Constant Comparative Method (21-23) were used to analyze the data using the computer programme NVivo 9. The interview data was transcribed then coded under the BBB principles identified in section “Build Back Better Principles”.

Table 1 Profiles of Interviewees

<i>Interviewee Code</i>	<i>Number of interviewees</i>	<i>Organization</i>
P1-P5	5	Disaster Management Centre (DMC)
P6	1	Asian Disaster Preparedness Centre (ADPC)
P7	1	United Nations Development Programme (UNDP)
P8	1	Practical Action (PA)
P9	1	Coastal Conservation Department (CCD)
P10	1	National Building Research Organisation (NBRO)
P11	1	Care International
P12	1	Urban Development Authority (UDA)
P13	1	Galle Municipal Council
P14	1	Galle Divisional Secretariat
P15	1	Peraliya School

5. THE INDIAN OCEAN TSUNAMI RECONSTRUCTION AND RECOVERY PROCESS IN SRI LANKA AND ITS IMPACTS

The reports “Post Tsunami Recovery and Reconstruction: Joint report of the Government of Sri Lanka and Development Partners”²⁴⁾ and “Preliminary Damage and Needs Assessment” by the Asian Development Bank²⁵⁾ present the approach to recovery taken in Sri Lanka: Firstly, the President of Sri Lanka established the “Centre for National Operations” (CNO) to oversee and monitor emergency operations, and also set up the Task Force for Rescue and Relief (TAFRER), Task Force for Law and Order and Logistics (TAFLOL) and Task Force to Rebuild the Nation (TAFREN) to undertake necessary post-disaster operations. TAFREN was responsible for activities in the rebuilding phase including coordinating and assisting the stakeholders involved.

A “Post-Tsunami Recovery and Reconstruction Strategy” was created by the Sri Lankan Government including the following considerations⁸⁾:

1. Involving families in the recovery process by using initiatives such as micro enterprise credit schemes and owner-driven housing schemes. Community organizations were identified as the most suitable means to identify beneficiaries together with banking infrastructure used to disburse funds. Professional field advisers and periodic audits to be used to ensure maintenance of work standards and training programmes to be held for up-skilling.
2. Provision of livelihood support and conducting rural work programmes to alleviate unemployment and poverty hardships faced by the people as a result of the Tsunami.
3. Promotion of development and long-term private investments into the affected areas which were under-developed and poverty-stricken before the Tsunami.
4. Reconstruction of infrastructure to support modern development incorporating risk and vulnerability reduction due to future disasters, starting with defining a coastal buffer zone to restrict developments in coastal areas.
5. Housing, livelihood support, rebuilding of schools and hospitals and large infrastructure projects to be done by non-governmental organizations and donors using an improved procurement system which will avoid delays and ensure transparency.
6. Consideration of long-term operational and maintenance costs of post-tsunami developments before implementation.

A set of “Guiding Principles” were established to guide the activities in the Recovery and Reconstruction Strategy ^{8, 16}):

1. The allocation of resources based on identified needs and local priorities – to ensure equity and consideration of all groups of people
2. The principle of subsidiarity – to provide locally appropriate solutions and directly involve local organizations
3. Consultation with affected communities and stakeholders – to respond to actual needs of the people
4. Communications and transparency in decision making and implementation – to allow implementing agencies and the community understand each other
5. Reconstruction processes should reduce future vulnerabilities to natural hazards – by adopting hazard-sensitive developments
6. Analysis of individual interventions – to ensure future sustainability and appropriateness
7. A coordinated approach to recovery is critical – to prevent duplication and overlapping of activities and for efficient utilization of stakeholder capacities

Regardless of the strategy and guidelines put in place to accomplish a successful reconstruction and recovery operation, the activities carried out in practice displayed both successes and failures.

(1) Risk Reduction

a) Principle 1: Improvement of Structural Designs

Although one of the objectives in the Post-Tsunami Recovery and Reconstruction Strategy was to “support modern development incorporating risk and vulnerability reduction due to future disasters” ⁸) interviewee P10 from NBRO said that conformance to structural standards to improve building resilience was uncommon in the rebuilding effort, and this was due to the fact that “the building code system is not practiced even at local council levels, who only look at planning and building regulations”. Owner-driven construction without technical guidance also created sub-standard structures vulnerable to future hazards ²⁶).

The Tsunami caused a change in direction for development practices in Sri Lanka according to CCD and ADPC officials: “Now we are trying to incorporate DRR into the structures for the long-term case. I believe that stricter building regulations and specifications is the best way to go because it will be very difficult to move people away from coastal sites, so the solution will be building a safe house in a high risk area”. Several projects such as the Urban Multi-Disaster Management Project and The Strategic Environmental Assessment for Northern Province were launched which aim to introduce hazard-based construction standards and practices in the country, according to interviewees P2 and P7.

b) Principle 2: Land-Use Planning

The primary risk reduction measure undertaken was the introduction of “coastal buffer zones”, which were areas of coastal land where construction was prohibited to provide protection from hazards such as the Tsunami in the future ^{3, 27, 28}). The people who previously lived within the buffer zone area had to be relocated, but this became problematic due to scarcity of suitable lands to create new settlements ^{24, 29}). The need to commence construction without delay resulted in relocating people into areas prone to other types of hazards such as flooding due to the absence of conducting hazard assessments exposing them to new hardships ^{7, 30}).

The UDA participant shared that a new zoning system has been introduced as a result of the lessons learnt after the Tsunami experience: “First the area is declared as an Urban Development Area; then a Base Map with contours is made; then main hazards are identified and affected areas are mapped; a zoning map with permissible uses and prohibited uses is made which will become legislation; then a Draft Development Plan is made which is submitted to stakeholders, the community and the local authority”.

(2) Community Recovery

a) Principle 3: Social Recovery

The implementation of the buffer zone and the resulting relocation posed major social and economic challenges for the community whose former livelihoods were predominantly based around fishing and the sea^{3, 5, 31}. The lack of consideration of traditional settlement patterns, housing types and layouts, and cultural and ethnic issues due to non-participatory reconstruction practices by donors caused conflicts and resentment among the local people^{3, 29, 31, 32}. On the other hand, the relocation helped to improve the living conditions of some affected groups who were happy with the move²⁷.

The UDA official showed how social and livelihood issues can be considered successfully using an example from the new Hambantota development programme: “We have identified those who have close connections with the sea (i.e. fishermen etc) and have located them in safer areas whilst still maintaining view points with the sea. They have been physically moved away from the sea for safety, but they are still able to maintain the connection with the sea, which was considered as an important part in the development strategy”.

b) Principle 4: Economic Recovery

There were several livelihood recovery programmes set up to assist the community, such as “cash-for-work” schemes to involve locals in rebuilding; medium and long term micro-credit interventions by the Government as well as local and international non-governmental organizations (NGOs), where concessionary loans were given to micro, small and medium enterprises; “Central Bank of Sri Lanka Susahana Scheme” which provided loans for restarting livelihoods; “National Development Trust Fund Scheme”: loans targeted at micro enterprises damaged in affected areas; as well as cash grants and a food-ration programme for the affected people^{24, 25}. However, the livelihood recovery programmes faced criticism for not paying attention to community needs and traditional livelihoods such as fishing and encouraging them to acclimate to new types of employment as a result of being moved inland^{29, 33}.

(3) Implementation

a) Principle 5: Stakeholders

A prevalent issue was the large influx of local and international NGOs to conduct recovery operations who were in competition against each other and worked under pressure to achieve fast results without taking into account local needs, standards and opinions of the people^{3, 5, 34}. The national and local Governments as well as most NGOs involved had no previous experience in large-scale post-disaster environments which contributed to an ad-hoc recovery effort without sufficient attention to long-term impacts of their actions due to not having had pre-planned systems to follow as recommended in BBB principle 8^{5, 7, 27}. Local-level authorities and organizations suffered from lack of capacity to fulfil their roles^{16, 35}. Although TAFREN was established as a coordinating body the large number of stakeholders involved, including 8 ministries and 100 international and national organizations, made coordination and role allocation difficult, resulting in duplication of functions^{5, 8, 16, 34}.

Officials from the Galle Municipal Council, UNDP and DMC stated that training programmes, workshops, conferences etc were introduced in Sri Lanka to build the disaster management capabilities in the country as a result of the post-Tsunami experience. Interviewees P2 and P10 explained the ongoing Priority Implementation Partnership (PIP) projects launched in 2008 to develop and test a coordinated multi-stakeholder approach towards DRR incorporated housing developments: “The agencies involved are Local Authorities, Local administrations division, District Authority and NHDA (National Housing and Development Authority). It’s important to incorporate DRR into all these agencies and work together because most agencies have different planning/approval schemes”.

b) Principle 6: Legislation and Regulation

The Tsunami experience brought about illegal construction of homes built without sufficient regulation due to difficulties posed by the drawn-out complicated regulative procedures existent in Sri Lanka according to interviewee P13 from the Galle Municipal Council. The time pressures arising during reconstruction programmes were raised by interviewee P13: “The problem in reconstruction is people need to build houses very soon, so at times like that we have to relax some regulations and reduce the power of some regulations”.

Although guidelines to incorporate risk reduction have been prepared for future developments (see “Principle 1: Improvement of Structural Designs” and “Principle 2: Land-use Planning”) interviewees P1, P10 and P11 collectively felt that “the problem is guidelines are guidelines, nobody is legally obligated to follow them. They must be transferred to regulations”. Interviewee P8 stressed that “you need to change the institutional structures and processes to incorporate DRR into developments”.

c) Principle 7: Community Consultation

The low level of community consultation during the resettlement and donor-driven construction process was a big inadequacy in the post-Tsunami recovery effort and interviewee P8 said that the feedback given to Practical Action was that “they (the people) were very upset about not being consulted”. The Galle Divisional Secretariat official recommends participatory owner-driven construction of homes: “I think owner-driven housing construction is good, or 50/50 participation between owners and donors. You have to take the people’s opinions to build the house ultimately, even if the materials and technology come from elsewhere”.

On the other hand interviewee P8 and P14 cautioned high reliance on community consultation based on their past experiences: “Consultation might cause problems too with people wanting to customize the houses too much and becoming highly demanding, as they are in victim mode after their losses”.

d) Principle 8: Monitoring and Evaluation

Interviewee P12 from the UDA holds the opinion that the enormity of the reconstruction and recovery experience following the Tsunami was new to Sri Lanka, but it provided a good learning experience. Interviewees P6 and P7 felt that a monitoring system should be put in place as well as “systems in place to strengthen the local authorities and procedures”. Interviewee P8 recommended that “an accelerated programme should be developed, and identify who is doing what and strengthen them and hold them accountable rather than creating new and complicating systems”.

6. DISCUSSION: LESSONS FOR JAPAN FROM THE SRI LANKAN POST-DISASTER EXPERIENCE

Japan’s history of earthquakes has provided the country with some experience to be prepared for future disaster events. Japan has a highly developed early warning system, a multi-media system to dispatch disaster information to the public, a well-trained self-defence force for evacuation of people, and some of the world’s most stringent construction standards for buildings and infrastructure to withstand earthquake forces ³⁶⁾. However, these preparations were inadequate to cope with the Great East Japan Earthquake event, which also surfaced shortcomings in local and national capacity and coordination among stakeholders in the response activities ³⁶⁾ showing the need for Japan to further improve its disaster management capabilities by absorbing knowledge from other disaster experiences.

The projects implemented in Sri Lanka to incorporate risk reduction measures (see Principle 1: Improvement of Structural Designs) portray good examples for adoption in Japan to achieve BBB. The key lessons include: conducting thorough hazard and risk analyses of the land; using this information to divide areas into zones based on level of risk; determine safe land-uses for each zone; and impose controls on developments in each zone to adopt the required design regulations for optimum safety.

The resettlement process in response to the Tsunami disaster and the lack of a proper resettlement policy was a major failure in recovery operations in Sri Lanka. Having a resettlement policy to implement in a post-disaster situation is beneficial. The resettlement policy must consider available lands for relocation with close proximity to current settlements in hazardous areas allowing the community to maintain links with their traditional occupations and lifestyles. The opinions of the community should be obtained during the development of a resettlement policy to incorporate their views and preferences. However, relocation should be a last resort as it is disruptive to the community and can prolong the recovery process.

The social problems emerged during recovery were due to the lack of consideration of the social structures, culture and needs of the local people. Livelihood and business recovery programmes implemented in Sri Lanka such as “cash for work” and micro-credit schemes implemented were subject to criticism and dissatisfaction by the people for deviating them from the types of employment they were accustomed to such as fishing. Therefore successful social and economic recovery to achieve BBB requires a thorough

understanding of the social and economic structure of the affected community, which can be achieved through inclusion of the local people and local authorities who are knowledgeable about the community, as well as from reliable data collection about disaster-affected families, to assist in providing tailored solutions for community recovery.

The use of already existing regulatory systems to incorporate disaster risk reduction measures to ensure safe developments is recommended. The Sri Lankan experience demonstrated the need to legislate measures taken for risk reduction to ensure adoption using simplified permit procedures to facilitate construction to assure quality control to prevent substandard designs and construction whilst not slowing down the process. A simplified administrative structure is necessary to avoid complications.

Highly-centralized recovery operations without sufficient community consultation and involvement at the grass-roots level hindered the accomplishment of BBB Guiding Principles established in Sri Lanka such as subsidiarity, communication, transparency and consultation, hence community consultation should be a vital part of Japan's recovery operations. However, the execution of projects must be managed by the local authorities with the community's best interest at heart, to provide them solutions that are realistic and compatible with the community.

Finally, the implementation of BBB requires a framework developed from past experiences to prescribe the actions to be taken by stakeholders involved; regulatory and legislative facilitations to be enacted to support reconstruction; and locally-specific arrangements to be made to support the economic and social recovery of the community.

7. CONCLUSIONS

The Indian Ocean Tsunami was a large-scale multi-national disaster which initiated a novel concept to post-disaster reconstruction and recovery: "Build Back Better"^{6,25)}. Build Back Better aims to use a holistic approach to improve a community's physical, social and economic situation during the post-disaster reconstruction and recovery process to achieve a more resilient state^{6,33)}. Literature such as "Key Propositions for Building Back better"⁶⁾ has led to the identification of 8 BBB principles under three main categories. "Risk Reduction", to improve the physical resilience of a community including, Principle 1: Improvement of Structural Designs and Principle 2: Land-use Planning; "Community Recovery", through Principle 3: Social Recovery and Principle 4: Economic Recovery; and "Implementation", the means by which Risk Reduction and Community Recovery measures are practiced in an effective and efficient manner, through Principle 5: Stakeholders, Principle 6: Legislation and Regulation, Principle 7: Community Consultation and Principle 8: Monitoring and Evaluation.

The Great East Japan Earthquake and Tsunami of 2011 is of comparable nature to the Indian Ocean Tsunami and would benefit from lessons learnt in the reconstruction and recovery process in a country such as Sri Lanka to improve Japan's own recovery effort. This paper investigated the effects of the Indian Ocean Tsunami on Sri Lanka and its reconstruction and recovery effort to Build Back Better, along with long-term implications of the Tsunami experience to provide lessons for Japan.

Key lessons for a successful BBB-incorporated recovery in Japan include:

- Performing thorough hazard assessments and a risk profile for affected areas to produce risk-based land zones
- Structural designs enforced adhering to building standards required for each land zone based on the risk levels
- Relocation for risk reduction considered as a last resort, and only implemented using a comprehensive resettlement strategy taking into consideration the best interest of the community
- Participatory and consultative approaches used for reconstruction and socio-economic recovery to provide a satisfactory outcome for the community
- Support and consideration given to the community's socio-economic structure, traditional livelihoods and cultural patterns
- Simplified administrative structures and permit procedures adopted which facilitate reconstruction
- Local authorities to play a key role in recovery operations by being the primary link between the community and Governmental and Non-Governmental agencies

- Final decisions about the reconstruction and recovery process to be taken by local authorities having considered the needs and wants of the people because of their knowledge about the community and understanding of locally appropriate and sustainable solutions and resources
- Monitoring and evaluation of the recovery process performed to collect lessons for future operations
- A framework to be assembled from lessons-learned including prescriptive actions to achieve BBB in post-disaster reconstruction and recovery in the future

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