

# **The Indian Ocean Tsunami: Vulnerabilities Exposed... Opportunities to Seize**

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# The Indian Ocean Tsunami: Vulnerabilities Exposed... Opportunities to Seize

Sara Rowbottom<sup>1</sup>

*“Our students have the potential and ability to move forward, but until now they haven’t had the resources... There is an opportunity now. We have suffered a lot, but we don’t like to think that our children were badly let down by the tsunami. Rather, they are facing a new future in the wake of it.”*

English teacher, Zahira College in Sri Lanka<sup>2</sup>

## Introduction

The Indian Ocean Tsunami of December 26, 2004 transcended the world’s imagination for natural disaster.<sup>3</sup> In the process, the tsunami manifested the profound vulnerabilities of human settlements around the Indian Ocean. Infrastructure, disaster preparedness and response planning, public education on natural disasters and their mitigation, and warning systems all failed to mitigate catastrophe with unprecedented consequences. From Southeast Asia to Africa, tsunami waves consumed entire towns, infrastructure collapsed, response plans fell apart and millions of survivors were left unaided to search for food, water, shelter, and loved ones.

Approximately 23 per cent of the world’s population lives within 100 kilometers of the coast.<sup>4</sup> As urbanization and migration continue, population and density in coastal urban zones mean increased human exposure to hazardous events, such as tsunamis, cyclones and flooding. Stemming disaster potential for such events requires understanding the conditions that allow Tsunami-like impacts on human settlements and taking concrete steps to address them. This case study is an attempt to generate such understanding by examining the recent Indian Ocean Tsunami through the lens of resilience, creating a typology of aspects of resilience with two main classifications:

1. Preparedness (three sub-categories)
  - Human security preparedness
  - Physical preparedness
  - Institutional preparedness
2. Vulnerability to assistance

Reflecting on these aspects of resilience after the Tsunami illustrates that recovery which rebuilds only to the pre-Tsunami status quo will invite similar devastation in subsequent

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1. This case study is based on a paper prepared by Alejandra Davidziuk, Lisa Guaqueta, Martin Mercado and Sabrina Quaraishi entitled “Tsunami: Space for Opportunity,” in spring 2006 for a course on Tsunamis, Monsoons and Hurricanes: Cities and Infrastructure at The Graduate Program of International Affairs at The New School. The original paper focused on the extensive impacts of the Tsunami, the roles of NGOs and alert systems, and identified ways in which Tsunami recovery efforts are attempting to create a more sustainable environment in order to mitigate future hazard risk. The current case study builds on many of these ideas and presents them within an analytical framework.

<sup>2</sup> Mitchell, 2005

<sup>3</sup> Hereafter the “Indian Ocean Tsunami” and “the Tsunami” will be used interchangeably to refer to the Indian Ocean Tsunami of December 26, 2004

<sup>4</sup> 1990 data based on the updated Gridded Population of the World (GPW2), Christopher and Nicholls, 2005

hazardous events. This case study will show that by exposing vulnerabilities in these areas, the Tsunami presented grassroots, local, national and international bodies with the opportunity not only to help communities recover from the disaster, but to also redress inequalities and hardships that previously characterized highly affected communities, and which, if attended, will reduce vulnerability and improve resiliency in the face of multiple hazards.

The case study will be presented in three parts: First, the Tsunami and its impacts are briefly explained. Second, the typology described above will be elaborated, and each category and sub-category of resilience discussed. For each sub-category opportunities for recovery and redress of those conditions of vulnerability, which compounded the Tsunami's effects, will be identified. Examples of actors seizing these opportunities will illustrate efforts to "build back better."<sup>5</sup> Third, the case study will conclude with a reflection on the Tsunami as a chance to address the complex and dynamic vulnerabilities explored here in order to achieve disaster mitigation, and for development and social justice overall.

## The Catastrophe

Just before 8:30 am local time on December 26, 2004 tsunami waves with maximum heights ranging from two to 15 meters began to crash coastlines in the Indian Ocean. The Sumatra-Andaman earthquake of magnitude 9.0 with an epicenter off the west coast of Sumatra, Indonesia displaced water above the sea floor set off the waves that directly hit 12 countries.<sup>6</sup>

The Tsunami decimated human settlements and their livelihoods. More than 180,000 people died, over 40,000 went missing and in excess of 1,700,000 were displaced.<sup>7</sup> India, Sri Lanka, and Indonesia suffered the most extensive losses of life. The provinces of Aceh and Nias in Indonesia saw 600,000 people lose their livelihood and 141,000 homes destroyed. In India, close to 1,090 villages were affected in Andhra Pradesh, Kerala, Tamil Nadu, Pondicherry, and the Andaman and Nicobar Islands.<sup>8</sup>

Total estimated damages in the affected region exceed \$10 billion, including physical infrastructure, residential and commercial structures, community institutions, and the environment.<sup>9</sup> Countries such as Sweden, the United States, and Australia, bore an indirect effect, being home to a large proportion of affected tourists. Losses in fishing, agriculture and tourism industries as well as informal sector economic activities all around the Indian Ocean paralyzed livelihoods among affected populations and national economic growth. In the agricultural sector, among the impacts, the Tsunami affected close to 130,000 farmers in Aceh, Indonesia, ruined 39,035 hectares of cropped area and killed over 31,000 livestock in India and flooded over 23,000 acres of cultivated land in Sri Lanka.<sup>10</sup> In Thailand, the tourism

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<sup>5</sup> The phrase "build back better" is taken from the subtitle of the UNDP report of activities one year after the Tsunami: (UNDP, 2005). This phrase is being used by a number of organizations to indicate the opportunity for development in the wake of disaster. Similarly Oxfam is using the phrase: "'reconstruction plus'; i.e., seeking to help poor communities to escape the poverty that made them so vulnerable to natural disasters in the first place" (Oxfam, 2005)

<sup>6</sup> These 12 countries included Indonesia, Sri Lanka, India, Maldives, Thailand, Myanmar, Malaysia, Somalia, Tanzania, Seychelles, Bangladesh and Kenya (Jaffe et al, 2005)

<sup>7</sup> Reported deaths vary according to sources, many exceeding 200,000 dead. The figures quoted here are those accepted by: UN-OSE, 2006b

<sup>8</sup> UN-OSE, 2006a

<sup>9</sup> UN-OSE 2006a

<sup>10</sup> UN-OSE 2006a

sector lost more than 120,000 jobs and estimates suggest tourism industry losses of around US\$ 25 million per month.<sup>11</sup>

The devastation caused by the Tsunami is difficult to put in perspective. What was unavoidable? What could have been prevented? Under what circumstances? The Tsunami's impacts are further elaborated below – contextualized in relationship to the vulnerabilities that caused them and strategies that could mitigate similar effects in the face of future hazards.

## **A Typology of Resilience Illustrated by the Tsunami**

The scale and scope of the Tsunami allow, even necessitate, analysis of the event at both broad and thematic as well as local and specific levels in order to generate meaningful lessons learned. The Tsunami resulted in devastation across an array of national and local realities characterized by differing economies, politics, socio-cultures, and built and natural environments. Each context is varied and nuanced, and warrants individual attention and tailored strategies for disaster response and recovery. And yet, examining themes across affected regions adds insight to understanding vulnerability as a societal condition that can be mediated.

This case study presents a schema for understanding vulnerability as it relates to disaster and the Tsunami in particular. Vulnerability here is defined to be: the conditions determined by physical, social, economic, and environmental factors or processes, which increase the exposure and susceptibility of people to the impact of hazards. The human, economic and structural consequences of the Tsunami, especially those which persist today, are the result not of natural forces alone, but the intersection of natural forces with the social, political, economic, and physical landscapes of human settlements. Absent sufficient mitigation, these encounters resulted in risk and loss. The meetings of these forces are neither static nor given, but rather, they are dynamic processes bound to time, space and particular articulations of each force as it interacts with others to produce types of exposure.<sup>12</sup>

Tracing back the processes that resulted in loss to their root causes helps to better understand vulnerability and the production of disasters. In the case of natural hazards, vulnerability is related to resilience, defined as “the capacity to adjust to threats and mitigate or avoid harm,”<sup>13</sup> Resilience reduces, or improves capacity to manage, vulnerability. When aspects of resilience are weak, hazardous events produce avoidable or mitigatable consequences. Classifying resilience into human security, physical, and institutional states of preparedness assists in linking a disaster's consequences to one or more aspects of resilience, and in distinguishing interaction among them. Additionally, the relief and recovery processes that took place and are under way in Tsunami-affected areas reveal another type of weakness – vulnerability to assistance – which comes to light post-disaster and has implications for recovery and future vulnerability. Each of these aspects of resilience is discussed below, along with examples of how they are being addressed in Tsunami recovery work.

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<sup>11</sup> *Ibid*

<sup>12</sup> Pelling, 2003

<sup>13</sup> Payne, 1997

## **a. Preparedness**

### ***Human security preparedness:***

Human security preparedness refers to the ability to protect the health and bodily integrity of people exposed to hazards. Indicators of human security preparedness might include basic emergency self-protection knowledge, having emergency food stores, medical supplies, medical response teams, and search and rescue teams. It would encompass zoning of dangerous areas to keep people out. Identification of and effective protection plans for vulnerable groups during and after a hazardous event would also achieve this end. Human security preparedness is associated with poverty levels and development in that it relies on food and supply surpluses to meet the needs of populations in crisis. Inadequate human security preparedness would lead to high death and injury tolls both during a hazardous event and in its aftermath and losses in economic growth and productivity.

During the Tsunami, a critical lack in human security preparedness meant staggering human losses among many sub-groups of populations; women made up one of these most vulnerable groups. Evidence from Aceh province, Indonesia, Cuddalore, India and Sri Lanka indicate marked fatality imbalances between females and males, on the order of three, and even four, to one.<sup>14</sup> Though experiences across the affected areas vary, this disproportionate burden was related to women's human security vulnerability and socio-economic and cultural systems. Many more women were exposed to the force of the Tsunami because they were at home in unsafe areas undertaking traditionally female activities such as cooking and care-giving, or were by the sea, waiting for fisherman to bring in fish for the market, or bathing.<sup>15</sup> Women also had more difficulty escaping the Tsunami because they did not have the strength and/or skills to climb trees or swim, and some were restricted by their traditional clothing. Still more stayed in harms way while trying to assist others.<sup>16</sup> In the aftermath of the Tsunami women face difficulties accessing assistance and regaining their livelihoods as relief aid is often disbursed based on property ownership, a case in which women whose husbands perished or went missing often became invisible. The same can be said for restoration of economic livelihoods, as quantifying women's economic activities – often informal – is difficult and sometimes unrecognized.<sup>17</sup> Forms of abuse and neglect, including sexual exploitation and violence in temporary shelters, as well as the lack or destruction of critical facilities and services such as for birthing created still further threat to human security.<sup>18</sup> In all of these instances women's ability to be prepared to defend their lives were impaired, and worsened still, by poverty.

The ways the Tsunami exacerbated weaknesses in women's human security preparedness emphasize the obligation to not only work harder to help women access the recovery assistance they need, but rather to address these underlying weaknesses as a means to prevent another disaster with similar impacts for women (and other vulnerable groups such as children, the elderly, and local marginalized and poor groups). Initiatives to strengthen human security might include re-establishing female livelihoods, enforcing gender equality in land

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<sup>14</sup> Oxfam, 2005a

<sup>15</sup> *Ibid*

<sup>16</sup> See UN-OSE, 2006c

<sup>17</sup> See UN-OSE 2006c; Tata Institute of Social Sciences (TISS), 2005

<sup>18</sup> In Aceh province, 41 of the 51 regional centers with reproductive services were damaged. In Maldives, hundreds of pregnant women lost access to delivery facilities (UN-OSE 2006a; Oxfam 2005b).

titling, ownership and inheritance rights, and creating opportunities for women to participate in decision-making processes.<sup>19</sup>

Many governments post-Tsunami took steps to incorporate and attend to women's special needs, generating job sources for women and opportunities to organize for the first time within their communities: for example, the creation of an emergency center with programs specifically targeting women and children in Indonesia, stationing female fire officers, police officers, and doctors in IDP camps in India and establishing a trust-fund for women's welfare activities in Sri Lanka.<sup>20</sup> Targeting and incorporating population subgroups, and addressing the root causes of their poor human security preparedness can both empower them to resist future hazards, and contribute further to overall development.

Children are another group the Tsunami hit hard, and are one group for whom efforts are being made to "build back better." In Sri Lanka, the UNICEF 'child-friendly school' approach is being employed to improve educational opportunities for children beyond levels pre-Tsunami.<sup>21</sup> Many children in Sri Lanka and other countries lost one or both parents, or had parents whose livelihoods were washed away. In losing those protective support structures, and the destruction of others (such as schools and health facilities) these children's human security and vulnerability to future hazards has increased. Zahira College in southern Sri Lanka saw 100 students, the principal, and five teachers die and 90 students lost one or both parents. Though the school is operating on relief supplies, by early 2007 a new facility with more space for recreation and computing, a library, separate girls' and boys' bathrooms, and boarding facilities for teachers will provide more support and prospects for children.<sup>22</sup> Zahira College's Vice Principal asserts: "I'm very happy with the new plans for the school. The parents are happy too because it means a better environment and facilities, in which their children can receive a better education. We're also able to increase our student intake by 100 students because we will have more classrooms." This UNICEF program is building twenty-six 'child-friendly' schools are being built in Sri Lanka,<sup>23</sup> meaning the next generation has more opportunity to achieve human security preparedness – to be aware of hazards, more knowledgeable about how to mitigate them, and with more means to do so.

### ***Physical preparedness***

Similar to protecting people, the built and natural environments' ability to withstand hazard indicates levels of physical preparedness. When physical structures, such as buildings, water and sanitation infrastructure, communications systems, transport networks, levees, and dams collapse, not only can cause immediate loss of life occur, but significant other costs are generated and recovery inhibited, including losses of shelter and livelihood options for affected populations, GDP, and ability to respond and recover. A lack of sufficient infrastructure and insufficient attention to protecting infrastructure design, operation and maintenance compromises physical preparedness. The state and existence of redundant infrastructure – generators, roads, vehicles, for example – also contributes to physical preparedness for disaster by virtue of being prepared for infrastructure failure. Protection of, and harmony with, the natural environment similarly falls under the rubric of physical preparedness.

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<sup>19</sup> UN-OSE 2006c

<sup>20</sup> *Ibid.*

<sup>21</sup> Mitchell 2005, p.25

<sup>22</sup> Mitchell 2005 and DFID, 2005

<sup>23</sup> Mitchell 2005, p.25

The phenomenal physical damage that occurred as a result of the Tsunami indicates poor physical preparedness in affected areas. In Indonesia, for example, the Tsunami wasted already poor infrastructure, increasing the event's casualties, and hindering relief and recovery. Before the Tsunami, 67 per cent of roads were damaged. This figure increased to 72 per cent after, and overall Aceh saw almost 100 per cent of local GDP in physical costs.<sup>24</sup> Infrastructure damage in Thailand, including piers, bridges, culverts, roads, dykes and public utilities came to more than US \$26 million. Total shelter losses across India, Indonesia, Sri Lanka and the Maldives numbered over 580,000 houses (severely damaged or destroyed).<sup>25</sup> The built environment could not resist the Tsunami's force, leaving victims unprotected – without shelter, safe water, communication, or access to help.

Though historically, “there remains a tendency to reconstruct the physical fabric of the city to a pre-disaster standard, thereby recreating physical vulnerability to future risk,”<sup>26</sup> the Tsunami proved the need to break this mold. In the face of future hazards, physical preparedness must be improved in order to reduce vulnerability. For the over 200 inhabited islands of the Maldives this need is most evident – flooding during the Tsunami engulfed up to 40 per cent of the land and the economic impact is estimated at 62 per cent of GDP.<sup>27</sup> Infrastructure damage represented a significant portion of the losses on 104 of the islands from social service infrastructure such as schools and health facilities to transport, electricity, and sanitation.<sup>28</sup> Much of this infrastructure is critical to daily life: “Safe harbours and jetties allow children to go to school and the sick to travel to atoll clinics... More importantly, these structures are the backbone of economic activity on most islands.”<sup>29</sup> Taking seriously the disaster's implications, the Maldives government is incorporating improving physical preparedness as a vital aspect of recovery plans: “The Government has developed a strategy for increasing the safety of island communities by redesigning the physical development features of islands and incorporating measures such as wider environmental protection zones, creating elevated areas for vertical evacuation in the event of floods, and providing easy access in emergencies.” Beyond that, the government is offering land, housing, and services to promote community relocation to safer areas.<sup>30</sup>

The scale natural hazard risks made clear by the Tsunami dictates the need for more structural flexibility and resilience. In the Maldives, as in other Tsunami-affected countries, advancing physical preparedness of infrastructure can improve resistance to future disasters.

### ***Institutional preparedness***

Institutional preparedness operates at both the individual and collective levels, and refers to the capacity to understand risk and hazard, particularly in terms of potential scope and scale, and for effective mitigating action before, during, and after a hazardous event. Education and awareness-building advance institutional preparedness, and can promote risk reducing behaviors. Poverty and inequality, as well as limited socio-spatial and other data on populations often produce uneven institutional preparedness for individuals and communities,

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<sup>24</sup> James Lee Witt Associates, LLC., 2005, p.10

<sup>25</sup> UN-OSE, 2006d

<sup>26</sup> Pelling 2003, p.35

<sup>27</sup> James Lee Witt Associates, LLC 2005, p.13

<sup>28</sup> Ministry of Planning and National Development, 2005, p.5

<sup>29</sup> UNDP 2005a, p.13

<sup>30</sup> Ministry of Planning and National Development 2005, p.5



and impede application of preparedness measures by governments and other coordinating bodies.<sup>31</sup>

*“The official in charge of Indonesia’s new tsunami-warning system told TIME that his office received an email warning from the PTWC [(Pacific Tsunami Warning Center)] on the morning of Dec. 26 but failed to see the message until the following day... [He] was not at work on that fateful morning. Thai officials, meanwhile, knew that a big quake had occurred.... But the duty officer [at the Seismic Monitoring and Statistic Center in Bangkok] concedes that there was no sense of urgency. ‘The earthquake was far away,’ he says. ‘In the past 1,000 years we’ve never had a tsunami, so why should I issue a warning for one?’”<sup>32</sup>*

Institutional preparedness was varied with regard to the Tsunami. Few organizations imagined that a Tsunami-like disaster could actually happen, and that secondary and tertiary effects and complexities could be so devastating and far-reaching. Although the tsunami was identified, early warning did not reach communities at risk.<sup>33</sup> Time could have saved lives in India had warnings been issued, as the Tsunami took two hours to make land there after striking Indonesia,<sup>34</sup> but there were no established communication networks or organizational infrastructure to deliver the warnings to the people at the coast. Lacking experience with tsunamis themselves, individuals did not recognize or act upon the simplest and most essential warning signs – retreat of sea, unusual tide currents, or the small forerunning wave.<sup>35</sup> Even as the disaster was unfolding, *“the immediate couple of hours after the tragedy, the nature and extent of the devastation were incomprehensible to all the actors save the affected... In Kanyakumari district [in Tamil Nadu, India], the situation was compounded by the fact that... much of the official machinery could not be kick-started as key officials were away for Christmas.”*<sup>36</sup>

Beyond capabilities of anticipation, communication and coordination, institutional preparedness includes protecting national and local livelihoods: “Livelihood instability can exacerbate vulnerability just as the hazard impacts experienced by vulnerable populations are likely to undermine livelihoods.”<sup>37</sup> Facilitating a quick recovery after a hazardous event means minimizing employment losses and sectoral damage. The dependence on a few large industrial sectors – fishing, agriculture, and tourism – for the majority of employment in Tsunami-affected localities, and the lack of protection of those industries against such a hazard, compounded the devastation – not only causing large economic losses but also the inability to regain normalcy and recover afterward. In Somalia, *“50 per cent of the affected population was left in need of sustained resource transfers in the form of cash and/or food assistance until the next fishing season.”*<sup>38</sup> Almost 75 per cent of the total fishing fleet was damaged or destroyed in Sri Lanka where artisanal fishery is an important source of fish for

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<sup>31</sup> See Tata Institute of Social Sciences (TISS), 2005, for discussion regarding lessons on exclusion in relief and rehabilitation processes from the Tsunami experience in Tamil Nadu, India

<sup>32</sup> Elliot, 2005

<sup>33</sup> Dickson, 2005

<sup>34</sup> Elliot, 2005

<sup>35</sup> Tsunami Laboratory, n.d.

<sup>36</sup> Tata Institute of Social Sciences (TISS), 2005, p.3

<sup>37</sup> Pelling 2003, p.163

<sup>38</sup> UN-OSCE, 2006a

local markets and industrial fishery is the major economic activity.<sup>39</sup> Environmental damage to reefs and changes in winds, currents, and populations of fish were also reported.<sup>40</sup>

*“The 2004 Asian tsunami tragedy demonstrates that formal and informal institutions with the capacity to respond to rapid change in environmental and social conditions are a key to mitigating the social effects of extreme natural hazards.”*<sup>41</sup> The economy is one such institution. The over-reliance on a few economic sectors proved to be a vulnerability in the Tsunami. However, there have been efforts during the recovery process to reduce this type of vulnerability in the future – by creating opportunities and training for alternative employment. The International Labor Organization (ILO), along with organizations such as the International Confederation of Free Trade Unions-Asia Pacific Regional Organisation, is doing this by setting up Vocational Training Centers (VTCs) in many affected areas. VTCs are being implemented in areas such as Nagapattinam and Kanyamukari districts to focus on incense stick production and computer skills training – activities which were brought into being through community consultation and pilot projects with local organizations:

*“The temporary halt in fishing activities after the devastating tsunami proved to be financially disastrous for the fishing hamlets of Pudupattinam and Oyalikuppam in Kalpakkam, Kanchipuram District, Tamil Nadu. It was in this situation that the fisher women expressed their desire to undergo skills training in an alternative income generating activity. Following consultations with members of the local community in Kalpakkam including women workers, the ILO initiated a pilot incense stick training unit through its project partner, the Indian National Rural Labour Federation (INRLF) in February 2005. An open training camp was held in Kalpakkam in February 2005. Selected beneficiaries were then trained in the pilot skills development units in Pudupattinam and Oyalikuppam hamlets...”*<sup>42</sup>

The initial pilot projects trained 136 fisher women between February and July 2005. In response to women’s requests a production unit was subsequently set up and 50 women went to work producing incense sticks.<sup>43</sup>

In India, *“the construction of the VTCs is, on the one hand, part of the overall strategy to make the resource base for the fishing occupation more sustainable by reducing the current over-fishing and improving practices. On the other hand, it should relieve the pressure on the fishermen community by encouraging them to find alternative employment.”*<sup>44</sup> Similarly, among the ILO’s efforts in Banda Aceh, Indonesia is implementing courses targeted towards young people who want to get training in starting and improving their own business (SIYB), English language, construction, and exclusive trainings for 15-17 year olds in furniture-making, sewing and embroidery, and computer skills.<sup>45</sup> These efforts to diversify Tsunami-affected area economies can increase institutional preparedness by lessening dependence on traditional major employment sectors, making the effects of future hazards less devastating.

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<sup>39</sup> *Ibid*

<sup>40</sup> Tata Institute of Social Sciences (TISS), 2005, p.15

<sup>41</sup> W. Neil Adger et al, 2005

<sup>42</sup> Swayam Shikshan Prayog, 2005

<sup>43</sup> *Ibid*

<sup>44</sup> UNTRS, 2006

<sup>45</sup> ILO, 2005

## b. Vulnerability to Assistance

Beyond preparedness at country and community levels, an additional dimension of vulnerability deserves attention: vulnerability to assistance. Though in some ways it might be accurately classified as another type of institutional preparedness, what is identified here as vulnerability to assistance deserves attention as a distinct issue.

The international community's response received praise for the unprecedented aid sent to assist Tsunami relief and recovery; however, it also drew criticism for lack of coordination, supply-driven irrelevant or redundant activities and inputs, competitive 'bidding' for client-victims and, poor understanding of community needs. The deficiencies in the above-described aspects of resilience (human security, physical and institutional preparedness) exacerbated by tsunami losses made many affected communities dependent on the international community to deal with the disaster's consequences. While international assistance was welcome and needed, its mode of delivery became problematic and can be interpreted as an additional source of vulnerability.

In response to the colossal destruction, the world is implementing the largest-ever reconstruction effort, including 124 international NGOs and 430 local NGOs, donor and UN agencies.<sup>46</sup> Tsunami aid across the world reached over US\$ 13.5 billion.<sup>47</sup> Yet the rush to use donations meant, in many cases, that local populations were never consulted on what and how they wanted the resources spent.<sup>48</sup> Without sufficiently consulting local populations, misunderstandings of needs and strategies to meet them ensued. For instance, 25 per cent of donated fishing boats were "too narrow or unstable" for local fishermen to use.<sup>49</sup> In other cases, "it is feared that this lack of community involvement and participation could lead to divisions and tensions in the community when the time comes to allocate houses to individual families."<sup>50</sup> Moreover, the potential for malpractice is realized when contractors are not monitored, for instance, in housing reconstruction. Tsunami survivors in Tamil Nadu complain, for example, that house construction quality has been compromised by using cement mixed with sea water.<sup>51</sup> In such cases the communities nominally being aided have little ability to do more than air their grievances, provided they recognize them. In the end, people may be forced to accept the 'help' that is offered though their vulnerability to the next hazard may remain the same, or even become worse.

Aloysius James and Max Martin on the Medico International website explain the disconnect between international NGOs and local communities:

*"NGOs in general show a failure in translating their policy-level knowledge into field-level action. For instance, at a recent meeting of our partners, not a single participant had a clear idea of the Sphere standards."<sup>52</sup> Such a lack of understanding of standards and values in field level can be dangerous as it makes the relief and rehabilitation processes prone to ad hoc decisions and ineffective*

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<sup>46</sup> Steer, 2005

<sup>47</sup> Tsunami Evaluation Commission, n.d.

<sup>48</sup> See TISS 2005, 10.

<sup>49</sup> J. Vasagar, "Tsunami Relief Swept Locals Aside, Study Finds," in [The Guardian](http://www.theguardian.co.uk), July 15, 2006, np. Available at: [www.theguardian.co.uk](http://www.theguardian.co.uk).

<sup>50</sup> Tata Institute of Social Sciences (TISS), 2005, p.11

<sup>51</sup> *Ibid*, p.11

<sup>52</sup> The Sphere Project was launched in 1997 by a group of humanitarian NGOs and the Red Cross and Red Crescent movement. The Sphere Project believes in alleviating human suffering arising out of calamity and conflict and assisting those affected by disaster based on their right to life with dignity and therefore right to assistance.

*action. Surprisingly, substandard work – including unlivable shelters with no drainage or toilets – passes the test of international donor agencies as well.*<sup>53</sup>”

Despite efforts of the UN Office for the Coordination of Humanitarian Affairs (OCHA) to delineate the overall coordination of humanitarian organizations in Banda Aceh, for example, the number of actors involved complicated the task. OCHA proposed arranging the humanitarian organizations under their umbrella and that the government would indicate the areas that needed more resources. However, this system proved to be confusing and difficult for NGOs to follow. With little incentive to do so, many organizations preferred to guide their own actions according to their own mandates, failing to share information, at times duplicating efforts, and neglecting concerns such as environmental and security issues.<sup>54</sup>

Fortunately, international and national bodies from governments, the private sector, and NGOs are responding to the criticism met by failures in coordination. The development of international aid tracking systems is one method that seeks to streamline and improve accountability in international assistance.<sup>55</sup> In Thailand the Thailand International Development Cooperation Agency (TICA), with support from UNDP, has implemented the Development Assistance Database (DAD) website (<http://dadthailand.mfa.go.th>). This government owned and TICA managed clearinghouse for information on technical assistance projects in the country is designed to aid long-term recovery by keeping updated information on technical assistance projects: *“DAD Thailand allows ministries, local government organizations, bilateral partners, the UN, NGOs, the media and the public to access information such as allocation of aid by sector, district, international partner and implementer. It includes information about projects from UN agencies, international financial institutions, bilateral partners, national and international NGOs, as well as the private sector.”*<sup>56</sup> By improving information availability and consolidation, DAD provides the opportunity to identify unmet needs and redundancy, make informed decisions about priorities, and coordinate among actors at different levels.<sup>57</sup> Indeed Maldives, Indonesia and Sri Lanka have also instituted DADs, and the Regional Tsunami Resources and Results Tracking website (<http://tsunamitracking.org/undprcb/>) allows for access to each country’s individual DAD and offers regional perspective.<sup>58</sup> If DAD is adequately maintained, it can serve as both a platform and a guide for effective coordination of future hazard reconstruction efforts, thereby reducing each country’s vulnerability to assistance.

## Conclusion

The manifestation of acute vulnerabilities as a result of the Tsunami revealed the world’s need to better understand vulnerability to disaster and how to improve resilience. The Tsunami disaster was not a catastrophic anomaly, but rather a looming prospect linked to failures in resilience, and more specifically, weak human security, physical, and institutional preparedness and the interaction of these weaknesses. In its wake, the consequences of vulnerability to assistance are similarly critical. Capacity to recover is enhanced or impaired by relief aid delivery, as communities needing aid often have little choice but to accept assistance regardless of its relevance, effectiveness, or efficiency. When this aid, for example, neglects to address key problems or stakeholders, or fails to coordinate, such limitations may

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<sup>53</sup> Von Aloyius and Max, 2005

<sup>54</sup> Canny, 2005

<sup>55</sup> UNDP, 2005b

<sup>56</sup> *Ibid*

<sup>57</sup> *Ibid*

<sup>58</sup> <http://tsunamitracking.org/undprcb/>

transfer to those being helped. The weaker communities' resilience, the more vulnerable to assistance they are likely to be.

As the Tsunami recovery process continues to unfold, efforts increasingly aim to build back better. There are signs of success: many small communities now have a healthcare center or a school for the first time. Activism and leadership are empowering women. Children too are recognized, often for the first time, as stakeholders in many processes.

There are challenges too. There is a balance to strike between ideals and realities, as unintended consequences may create additional vulnerabilities where they did not exist before:

*"...It has been seen that the donor and implementing agency ideals regarding equity and social norms, and the desire to use disaster as a window of opportunity to bring about social change, have often resulted in the designing and implementation of programmes that are unsuitable to and do not address the true needs of the community. For instance, fishing labourers [in Tamil Nadu] have been provided with boats with the objective of bringing about social change by enhancing their economic foundation. While this objective in itself is laudable, the fact is that it has led to a proliferation of boats, and an associated net deficit in fishing crew, resulting in older boys being pulled out of school to work on the boats."*<sup>59</sup>

Australian Council for International Development (ACFID), an independent national association of Australian Non Government Organizations working in international development, stresses interaction with local populations in any disaster relief and reconstruction effort: The key element in disaster areas is to listen to the views of the local community, especially on sensitive issues such as land use, relocation of communities and large infrastructure projects.<sup>60</sup> Individuals and communities bear the practical burden of disaster, and strategies must be consonant both with larger development goals and local immediate needs, not create contradictions between them.

This case study has explored post-Tsunami opportunities to redress vulnerability through reconstruction and rehabilitation, going beyond the pre-disaster status quo. This experience highlights the importance of better infrastructure and planning to withstand or minimize future disasters, the urgency of effective warning systems and the means to disseminate alerts, and the need for education from individual to institutional levels on natural disasters and their mitigation to promote resilience. To the extent that Tsunami recovery sets benchmarks for "building back better," capabilities to mitigate risks to future catastrophes will be improved the world over. More than seeking to control human exposure to hazardous natural events by managing or building barriers against nature, preparing the different social, political, economic, and physical landscapes to work together in the face of hazardous events and in their wake provides the most promise for security in complex and changing urban environments.

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<sup>59</sup>Tsunami Evaluation Commission, n.d., p.43

<sup>60</sup> Australian Council for International Development (2005)

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