

A Reconstruction Opportunity

A tsunami response in Sri Lanka

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Disclaimer: The opinions expressed in this article are mine, though they may have been developed in concert with numerous colleagues. I am solely responsible for errors and omissions and I do not speak for the Department of the Navy or the Department of Defense.

Ten days after the 26 December 2004 tsunami killed several hundred thousand people around the Bay of Bengal, I led a small team into Indonesia to lend support to both the US military relief operations aboard the aircraft carrier USS Abraham Lincoln and the UN relief agencies working on the devastated beaches of Banda Aceh in northern Sumatra.

The emergency response task was enormous. The earthquake and tsunami just west of the Sumatran coast had affected a large portion of the island's coastline, from Padang on the low western coast, up and around the northern tip past Lhokseumawe into the Strait of Malacca. The earthquake, at magnitude 9.3, was the second largest ever recorded by a seismograph (second only to a 9.5 in Chile in 1960). It occurred along a fault line that was later found to be nearly 800 miles long, arching from Indonesia north toward Bangladesh. The instantaneous vertical slip of nearly 30 feet along the Burma plate was large enough to cause massive tsunamis that propagated in an east-west direction. Waves came crashing ashore on Sumatra at heights of up to 100 feet mere minutes after the earthquake. The low-lying areas in the Bay of Bengal to the north and south (Bangladesh and Diego Garcia, for example) were largely spared, but the waves destroyed large swaths of coastal settlement in Indonesia, Thailand, Sri Lanka, and south India, and they caused measurable damage on the east coast of Africa nearly five-thousand miles from the epicenter.

A large portion of the Indonesian loss was in the northern Special Territory of Aceh, a region that had been closed to outsiders for more than twenty years due to a civil insurgency that arose in 1977. Initial casualty reports from late December 2004 put the deaths in the Aceh area in the many tens of thousands with at least as many displaced. As the later reports came in the death toll in Aceh Province alone rose to well over 100,000.

All told more than 200,000 South Asians died that day, making the event one of the worst natural disasters in recorded human history. But even beyond the heavy toll on human lives, the Bay of Bengal earthquake and tsunami caused an enormous environmental impact which will affect the region for many years to come. There are initial survey reports that the Boxing Day Tsunami inflicted severe damage on multiple complex ecosystems including mangrove swamps, coral reefs, coastal hardwood forests, coastal wetlands, sand dunes, coastal river systems, and tidal rock formations. Further environmental threats include the spread of solid and liquid waste, with industrial chemical dispersion causing further groundwater pollution, plus the destruction of sewage collectors and treatment plants. These second-order effects have serious consequences in the rebuilding of the affected societies, including the economic cost incurred with the loss of several thousand banana and mango farms. That discussion must be left to another essay.

Some of this was evident to each of us during the response. While working in tents two blocks from the edge of the tsunami's destruction, we began discussing with colleagues the rebuilding of the damaged areas and the options for sustainable and resilient reconstruction that are now, in 2005, available for Aceh across multiple sectors: water, food, shelter, energy, communications, security, health care, transportation, economics, perhaps a little agriculture, and maybe a few others. It seemed that Aceh might be an appropriate site to try a more sustainable level of reconstruction, particularly since we had a somewhat unusual demographic to work with - a forcibly isolated society with little exposure to the west over the past 25 years and active opposition to our presence from the host nation. As it happens, however, the opportunity for interesting reconstruction has come from elsewhere.

I returned from Indonesia to my ranch outside Olympic National Park in Washington near the end of January and began conversations on the topic of sustainable reconstruction with colleagues around the globe using email and Skype. My trip report, built with extensive support from my team members and experienced friends, culminated in our recommendation for a permanent organization to bridge the civil-military boundary in the field during a disaster response. Our thought is to establish a small field organization supporting both external efforts, civilian and international military, in a common humanitarian purpose and chartered to provide collaborative communications capability in three areas: disaster logistics support, multi-agency coordination, and public health. That, too, is another essay, but the idea has traction within the international community and helped stimulate the reconstruction conversation around the world.

After a few weeks of discussing the reconstruction possibilities electronically I went to Snowmass to meet with Amory Lovins and the staff of RMI. We then went together to speak in a public forum on the subject of tsunami relief and reconstruction at the Given Institute in Aspen. A few days after that public lecture (which contained almost 100 photographs from Banda Aceh to help illustrate the issues), I received a note that a supporter of RMI had seen the presentation and had decided to help rebuild a single village he'd chosen at the southern tip of Sri Lanka and would we please consult with one another and describe what should be done?

Although all of our tsunami experience was Indonesian, we knew others who had worked in the Sri Lankan relief effort so we were able to support the request through contacts. I'll note, though, that we clearly recognized that such a question is a rare and remarkable opportunity and each of us began an active discussion about cultural norms and reasonable possibilities.

The accompanying photographs help illustrate the depth and complexity of the problem. Like Aceh, Sri Lanka, too, has been enmeshed in a civil war for factional independence, pitting the minority Tamils against the dominant Sinhalese. The Hindu LTTE (Tamil Tigers) have wanted an independent state since 1983. Casualties have been high, roads have been restricted, landmines are common, and both sides lost villages in the tsunami.

So, with such an opportunity for resilient and sustainable reconstruction in a complex and foreign environment, what capabilities should be brought to bear?

First need, in our view, is a better understanding of the environment to be rebuilt. Who are the villagers? How were they linked to the world before? What do they know? What do they want? What capabilities were present before? What capabilities were lost? What is the community already rebuilding because a prolonged loss was intolerable? What does the

community think is desirable as a longer-term goal for development and integration with the region and the rest of the world?

The small fishing village in the extreme south of the Sri Lanka that was selected by the donor for reconstruction has a current population of about 1200 and its physical infrastructure was essentially destroyed. A few months have already passed so, if we were to begin now, what could we do?

In my opinion our core model should be Gaviotas, a settlement in the eastern llanos of Columbia founded by Paolo Lugari - another friend of RMI and a man who's developed a gorgeous example of the possible. Gaviotas started with empty prairie and a firm conviction and, through sense, clear vision, courage, cooperation, and persistence, it has become a font of innovation, optimism, sustainability, recovery, and peace. Gaviotas has also begun an incidental restoration of the Amazon rainforest in the middle of a dry scrubland as a purely unintended consequence of Right Livelihood. That's an appealing model.

And in Sri Lanka, we'd first want to talk with the villagers and discover what locally viable techniques already known to them could help establish a similar sustainability and resilience. We'd then want to discuss principles from Janine Benyus in "*Biomimicry*", rebuilding with low energy flows, sunlight and wind for power where it's feasible, local materials and local construction, closed loops, and comprehensive recycling. We might consider layering the reconstruction as we see layering in recovering forests, from simple, linear, temporary Type 1 through to densely interconnected and self-sustaining Type 3.

We'd want to re-build using knowledge from Stephen Kellert and "*Biophilia*", including principles of natural ventilation, enticement, prospect and refuge, dynamic and diffuse daylight, and local materials (like bamboo) that make sense for local construction. We'd want to learn still further from the sterling habitation examples developed by Cameron Sinclair and Architecture for Humanity. His organization has done superb work on developing indigenous HIV clinics in central Africa using local knowledge enhanced by international consultation and competition.

We'd want to incorporate the lessons we've learned from Sanjana Hattotuwa of InfoShare, a Sri Lankan NGO deeply involved in cultural and political peace-building in Sri Lanka through the collaborative inclusiveness of all-faction conversation. Info Share's techniques of Online Dispute Resolution and the One-Text process they have developed with Hannes Seibert of the Nobel Peace Prize Foundation help competing opinions see areas of agreement and compromise (and occasionally persistent disagreement), defusing tensions and encouraging a spirit of multi-lateral cooperation. As Sanjana describes it that, in turn, reduces "spoiler dynamics".

We'd want to ensure resilience. We'd want to introduce the possibility of robust LED lighting from Carmanah in Canada, solar power from a number of good sources (particularly Steve Troy's international team at Sustainable Village), further shelter assistance from Bernard Amadei and Engineers without Borders, communication and public health surveillance on the Peruvian model developed by Paul Meyer and Voxiva, and synthetic planning through Alexis Karolides of RMI's Green Development Systems. And there is much more.

The depth and breadth of the rebuilding within this small fishing village in Sri Lanka will center around the desires of that informed indigenous population. No aspect is more

important than the wishes of the population served but, like any democracy, the δειμος must be informed in order to make responsible decisions. Our early task, therefore, must include teaching the range of the possible. Many sectors can be addressed, but perhaps not all will be wanted. Housing? Power? Lighting? Potable water? Micro-industry development? Economic restructuring? Education? Healthcare delivery support (particularly Maternal-Child Health, nutrition, and post-traumatic stress disorder counseling on the Sambhavna Clinic model at Bhopal run by Sathyu Sarangi)? Fungal micronutrient and immunological supplementation as Paul Stamets can do so well? Communications (including Worldspace, portable and local AM broadcasts, satellite access to the internet on a BGAN, medical consultation from Peter Buxton's Axon model out of Sierra Leone and Nepal, SMS messaging for information sharing from both GSM and Thuraya sat/cell phones, and the Pony Express relay server model for austere-environment communications developed by Robert Kirkpatrick)?, clean water and flowers from sewage through John Todd's "Living Systems"?, indigenous resource survey and development support as described so well in CK Prahalad's "The Fortune at the Bottom of the Pyramid"?

As I've consolidated advice over the past month these seem the best options on the planet for acutely helping those in urgent need. These are solutions that are both culturally appropriate and that help disconnected populations begin to share in the benefits from efforts already done well elsewhere. As I've re-learned, the range of good ideas is breathtaking and while they have each been tried in the field somewhere, it has not been as a synthetic and integrated whole. But we could here. We know enough to start, and the results might be worth studying.

In my view, this is where we could go. With respect and conversation, we can bring a village shattered by natural disaster back from the abyss in ways they find acceptable using sustainability principles, proven models from the Global South, current technology, cultural intelligence, political sensitivity, collaborative approaches, educational efforts, global participation, and local personal energy. We have a chance to establish a remarkable model of post-disaster reconstruction, well-worth long-term study and iteration, and the ripples we create might propagate farther than we imagine.

We intend to start within weeks.

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