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**REGIONAL WORKSHOP
on
Post-Tsunami Sustainable Livelihoods and Coastal
Ecosystem Management**

**Asian Institute of Technology
Bangkok, Thailand**

February 18-21, 2008

**A Workshop Hosted by the USAID Post-Tsunami Sustainable Coastal
Livelihoods Program**

Proceedings Report

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Executive Summary

The December 26, 2004 tsunami prompted an outpouring of donor assistance to affected countries in the region. This included Thailand, where the USAID Office of Regional Development Mission/Asia funded the *Sustainable Coastal Livelihoods* (SCL) project to help coastal communities rehabilitate their livelihoods, make their communities more resilient to natural hazards, and adopt livelihood practices that use natural resources more sustainably.

A hallmark of the SCL project was the exchange of learning and best practices on these topics. The project's final learning workshop—which focused on such exchanges—is the topic of this report. Its dialogue centered on four themes:

- Sustainable fisheries and aquaculture
- Livelihood development among coastal residents
- Coastal management capacity development
- Community-based disaster risk management

For each theme, the workshop sought answers to questions about: 1) unresolved issues relating these topics; 2) changes needed to bring about positive change; and 3) enablers and barriers to making change happen. Selected examples of outputs from the dialogue on each theme follow.

Sustainable fisheries and aquaculture
Unresolved issues that span both activities are overdevelopment beyond carrying capacity levels, the need to adopt best management practices, and the need to improve post-harvest processing and marketing. One way to improve fisheries is the use of co-management regimes; while aquaculture could be improved through improved extension services. Meanwhile a barrier to making fisheries and aquaculture activities more sustainable and resilient to the impacts of natural hazards is a lack of access—access to credit, markets, and post-harvest facilities.

Livelihood development among coastal residents
A recurring issue is the lack of knowledge and interest by locals in business entrepreneurship and the concepts of markets, savings and profits. One approach to ensuring more successful livelihoods is to conduct feasibility assessments of local demand, markets, and business interest before introducing new livelihoods to a community. Even when interested "entrepreneurs" are identified, one barrier to progress can be the uneven access to capital and technical assistance for the new livelihood.

Coastal management capacity development
Two inter-related issues that slow the progress of developing capacity for coastal management are: 1) an inadequate coordination among agencies and between levels of government, and 2) inadequate sharing of emergency information amongst the same groups. On a positive note, there is increased awareness of the need to address these issues and to create institutional mechanisms to support such coordination. Unfortunately, under the current agency framework, there also exist jurisdictional issues that may impede such coordination.

Community-based disaster risk management
One unresolved issue is the need to develop hazard policies and regulations and clarify the roles and responsibilities of governmental and nongovernmental agencies alike in hazard management. One way to improve disaster risk management is through increased participation of the community in local government decision-making in land-use planning, while a potential barrier to greater progress is a lack of community understanding of the breadth of issues involved.

Introduction

The December 26, 2004 tsunami caused tremendous loss of lives and damage to property and livelihoods, but also attracted a record amount of donations to the affected countries. USAID was amongst the many organizations to immediately respond to the tragedy. This included in Thailand, where the USAID Regional Development Mission/Asia (RDM/A) created the Post-Tsunami Sustainable Coastal Livelihoods (SCL)—a demonstration project focused on assisting coastal communities in Southern Thailand to rehabilitate their livelihoods, build resilience to future natural disasters, and adopt livelihood practices that use natural resources more sustainably.

The three-year SCL project (end date March 31, 2008) was implemented in a partnership with the Coastal Resources Center of the University of Rhode Island, the Asian Institute of Technology (AIT), University of Hawaii-Hilo, Coca–Cola (Limited) Thailand, and other local partners.

In addition to on-the-ground demonstration of model actions in Ranong Province, Thailand, the SCL project used study tours and regional workshops to promote the regional exchange of best practices and lessons learned. The last regional workshop, held February 18-21, 2008 in Bangkok at AIT, provided a forum for those involved in tsunami reconstruction efforts across Asia to share their experiences, identify lessons learned, and apply these lessons to policy reforms and/or better practices.

Workshop objectives were to:

- Exchange experience and lessons learned in selected theme areas related to disaster preparedness and rehabilitation
- Identify key unresolved issues and the forces impeding sustainable practices
- Work toward consensus on recommendations for action for government, non-government, and donor organizations

After the tsunami there were two critical and recurring questions posed by assistance providers and communities. What caused the massive loss of life? How can such tragedies be prevented in the future? Workshop discussions highlighted that the answers to these questions is linked to the extent to which communities apply certain principles of "coastal community resilience"—principles that support broader measures for disaster preparedness. These principles focus on the need to:

- Undertake strong and comprehensive local disaster planning
- Protect and sustainably manage the coastal environment
- Promote diversified livelihoods to maintain robust local economies
- Promote sustainable coastal land use planning
- Strengthen local governance to support all these areas

Assisting coastal communities to address long term needs for preparedness and better prepare for the future risk of tsunamis and other hazards is thus tied to these human development issues in coastal areas.

Meeting Format

The first part of the workshop was comprised of panel discussions on four workshop themes:

- Sustainable fisheries and aquaculture
- Livelihood development among coastal residents
- Coastal management capacity development
- Community-based disaster risk management

Panelists briefly discussed what their experience or research revealed about post-tsunami conditions, perceptions, and attitudes toward coastal management in general and how best to address issues associated with the disaster. Each panel was followed by 45 minutes of questions and comments from participants.

Most of the second and third days of the workshop was comprised of small, focus group discussions on the four themes. Each group addressed three questions:

- What are the unresolved issues for sustainable fisheries and aquaculture (or sustainable livelihoods, ICM capacity development, or community disaster management) at the community level?

- What actions (changes in law, capacities, political priorities, funding, incentives, regulations, technologies or other initiatives) are most likely to result in positive changes for sustainable fisheries and aquaculture (or sustainable livelihoods, ICM capacity development, or community disaster management)

- Describe the community assets and/or barriers likely to enhance (or impede) actions taken to strengthen community resilience.

Below is a summary of the key issues and actions for each theme.

Fisheries and Aquaculture

Marine capture fisheries and coastal aquaculture were some of the most visible economic sectors affected by the Indian Ocean Tsunami of December 26, 2004. Today, these sectors in tsunami affected areas have largely moved beyond a rehabilitation and reconstruction phase (although there may be notable exceptions) and now face once again the longer term issues around their sustainable development. Interestingly, today's issues related to the health and sustainable development of these sectors, vary little different from those that existed before the tsunami. For example, the fisheries sector suffers from overfishing, overcapitalization, use of destructive fishing gears, habitat degradation, weak governance, a lack of alternative livelihoods and widespread poverty in coastal communities. These were problems in the past and remain problems today. What *is* different in this post-tsunami era is the increased awareness of the need to build more resilient coastal communities in preparation for better addressing these key issues. Why resilience first? Because by their nature, communities involved in fishing and coastal aquaculture need to locate in inherently hazardous and risk prone coastal areas—the very areas most vulnerable to tsunamis, cyclones, floods, erosion and sea level rise.

Group discussions focused on several issues—examined separately for fisheries and aquaculture:

- unresolved issues or new issues resulting from the tsunami
- issues that existed prior to the tsunami and remain unresolved

Fisheries

Unresolved issues resulting from the tsunami

In the tsunami aftermath, there was an opportunity to "build back better." Many fisheries experts warned against replacing all boats and gear lost so as not to rebuild back to over-fished levels. In spite of the tragedy, it was viewed as a rare window of opportunity to reduce effort to more sustainable levels—especially in this climate where a large amount of assistance was provided for the fisheries sector in a short window of time. While some projects had objectives to promote alternatives, most lacked good procedures for identifying those individuals working in the fisheries sector who wanted to exit and few provided a sustained package of services for those willing to exit.

Since boats and gear donations were such high-visibility expressions of assistance, many donors chose to make contributions to such purchases. Unfortunately, in many cases, more boats were replaced than were lost from the tsunami. The net result of this overwhelming collective generosity of donors was even greater overcapitalization in the fishery—only further exacerbating the overfishing problems. The result is alterations in some of the fishing territories. Some fishers have stated they are now forced to fish even further from home to catch enough fish to survive. In some instances, this has ignited conflicts among fisher groups. Increased fishing effort coupled with recent fuel price increases are forcing some fishermen out of this livelihood activity in spite of their wish to continue making their living by fishing. Remaining issues for continuing reconstruction efforts include:

- **Post harvest infrastructure:** While boats and gear received particular attention, shore-based infrastructure, particularly post harvest infrastructure such as ice plants, were neglected.

- **Housing:** While housing needs in most fisher communities have been met, in some places housing needs remain unmet. Also, there may be downsides to some of the new housing in that some communities displaced to new housing areas must now travel further to reach their fishing grounds and to access postharvest facilities such as ice plants.

- **Boat and gear donations:** Discrepancies in aid distribution has led to some groups benefitting more than others. While many experts are urging donors to stop giving boats for the reasons explained above, groups that have not received this form of assistance see this as unfair.

Prior issues that remain unresolved

Many of the problems listed below are interrelated and complex. This makes them difficult to address and requires taking an integrated approach to addressing the issues that lie both within and external to the fisheries sector. Issues include:

- **Low income levels of fishers:** Fisher households generally remain poor and cannot make enough income from fishing alone.

- **Overfishing** is still occurring in most nearshore fisheries, and over-donation of boats, as previously mentioned, has exacerbated problems in some areas.

- **Use conflicts:** Conflicts over fishing areas, different types of gears, as well as between small-scale and large-scale sectors still remain issues in many areas.

- **Low compliance with regulations:** Many regulations promulgated by centralized decision making authorities are often ignored by fishers as they are not viewed as legitimate, or because they cannot be properly enforced.

- **Poor information base**: While there is a general consensus concerning overfishing of most inshore waters, there is a lack of information from which to understand and make decisions on sustainable harvest levels.

- **Different perceptions of the issues by managers and fishers:** Fishermen often see their problem mainly as a livelihood issue whereas resource managers and policy makers see the problem as overexploited resources that need to be better managed. This difference in perspective makes it difficult to find consensus between these stakeholder groups. For instance, fishers may want to increase catch levels in an effort to improve livelihoods, but policy makers may want to reduce fishing effort to rebuild stocks.

Actions likely to result in positive changes at the community level

- **Improve fisheries management by emphasizing co-management regimes:** Governments need to work more closely with fishing communities on creating regulatory regimes. Empower fishers by including them in management decision making and by sharing enforcement responsibility. This requires a willingness of government to share power and find the right balance between full controls by fishers versus full control by government. Co-management requires fishers and government officials to try to understand each others' perspectives, learning together by doing and reflecting, and accommodating local knowledge and methodologies.

- **Build on traditional management practices where they exist:** Promote those existing local management mechanisms that are working. One example is "*Panglima Laut*" in Aceh, which allocates territorial use rights that are determined by the fishers themselves and *t*hat help reduce conflicts between gear—or in some cases even prohibit certain gears. *Panglima Laut* rules are voluntarily followed by the fishers. In such cases it may not be necessary to have these management regimes adopted formally through law. The informal systems often allow for quick flexibility and changes in decisions that are hallmarks of adaptive management systems. If formalized through legislation, the adaptive capacity of the traditional management regimes needs to be preserved.

- **Improve enforcement:** While co-management is viewed as a one means to achieving greater voluntary compliance with rules, conventional law enforcement measures are still needed and must be strengthened, especially in areas with conflicts between small-scale and large-scale fishers.

- **Build coastal community resilience through a sustainable livelihoods approach:** A sustainable livelihoods approach needs to be integrated and multifaceted, involving elements within and outside the fisheries sector. Fisheries issues must be viewed as more than simply a resource management problem. There must be a people-centered focus. Promote diversification of livelihood options both within and outside of the fisheries and aquaculture sectors, and promote product and market diversification. Aquaculture especially, can be a means of livelihood diversification for fishing communities but most likely should be viewed as a part-time versus full-time business opportunity, one that can provide supplemental income or food. Aquaculture development however, should not be seen as a substitute to failed fisheries management. Non-sector specific development should be promoted including establishment of community-based financing and credit systems, improvements of marketing infrastructure such as ice distribution, improved roads, and other means for better market access.

- **Improve donor coordination:** In the aftermath of subsequent disasters, require better donor coordination on boat and gear donations and have a centralized information depository on what was there before, losses incurred, pledges offered, and gifts and donations made. Ensure this information is readily accessible to all donor groups.

- **Build biological resilience into local management regimes:** While the tsunami did not greatly impact most fisheries habitats or ecosystems in general, other types of disasters such as global climate change and sea surface temperature rise are likely to have major impacts on these natural systems. Maintaining healthy biological systems through measures such as protection of spawning aggregation sites and establishment of no-take reserves will make biological systems more resilient. More resilient biological systems will, in turn, insulate communities that depend on the natural resource base from potential shocks to these ecological systems.

Aquaculture

Unresolved issues resulting from the tsunami

With respect to aquaculture, there was also an opportunity to build back better, but in retrospect, that did not happen. No buffers (e.g. bio-shields) were used and poor aquaculture siting practices were repeated. As in the fisheries sector, there was a rush to build back quickly, not better. Little

reconstruction support was coupled with investments to promote good management practices. Many projects that did support aquaculture rehabilitation provided weak technical assistance and bad advice. In many areas, aquaculture is intensifying because there is an available supply of capital and inputs from donors, and the declining gains from fishing (due to overfishing) is pushing people into aquaculture as an alternative. This intensification has created several issues:

- **Supply of inputs:** In some instances, large donations of new aquaculture equipment (e.g. cage culture or for pond culture) resulted in supply shortages of fingerlings for grouper and milkfish. Intensified aquaculture efforts have also increased local demand for trash fish as feed. This can be viewed negatively with respect to sustainability of the capture fisheries.

- **Water quality**: In some areas, intensification of aquaculture to a level higher than existed prior to the tsunami is raising concerns about exceeding carrying capacity of local water bodies, increased pollution, and eutrophication.

Prior issues that remain unresolved

As with fisheries, many of the issues that existed before the tsunami remain unresolved including overdevelopment of aquaculture beyond carrying capacity levels, poor siting of new aquaculture development and a general need for adoption of well-known best management practices. More attention is also needed, but little has been given in this post-tsunami period to improving post harvest processing , marketing, and producing value-added products.

Actions likely to result in positive changes at the community level

Actions that promote more sustainable aquaculture practices will benefit coastal communities involved in aquaculture and improve community resilience. Specific actions include:

- **Improve aquaculture extension services:** Promote demonstration-learning sites that use better practices for sustainable aquaculture where farmers can learn-by-doing. In post disaster situations, establish field extension teams and task forces that can provide extension and training services to farmers in the field. Dedicate sufficient resources for such field extension efforts including provision of adequate technical expertise.

- **Concentrate more fully on market based approaches and issues:** Provide better analysis and understanding of market value chains, and provide that information to farmers. Assist farmers in how to tap into these markets, especially if introducing new types of aquaculture. Promote "certification" and eco-labels, and codes of conduct for aquaculture products.

- **Improve seedling supply:** For grouper and milkfish culture, which is popular in many coastal areas of Asia, improve seedling supply through "backyard" or government hatcheries and reduce reliance on wild caught supply.

- **Build resiliency into aquaculture farming systems**: This would include, for example, maintaining mangrove buffers around pond systems, improved aquaculture siting that integrates hazard risk assessment into siting and construction practices (separate inlet and outlet gates), and promotion of more polyculture and crop rotation as a means to reduce vulnerability.

Assets and barriers likely to enhance or impede actions to strengthen community resilience

Capture fisheries and aquaculture are both typical livelihoods activities practiced in coastal communities and found side by side. Supporting infrastructure including ice plants, landing sites, boats, supply stores and supply chains are often shared and complementary to both sectors. Quite often capture fisheries and aquaculture are both practiced as part of the coastal household livelihood mix. Since capture fisheries and aquaculture are so closely intertwined, assets and barriers to strengthening coastal community resilience are difficult to separate out by sector and were considered more holistically by this group in our discussions.

<u>Assets</u>

Many coastal communities have an inherent degree of community resilience due to the typical pattern of occupational multiplicity and the natural diversity of household livelihoods. This is probably one of the greatest assets of coastal communities that help them recover from natural disasters such as a tsunami.

There are community wide assets that may already exist and which make communities more resilient. These include:

- Community level credit systems and institutions (other than money lenders)
- On-going field level extension services
- Improved infrastructure such as roads, landing sites, educational and market facilities
- Greater awareness of tsunami hazards and actions to prepare for future disasters

Another community asset, particularly for the fisheries sector, is the often existing community-based or traditional management practices that resource managers may either be unaware of or are unwilling to recognize as legitimate. However, these existing practices often provide a perfect base upon which to build, and to promote integration with more conventional management regimes. This integrated model can lead to greater community empowerment and perceived legitimacy of rules, leading to increased regulatory compliance. Building on these existing local governance institutions can also help move local fisheries towards more sustainable use practices.

<u>Barriers</u>

Many of the barriers to strengthened community resilience have their roots in the lack of the assets mentioned above. Meeting some of these basic development needs should be promoted as they make good economic and development sense and help break down barriers to increased community resilience, thereby insulating communities from the ravages of natural disasters. These include:

- Lack of access to credit
- Lack of access to markets or post harvest facilities
- Poor access to extension services or weak capacity of extension providers

Other barriers to community resilience include a lack of understanding of market issues and channels, and price versus profitability issues. There are two other barriers to building community resilience. First is the lack of a culture that favors entrepreneurship. Second is the presence of a culture of dependency—a culture promoted by some reconstruction efforts.

Many of the barriers described above are typically found in isolated communities, at great distances from urban centers. Because these communities are more difficult and costly to reach by centralized service providers, they often receive fewer extension and relief services. While there may be little that can be done to reduce such geographic barriers in the long term, development agencies and relief services need to give special attention to the particular needs of these areas.

Lastly, a key barrier to more sustainable management of fisheries resources are regulations that are impractical, inflexible, or seen by resource users as lacking in legitimacy. In contrast, management regimes that are adaptive and involve resource users in planning decision- making, implementation, and enforcement are likely to make fishing communities more resilient.

Livelihood Development

The theme of livelihoods in the context of post natural disaster can be viewed from two angles. The first is restoration of damaged infrastructure and property that serves as the basis for livelihoods. The second is long-term livelihood development. Issues in restoration involve replacing and repairing lost and damaged equipment, property and infrastructure, and fairness in distribution of external aid. On this latter point, external aid can—unfortunately—too often foster the "victim mentality" thereby creating a long-term impediment to livelihoods development.

The workshop group chose not to address **livelihood restoration** and rather focused on **livelihood development**, with the foundation of livelihood development being seen as successful livelihood restoration. People are then able to make decisions from an informed and secure position.

Unresolved issues resulting from the tsunami

The discussion of issues, actions and assets to build on in livelihoods development encompassed the following areas:

- **Staff and technical skills:** In the rehabilitation phase post-disaster, there is great demand for experienced and trained staff to assist communities in livelihood development. In this context it can be difficult to find organizations that work at the community level in small scale livelihoods development. The few local organizations with such experience become overextended and may not be able to provide the assistance needed. So, it becomes necessary to "make do" with the skills of project staff and people in the community. There is also a lack of readily accessible resource materials for livelihood development practitioners to use in training. This includes the fact that most training guides are not oriented at the very small scale, rural coastal business person.

- A related issue is that the majority of post disaster organizations that provide external rehabilitation assistance in livelihood development are "not for profit' organizations. These organizations themselves do not have a culture of business profitability. Yet, they are providing assistance to others in business development.

Prior issues that remain unresolved

- **Disconnect between planning and local community:** There is often a gap between project design and implementation in that plans for project activities are prepared without local consultation and ownership, often resulting in plans that may not resonate with local needs, and/or be feasible.

- **Knowledge of local interest and skills for business development**: It is critical to know the business mindset and level of entrepreneur culture of the intended beneficiaries. If beneficiaries are pushed into business without understanding the business capacity, needs and interests of those beneficiaries in undertaking business-oriented activities, bad advice is often given and success is highly unlikely. Usually, a community will have a different business sensibility and logic than the external implementing organization. The Western perspective of production, sales, savings and profits may not apply. Rather, rural, coastal fishing communities are dominated by fishing and fishers that are basically gamblers (not business entrepreneurs) by nature. What is evident from some post-disaster efforts is that by

If the goal of livelihood development is successful income generation, then it is important to identify and work with those in the community who already have a strong 'business' motivation. Instead, post disaster livelihood development efforts often seek to impact a large number of people, not a smaller number of beneficiaries who have been pre-selected as having stronger entrepreneurial capacities and interests. The important thing is to identify existing capacity for successful livelihoods and build on it. What should not be done, but in many cases happens, is to force micro-enterprise initiatives inconsistent with local realities (e.g. supporting bread making enterprise in a place where people do not eat bread).

- **Selection of livelihood areas and markets for external support**: A livelihoods initiative must make a choice—improve traditional livelihoods, products and markets *or* promote new livelihoods.

  It is important to assess livelihood endowments—local materials and resources, local skills and experience, and markets and distribution chains. This analysis is even more critical for new livelihoods, since the activity is untested and the local culture, technology, inputs and market for the product or service are untried. New livelihoods require more assistance in start up, including capital investment, technical assistance, production techniques, and marketing and sales. New livelihoods can address inequalities within communities. Marginalized groups may be excluded from the livelihood activities that currently exist. Since the equity and social welfare aspect of livelihood initiatives after a natural disaster are usually very important, it it critical to understand which groups are disempowered and why.

- **Strategies for livelihood development**: Many livelihood rehabilitation efforts target occupational groups rather than selected individuals. Such an emphasis can increase the number of beneficiaries, but may reduce the success of livelihood assistance efforts because risk and business accountability is spread unevenly among many people. A better strategy than universal assistance to a broader occupational group is to identify and provide support to those individuals with a strong business sense.

- **The role of social welfare in livelihood development**: Livelihood development areas affected by a natural disaster have a social welfare element, or equity considerations. It is important to be explicit about welfare objectives since livelihood development is often evaluated using business criteria, particularly profitability. In the end, all livelihoods must generate net revenues if they are to be sustained, but there are also other objectives to livelihood development initiatives, such as empowering marginalized groups and creating new leadership and skills opportunities.

  The balance among good business schemes, profitability and social objectives can be difficult. When assisting beneficiaries, the process must be somewhat competitive. If the assistance is viewed as welfare or charity, the assistance or money will be seen as "free". People can become reliant upon grants and when faced with loans, will fail to repay. Thus, mixing post disaster social welfare with business development can be a contradiction. In the extreme it could be said that "the tsunami steals the village, but charity steals the dreams."

Actions likely to result in positive changes at the community level

- **Organize capacity building for coastal residents:** Training in leadership, management and administration, and group dynamics can strengthen community leadership.

- **Identify "village facilitators":** Village leaders would nominate village facilitators to work closely with the livelihood development project. These individuals are windows to the community. Through skills building, on-the-job training, and mentoring, they could become catalysts for livelihood development.

- **Gather community data before designing projects:** An extensive program of local consultation/information gathering should be implemented before developing community programs.

- **Conduct livelihood feasibility assessments:** Examine locally available resources for productive activities, culture, infrastructure, human resource skills (what do people know how to produce, what are their knowledge and skills). Analyze demand and markets and consult with the local community to identify their interests and capacity for new livelihoods. Find niche markets and labeling/packaging that will allow products to realize a higher price.

- **Leverage the experience of existing community entrepreneurs:** Find "model individuals" who can demonstrate successful business practices that will catalyze others in the development group. Business leaders are selected entrepreneurs that have the greatest chances for further expansion and income generation. "A rising tide lifts all boats."

Assets and barriers likely to enhance or impede actions to strengthen community resilience

Communities have a natural resilience borne of years of experience in coping with natural disasters, episodic fish depletions, disease and economic dislocation. Modern communication technologies, roads and railroads linking rural villages to larger cities and increased access to wage labor have both strengthened and undermined community conditions.

<u>**Assets**</u>

Some community assets provide potential sources of strength:

- Existing 'sense of community' and experience
- Community desire to improve their situation
- Experience with livelihood projects
- Improved access to technical assistance for livelihood projects
- Better access to outside sources of project funding.

These assets vary among communities. Some communities already have successful entrepreneurs and a local culture that supports entrepreneurship. These are the communities that can often make more effective use of project assistance

<u>**Barriers**</u>

Effective community livelihood projects are impeded by a variety of factors:

- Low demand for products made from local resources
- Lack of entrepreneurial and basic business skills in most communities
- Uneven access to capital and technical assistance
- A culture of dependence
- Existence of 'free riders'—people who seek to benefit without contributing their effort and' rent seekers'—those who desire disproportionate benefits for their effort

Coastal Disaster Management Capacity-Building

Capacity building is most often used in the context of identifying "deficits" in the knowledge or skills needed to engage in effective management. However, analysts have often noted that while skilled and knowledgeable professionals are essential to effective management, such effectiveness is shaped by the degree to which these professionals work in a supportive administrative and political environment.

Unresolved issues resulting from the tsunami

The discussion reflected the broader concept of capacity building for more effective integrated coastal management. Several issues were emphasized:

- **Inadequate baseline data on coastal resource users and conditions:** Those government agencies and nongovernmental organizations (NGOs) organizing rehabilitation assistance to coastal users during the tsunami recovery period found it difficult to make accurate counts of those killed, injured and displaced. They also found it difficult to address claims for boats and other property lost in the disaster. Environmental assessments were hampered by inadequate geo-spatial data on the pre-tsunami location and quality of mangroves, dunes, seagrass beds and other coastal resources, as well as on pre-existing buildings, infrastructure, property lines and other evidence of the built environment.

- **Inadequate capacity for coastal hazard assessment:** Rapid population growth in coastal communities around the world has led to the development of settlements in areas vulnerable to coastal flooding, tsunamis, storm surge, erosion and degraded environments resulting from urban wastes, oil spills and other hazards. While some of these communities are expansions of existing urban areas, others are informal settlements on state-owned or privately owned property. Occupants of informal settlements often have few, if any, tenure rights.

  Both planned and unplanned urban expansion into low-lying coastal areas exposes residents to coastal hazards, in part because existing land use planning and management does not adequately incorporate detailed calculations of hazard risk and vulnerability—nor does it demarcate hazard-prone areas on official maps used for land use management.

- **Inadequate capacity for incorporating risk assessment into coastal mitigation initiatives:** The terrible impacts of tsunami, storm surges, coastal flooding and other hazards can be somewhat mitigated by a variety of countermeasures including the demarcation of hazard areas, setback lines, reinforcing new and existing structures to make them more hazard resistant, coastal protection works, and providing greater protection to natural barriers such as mangroves, reefs and dunes. The demarcation of hazard zones and the location and construction and other coastal protection works must be based on careful assessments of risk and vulnerability.

- **Inadequate coordination among agencies and between levels of government:** The notion of "integrated" coastal management suggests that agencies will coordinate at least some of their coastal management activities. Interagency coordination is a way of encouraging greater attention to the management goals of each agency and the ways in which one agency's regulatory or developmental activities can sometimes conflict with the resource protection activities of other agencies. Inter-agency coordination can also facilitate

more efficient information gathering, analysis and planning and regulatory decision-making.

- **Inadequate capacity to share emergency information among all levels of government:** In the case of a tsunami, warnings are transmitted from international monitoring devices and technical centers to national authorities, and from national authorities to local agencies and first responders, and then on to the public. Warnings about other hazards, such as flooding and storm surges, are most often transmitted from national and local authorities directly to the public. Several recent tsunamis have indicated gaps in the warning system. For example in some recent cases, warnings about a potential tsunami were not transmitted to local officials, so never "trickled down" to the public—resulting in deaths and substantial property damage. On other occasions, warnings were issued, but not heard or, if heard, not acted upon by local residents.

- **Lack of clarity about agency jurisdictions and gaps in legal authority for management:** NGO staff, citizens and even agency staff themselves are sometimes confused about which agencies are responsible for the management of particular resource uses and activities. In some cases, multiple agencies may have legal authority for the management of different aspects of the development of an aquaculture facility or industrial plant. In other instances, particular activities/uses, such as sand mining, may not fall under the legal responsibility of any agency. These gaps and overlaps in authority and responsibility complicate management, making it less efficient and effective.

- **Inadequate enforcement capacity:** Coastal management systems require that a wide variety of coastal resource users comply with laws, agency regulations, community norms or other guidelines. For example, hotel developers are required to apply for development permission and to comply with any conditions regarding the siting of the proposed hotel, discharge of wastes and other requirements imposed by management agencies. Meanwhile, industrial plants in coastal areas must comply with pollution discharge regulations, while sand miners in coastal areas are limited in the amount of sand they can harvest daily from the mouths of rivers. Even local fishers may be restricted in their fishing practices by rules developed by fisher groups in specified community-based management areas.

  Compliance with environmental regulations occurs because resource users fear detection of violations and punishment for them, feel a civic duty to comply or feel social pressure to comply. Most discussions about compliance focus on enforcement activities. Yet, the effectiveness of enforcement-based compliance is affected by the likelihood of detection (and thus the frequency of inspection) and by the speed, certainty and size of the sanctions imposed for non-compliance. Increasing capacity for enforcement requires training inspectors and developing monitoring protocols.

Actions likely to result in positive changes at the community level

- **Develop or coordinate databases on coastal resources**, uses (e.g. farming, fishing, industries), geo-spatial data, including property lines, and demographic data on coastal residents**.** Such databases are needed both for more effective hazard planning and to provide better data for allocating resources in a post-hazard situation.

- **Increased training for land use professionals in hazard risk assessment** and the physical identification of hazard areas. One of the critical elements of improved hazard management is the accurate designation of hazard-prone areas.

- **Develop pilot projects testing tools for risk assessment** and the demarcation of hazard areas. Pilot projects provide a means for testing methods for assessing hazard risks and vulnerabilities and designation of such areas.

- **Make risk assessment a routine component of designing new dikes and other coastal protection works**. Engineering of coastal protection structures requires more careful assessment of the ability of these structures to withstand major hazard events such as a tsunami.

- **Identify mangrove, dunes and other coastal resources that are particularly valuable in providing protection** from tsunami, storm surges, etc. Bio-shields can be an effective complement to other means for reducing the energy of waves.

- **Develop design guidelines for strengthening existing infrastructure** that are difficult to re-locate to sites outside coastal hazard areas. Some infrastructure cannot be located away from hazard prone areas—except at great cost. In such cases, however, design strategies that include "flood-proofing" which can help reduce their vulnerability.

- **Create new institutional mechanisms to support increased inter-agency and inter-governmental coordination**. Such mechanisms might include inter-agency memoranda of agreement for managing specific resources or activities (e.g. aquaculture), inter-agency task forces, routine information sharing, joint hearings, coordination meeting, inter-agency plans, etc.

- **Improved technological links and development of capacities to receive, process and transmit warning information.** Improved technologies are needed to insure improved communication from international agencies both down and horizontally across national and local agencies on a timely basis.

- **Develop handbooks, websites and other educational materials to clarify each agency's legal jurisdiction and authority in coastal areas**—and possible jurisdictional conflicts and overlaps. Clarification of agency responsibilities can be useful both in preparing for hazards and in rehabilitation.

- **More specific resource use rules**, better communication of rules, increased penalties for non-compliance and more enforcement personnel and staff training. Specific resource use rules can help encourage compliance among resource users.

Assets and barriers likely to enhance or impede actions to strengthen community resilience

Hazard management capacity varies across countries in the region. The administrative, knowledge and political assets in each country on which improved management can be based also vary—as do the barriers.

Assets

- Increased awareness of the vulnerability of coastal areas to floods, storm surges, tsunami and other threats
- Availability of increased resources for hazard management planning in coastal areas
- General political support for cost-effective mitigation strategies
- Greater awareness of the need for closer management coordination in many sectors
- Increased awareness of the dangers and probability of tsunami and other hazards
- Increased investments in warning technology
- Increased understanding of the importance of enforcement activities
- Greater clarity about which resource uses and activities require closer management

Barriers

- Current data may be scattered among multiple agencies
- Data may be incomplete for some resources, coastal residents, and coastal uses
- Lack of resources for collecting, managing, updating and storing data in useful and accessible formats
- Inadequate protocols governing public access to data, as well as sharing, storing and retrieving among agencies
- Potential resistance to unfamiliar design standards—and the costs of imposing them
- Lack of technical knowledge for developing and applying new design standards
- Incorporating hazard management tools into existing management regimes will be expensive and time-consuming in some countries
- Technical resources for risk assessment and hazard management may be limited in some countries
- Some inter-agency conflicts and jurisdictional issues impede coordination among some agencies
- Inadequate incentives to coordinate in some instances
- Insufficient experience with coordination to see the value
- Perceived illegitimacy of some laws and regulations
- Inadequate detection of non-compliance
- Lack of knowledge of law on the part of some resource users
- Lack of coordination with NGOs

Community-Based Disaster Management

The 2004 Sumatra-Andaman earthquake and tsunami exacted a devastating toll in human suffering and destruction and demonstrated how tsunamis are a significant threat to the safety, security, economic well being, and natural resources of many coastal communities. It was a painful reminder of just how vulnerable coastal communities are to unforeseen events that can bring about massive changes. It is important to note that tsunamis of this magnitude, though fortunately rare, are recurring events and when combined with other hazards, make coastal communities increasingly vulnerable. As stated in the Indian Ocean Tsunami Warning System (IOTWS) guide to coastal community resilience: "Coastal communities today, around the world, are experiencing an unprecedented rate of change due to population growth in coastal areas, human-induced vulnerability, and global climate change. The effects of this change are placing communities at increasing risk from coastal hazards such as tsunamis, severe storms, and shoreline erosion."

Unresolved issues resulting from the tsunami

It was in this context that the group on Community Based Disaster Management addressed unresolved issues and areas requiring action. To this discussion was brought a wide range of experience ranging from high government officials to NGOs working at the grass-roots community level and from a wide range of geographic locations throughout the region. The group focused on the following three areas:

- **Development of hazard policies and regulations:** There are many aspects of community disaster management that need to be addressed by coherent and consistent policy and regulation. Panelists recognized that the overall framework of disaster management in most areas is unresolved and that an integrated concept of disaster management remains lacking. In particular, local level mechanisms and procedures need to be developed. Each community should have a standard operating procedure (SOP) for each aspect of each hazard to which the community is exposed. The responsibilities of each agency involved at each level from central government through regional government to the community level should be clearly defined and each agency held accountable for their actions or inactions. The role of NGOs should be clearly defined in advance of their response to an emergency and their actions carefully coordinated and monitored.

  Rather than list a daunting array of issues and potential actions, the group chose to present a single concrete example of an issue suggested and outlined by a group member based on their own actual experience. In the area of policy and regulation the example presented was land use planning.

- **Coordination and integration:** Successful community-based disaster management is inhibited by a serious lack of coordination and integration at all levels. Participants noted that unresolved gaps exist between levels of government in what should be a seamless chain. Furthermore, there is often poor coordination even within agencies. These problems are often exacerbated by poor communication between governments and their local communities.

  As indicated in the area of policy and regulation, the responsibility and accountability of communities, agencies and NGOs must be not only clearly defined, but well integrated and coordinated and all levels and each level must be held accountable.

On a different note, participants concluded that there is little encouragement for follow-up/follow-on community initiatives and proposals, with the result that local communities often give up hope when their initial efforts are not rewarded with action. In the area of coordination and integration the example put forth was the need to maintain attention and enthusiasm for successful efforts on-the-ground in order to improve community resilience.

- **Risk communication:** One of the most obvious unresolved issues requiring immediate action is in the area of risk communication. The term "communication" was used in both the narrow sense of delivery and understanding of the actual disaster message, and in the broader sense of communicating general and specific information about hazards to the community to create a culture of awareness and avoid panic situations. Panel members repeatedly stressed the lack of know-how in how best to communicate between the government levels and the local community.

  Participants noted that many local communities have no capability of receiving a disaster alert message in time to take necessary action. Participants concluded that special communications links or "hot-lines" need to be established with designated community members prepared to disseminate the alert message. This would require the allocation of resources to establish and house the hot-line, train community personnel, and maintain the system once operational.

  A more general type of risk communication that involved specific individuals common to any community was identified as being those with special needs. There are a wide variety of situations in which people may need special assistance. For example, an elderly person may not be able to move quickly enough on their own, or a mother with several young children could have trouble getting them all to safety without help, and someone with a physical or mental disability need help evacuating. It can not be assumed that emergency personnel will be available to help everyone who needs assistance during a disaster emergency. A special neighborhood preparedness program known as "The Tsunami Buddy System" was presented as an example of an effective process as part of a broader risk communication program.

- **Developing the capacity to design and implement hazard protection initiatives:** Nearly all of the previously discussed issues could be included in the areas of mechanism development and capacity building and, indeed, the panel listed all previously mentioned unresolved issues and action areas in both of these categories. They also chose to focus on three major points. Participants concluded that even when the capacity was in place for disaster management plans, this capacity was not often translated into specific action plans but remained vague, generalized and untested. The need for exercises at all government levels as well as actual community level evacuation tests is critical in order to turn plans into action and to avoid panic and produce an efficient response.

  A very different theme emerged as a missed opportunity that should be built into the capacity of all disaster management plans where appropriate. This is the use of cultural memories. Based on long and close associations with the land and its resources, most indigenous people have developed detailed knowledge of local natural hazards. This may include oral histories and traditions that record past catastrophic hazard events, place names that designate areas that are high risk, and environmental indicators that inform about the safety and viability of activities linked to changes in the environment. This environmental knowledge can provide a valuable source of expertise than can contribute to contemporary

natural hazard management and mitigation, and become a valuable resource for community education and involvement in hazard preparedness.

A related theme was the loss of institutional memories as individuals retire, are promoted, or transferred. Their expertise, lessons-learned, and networks are often lost as these individuals leave an institution. Though individuals will always move on, the practice of capturing their "institutional memories" should be built into the system.

The third point related to the previously discussed issue of individuals with special needs. It has been repeatedly shown that tsunamis have a disproportionate impact on women, children, and the elderly. This is a sad fact, regardless of cultural setting. Special consideration for these groups should be built into all community disaster management plans.

Actions likely to result in positive changes at the community level

- **More effective participation by community in local government decision making in land use planning:** Greater community participation is a way to both gather and incorporate local knowledge and to build understanding and awareness of the rationale and mechanics of hazard management efforts. Genuine involvement can also build political support for the program.

- **Develop strategies for more effective risk communication and evacuation for individuals with special needs:** Procedures for risk communication remain incomplete in most areas. There is a particular need for the development of strategies for insuring the safe evacuation of people with special needs are a particular need. Implementing a "buddy system" is one such strategy for insuring the safe evacuation of people with special needs..

- **Create specific disaster management models based on geography and culture of a specific region:** Models should be tailored to both technical analysis of vulnerability as well as incorporating local knowledge of specific areas of risk or vulnerability.

Assets and barriers likely to enhance or impede actions to strengthen community resilience

<u>**Assets**</u>

- Communities are now sensitized the to the need for land use planning and increasingly motivated to participate in the process.
- Government agencies already have much of the necessary expertise.
- Motivation by recent disaster and potential to link with all hazard planning.
- Increased information/materials available to encourage local community participation.
- Strong family ties and extended family bonds at the community level
- Pride in self-reliance
- Existence of potential models, some tested and some untested
- Networking established by this and other regional workshops

<u>**Barriers**</u>

- Lack of understanding by the community of issues involved
- Lack of time or will to educate the community

- Identifying individuals with special needs
- Identifying willing and capable "buddies" willing to assist disabled people in an emergency
- Planning and organizing the appropriate response for each hazard situation

Annex 1

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Annex 2

Workshop Agenda

REGIONAL WORKSHOP

POST-TSUNAMI SUSTAINABLE LIVELIHOODS AND INTEGRATED ECOSYSTEM MANAGEMENT

Conference Center
Asian Institute of Technology
February 18-21, 2008

Agenda

Objectives

- Exchange experience and lessons learned in selected theme areas with respect to disaster preparedness and rehabilitation
- Identify key unresolved issues and forces impeding sustainable practices
- Work toward consensus on recommendations for action for government, non-government, and donor organizations

Workshop Outputs

- Workshop report highlighting key issues and challenges, lessons learned, and recommendations for action
- Poster panels and resource material on post tsunami project experience and lessons learned

Monday, February 18th

Afternoon   Arrival and check-in

                 Open time to tour post-disaster rehabilitation project displays and posters

19:00   Welcome dinner

Tuesday, February 19ᵗʰ

Introduction and Overview

8:00- 9:00 Open time to tour post-disaster rehabilitation project displays and posters

9:00-9:30 Welcome
      Mr. Olivier Carduner, Director, USAID Regional Development Mission Asia
      Prof. Said Irandoust, President, Asian Institute of Technology

9:30-9:45 Workshop Agenda and Objectives (Amrit Bart)

9:45-10:15 Introductions (Kem Lowry)

10:15-10:30 Remembering the Tsunami – personal accounts (Walter Dudley)

10:30-11:00 Critical Issues in Sustainable Coastal Livelihoods and Ecosystems in Post Disaster
      Contexts (Stephen Hall)

11:00-11:30 ***Break***

Panel Session on Sustainable Fisheries and Aquaculture

11:30-12:15 Four panelists will be questioned on lessons learned, challenges, critical unresolved
      issues and solutions in small-scale capture fisheries

    Panelists:
      Brian Crawford (CRC/URI)
      Stephen Hall (WorldFish)
      Amrit Bart (AIT)
      Niklas Mattson (FAO)

12:15-12:45 Questions and comments from participants

13:00-14:00 ***Lunch***

Panel Session on Livelihoods

14:00-14:45 Four panelists will be questioned on lessons learned, challenges, critical unresolved
      issues and solutions in sustainable livelihoods

    Panelists:
      James Tobey (CRC/URI)
      Bodhi Garrett (NATR)
      Richard Bernhard (Kenan Institute Asia)
      William Murray (AIT and Wetlands Alliance Program)

14:45-15:15 Questions and comments from participants

Panel Session on ICM Capacity Needs

15:15-16:00   Four panelists will be questioned on lessons learned, challenges, critical unresolved issues and solutions to ICM capacity building in Asia.

     Panelist:
          Kem Lowry (University of Hawaii)
          Brian Crawford (CRC/URI)
          Don Macintosh (IUCN)
          Wenresti Gallardo (AIT)

16:00-16:30   Questions and comments from participants

Wednesday, February 20th

9:00-9:15   **Recap previous day and introduction to today's goals**

Panel Session on Community Based Disaster Management

9:15-10:00   Four panelists will be questioned on lessons learned, challenges, critical unresolved issues and solutions to CBDM capacity development in Asia.

     Panelist:
          Walter Dudley (University of Hawaii-Hilo)
          Atiq Ahmed (ADPC)
          Therachai Haitook (AIT)
          Peter Collier (IOTWS)

10:00-10:30   Questions and comments from participants

10:30-11:00   *Break*

Group Work

11:00-12:30   Participants will form four working groups based on interest and expertise in sustainable fisheries and aquaculture; sustainable livelihoods; ICM, and CBDM. The groups are charged to produce a consensus report on solutions to critical unresolved issues and challenges.

12:30-13:30   *Lunch*

Poster Presentations

13:30-14:00   Open space tour of tsunami rehabilitation project displays and posters

Group Work (continued)

14:00-16:00   Working groups will continue their deliberations

Thursday, February 21st

9:00-9:15   Recap previous day and introduction to today's goals

9:15-10:30   Open time to complete working group reports and presentations

Report Out of Working Group Findings

10:30-11:00   Sustainable fisheries and aquaculture

11:00-11:30   Sustainable livelihoods

11:30-12:00   ICM capacity needs

12:00-12:30   Community based disaster management

12:30-12:45   Participant reaction panel

12:45-13:00   Closing Remarks

13:00-14:00   *Lunch*