**The Tsunami Challenge**

Brainstorm innovations in rebuilding communities in the Tsunami affected countries.

"A FRAMEWORK FOR MANAGING DESIGN" (Team GSD-1)

A multi-pronged proposal ranging from dwelling cores to urban patterns, with focus on flexibility to adjust to culture. Includes income generation by attracting private sector through innovative marketing, and use of local materials. Ellen Chen, Eric Ho, Nour Jallad, Rick Lam, Ying Zhou; Harvard Graduate School of Design.

A workshop for MIT and the Cambridge community during Springbreak – March 2005

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**CORE + Infill | Phasing**

The parameters for the task in the devastated areas of Sri Lanka are the classic dimensions of sustainability: "economy, ecology and social sustainability" translating into low cost, disaster prevention, local technologies and materials, and participatory reconstruction in all stages of the project.

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WORKSHOP = community

The workshops bring the community together and teach them how to build their homes. Helping the people help themselves is a longer-term sustainable goal, economically, ecologically and socially.

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HOW TO BUILD YOUR HOUSE
BUILDING MANUAL

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MICHAEL CHEN

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We accept the challenge!

Current Situation

- NGO and government response
  - Top down
  - Bureaucratic
  - No community decision-making

- Community response
  - Independent of NGO and government
  - Fragmented use of information and resources
  - Reconstitution of social networks

Current Problems

- Funds are not being distributed
- Mismatch between conditional aid and communities’ priorities
- Complicated distribution process
- Projects are being stalled

Our Solution

To create a cooperative forum to establish a key role for the local community in the planning process, while addressing concerns about accountability. This forum is formed through a local NGO as a two-part community council with planning and monitoring branches.

Planning Branch

Composition
- Keciek - Village head
- Imam - Religious representative
- Ibu Arisan - Leader of women’s savings club
- Lorong representatives

Roles
- Determine need priorities
- Identify resources with local NGO help
- Locate project partners/donors
- Manage projects

Monitoring Branch

Composition
- Civic roles models identified by planning branch
- Government representatives
- NGO representatives determined by project

Roles
- Assess the project operations
- Ensures aid organizations’ missions are accomplished
- Oversees proper use of funding

"PARTICIPATORY FRAMEWORK FOR THE ACEHNESNE COMMUNITY" (Team MIT-1)

A reorganization structure to bridge the gap between the aid organizations and community priorities, balancing a planning section with monitoring section.

Rogelio Palomera-Arias, Sonia Parleca, Amanda Ikert, Manehi Low; MIT.
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We accept the challenge! - Team MIT 1
The Tsunami Challenge

Brainstorm innovations in rebuilding communities in the Tsunami affected countries.

"100 MOSQUES 100 DOSOONS" (Team MIT-2) Drawing on strong cultural traditions, a central mosque becomes the key organizing element for new communities (‘dosoons’) and a reliable ‘safe haven’. Within a planning framework of canals that shift villages to safer inland locations, construction is achieved quickly through innovative precast elements, promoting local participation and employment. Omar Rabie, Scott Francisco, Anahita Anandam; MIT.

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The Mosque has always been the center of spiritual and community life, providing the basic social, cultural and pragmatic resources that unite people and neighborhoods.

The construction of community mosques or madrassas is the critical first step in rebuilding infrastructures that allow communities to function properly once again.

WE ACCEPT THE CHALLENGE! - Team MIT 2
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A new canal for each town maintains the fishing community connection to the sea inspite of a buffer zone setback.

WE ACCEPT THE CHALLENGE! - Team MIT 2
"FROM HOUSING TO HOME: AN URBAN PLAN FOR TSUNAMI RELIEF"
(Team BAC-1)
A low-tech, low-rise community built urban block is the organizing principle of a planning framework designed to address immediate needs for shelter while creating viable permanent neighborhoods.
Jessica Wattman, Erin White, Alexandra Escobar; Boston Architectural Center and MIT.

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we accept the challenge! - Team BAC 1

An urban plan for tsunami relief:

A repeating urban block

immediate shelter and roots for strong community

an architecture of security (shelters and walls)
of support (communal rebuilding)
of trust (fresh water, trees)

Monuments to rebuild identify

The basic Block

Temporary Shelter
Support House

Community crews will be hired and trained to construct these buildings.
The Tsunami Challenge

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Local and innovative materials through self-help

FINANCING
- Aid and Gov’t Subsidies
- Micro-Credit
- Private Owners
- Private Developers

SKILLS
- Local Builders
- Local Architects
- Trained Community Crews

DIRECTION
- Community Organizations
- Local and National Gov’t
- International Consultation

Repetition of Block
18 acres
350 families

Urban Infill with Block

Partnerships

WE ACCEPT THE CHALLENGE! - Team BAC 1

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The Tsunami Challenge

Brainstorm innovations in rebuilding communities in the Tsunami affected countries.

WE ACCEPT THE CHALLENGE! - Team RISD 1

Brainstorm innovations in rebuilding communities in the Tsunami affected countries.

Urban Growth Model

Approximate population:
1 Menasa – 300 people
4 – 5 Dusuuns (neighborhoods)

Meeting house, market, Mosque, commercial zones structured in relation to water body and main roads.

"DEVIATING FROM THE D.U.Z (De-Urbanized Zone)" (Team RISD-1)

Development of a social core for reestablishing the water-based economy, with housing to be built with simple materials by families.

Tighe Butler, Davit Elecson, David Dwight, Jennifer Niem; Rhode Island School of Design.

Meeting House as Neighborhood Anchor

Modular Housing Unit Kit

Kit Contents:
Slab and Footings
Footings
Planks
Claddings
Roof

Available in centralized distribution centers

Provides a simple framework to be modified by residents

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"POST-TSUNAMI RECONSTRUCTION GUIDELINES"  (Team MIT-3)
A multi-component proposal which includes early warning system, an evacuation system, barriers to reduce impacts, and ‘ecotels’ to rejuvenate tourism, with innovative strip typologies in the urban layout to reduce damage and safe havens through multi-purpose facilities. Grant Sharpe, Ajit Singh, Anubhav Gupta, Kaustuv De Biswas, Rakhi Bhavnani; MIT and GSD.

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THE MASTER PLAN

Problem  Massive Destruction with little to no chance of Stopping

Solution  Mitigation through three Concepts

- Disaster Response Mechanisms
- Minimize Damage
- Community Development and Revitalization

Disaster Response Mechanisms

- Early Warning System
- Evacuations Routes
- Safe Havens

Minimizing Damage

- Zoning & Development Strategies
- Barriers
- Building Guidelines

Community Development and Revitalization

- Public Education and Awareness
- Tourism and Revitalization
- Eco-tels / Eco-tourism

Disaster Response Mechanisms

“Run for the hills” evacuations

Early Warning Systems

- Underwater Buoys
- Use of in-place communication systems wherever possible. Ex. Aceh
- Implement “Tornado style” Warning Systems in other at-risk areas. Ex. Sri Lanka
- Public Awareness of the Warning Systems

Evacuation Routes

- Warning Useful if no way to run
- Most at-risk populations can still move 1 km. in 20 mins
- Create Gathering Places connected to fast evacuation networks to the Safe Havens. Solution: Horizontal and Vertical Evacuation
- Vertical: Climb designated stairs

Disaster Response Mechanisms

SAFE HAVEN
CASE STUDY STADIUM

- Large-scale multi-purpose disaster center
- Safe haven in emergency
- Shelter, medical center, distribution/communication center for NGOs
- Regularly used as disaster education centers, community development, training
- Existing buildings retrofitted

TARGET BUILDING TYPES

- Community Centers
- Large Halls
- Sports Arenas
- Schools

Disaster Response Mechanisms

SAFE HAVEN Building Guidelines

Necessary Components

- Sized for capacity expected
- Sleeping Quarters
- Sanitation
- Food and Water

Helpful Components

- Medical Facilities
- Helicopter/ Transport
- Communication Center
- Food/ Aid Distribution

WE ACCEPT THE CHALLENGE! - Team MIT 3
**Minimizing Damage**

Zone 1 0-100m
- Only open and non-permanent structures
- Kiosks, Cabana or Religious style structures

Zone 2 100-600m
- Increasing Height
- Mangrove swamps
- Other “natural” barriers – hills, berms, ditches

Zone 3 600m-1.5km
- Low Density Building interspersed with forests and barriers
- Cluster Style
- Raised Buildings

Zone 4 1.5km on
- Beyond Expected Inundation Zone
- Higher Density
- Safe Havens

**Zoning & Development Strategies**

**Minimizing Damage**

- Perpendicular to Ocean
- Minimal surface area exposed to possible Tsunami damage
- Linear Cluster Building Typology Development
- Overall: Low Density Zone
- Construction Technologies to respond to the Tsunami Challenge.
- Community Participation in Building Development.
- Promote sustainable community development

**Building Guidelines**

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**Community Development and Revitalization**

Public Education and Awareness

Tourism and Revitalization through ‘Ecotels’ and Eco-tourism

Festivals as a device to revitalize communities using ‘Safe Haven’ structures for festivals

Create jobs - highlight and preserve local trade and culture

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