Initiative for A “National Guideline for Rural housing in Disaster Prone Areas in Bangladesh” experiences in development

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A VALUE- BASED NON-GOVERNMENTAL ORGANIZATION THAT WORKS WITH POOR AND MARGINALIZED COMMUNITIES
Established in 2002, Friendship works to restore the dignity of marginalized communities by delivering effective development solutions using a holistic needs-based approach. It emphasizes on values, self-respect and dignity of the people in uplifting the quality of life of the ultra-poor and disaster prone communities.
Our Vision
A world where people, especially the hard to reach and unaddressed, will have equal opportunity to live with dignity and hope.
Our Mission

To contribute to an environment of justice and equity to empower people to reach their full potential through a sustainable, integrated development approach.
Where Do We Work?

Friendship’s key working areas comprise of some of the most remote and inaccessible *chars* and riverbank areas of Gaibandha and Kurigram district, which are situated in northern Bangladesh, as well as areas in the south including Bagerhat, Patuakhali and Barguna district. Other than our regular work in our prime areas, we have also operated in Bogra, Jamalpur Sirajgonj, Tangail, Pabna, Pirojpur, Chittagong, Khulna, Noakhali, Satkhira during disasters, emergency situations, and according to specific project needs.
Friendship Integrated Development

- Healthcare, Nutrition and Population
- Education
- Disaster Management & Infrastructure Development
- Sustainable Economic Development
- Good Governance
- Cultural Preservation
River-based health service

Lifebuoy Friendship Hospital
Emirates Friendship Hospital
Rongdhonu Friendship Hospital

Friendship River Ambulances
Friendship Houseboat
Friendship Speed Boat
Friendship Integrated Healthcare Delivery System

Tier 1: Hospital Services, Specialized Health Camps & Doctor Centre

Tier 2: Satellite and Static Clinics

Tier 3: Friendship Community Medic-Aides (FCM)

mHealth
(Smartphone Based Basic Primary Healthcare Service Delivery Tool for FCM)

Floating Hospitals:
- Lifebuoy Friendship Hospital
- Emirates Friendship Hospital
- Rongchonou Friendship Hospital

Land Hospital:
- Satkhira District (Under Construction)

Doctor Centre:
- Dhaka District (In Process)

Primary, Secondary & Selected Tertiary Healthcare

Primary Healthcare
(Essential Service Packages)

Primary Healthcare
(Basic Service Packages)

Patient

Connectivity with SATMED for
Interoperability between eHealth Solutions, Access to IT Infrastructure and Medical Education & Training
Tier 1: Hospital Services, Specialized Health Camps & Doctor Centre: Lifebuoy Friendship Hospital (LFH)
Rongdhonu Friendship Hospital (RFH)
• More than 2.4 million beneficiaries served out of which adult is 69%, adolescent 14% and child 17%.
• 344 secondary health camps held out of which 134 camps are volunteered by foreign medical teams.
• 15,098 successful surgeries.
• 445 satellite/Static clinic days per month.
• More than 500 FCMs (Friendship Community Medic-Aide) have been trained from local communications of chars and are giving healthcare to these communities.
• A total of 14 boats, including 2 river ambulances, supporting the ships.
Adult & Adolescent Functional Literacy Programme
• 75 primary schools in 65 chars
• 5526 students are in primary schools
• 100% of the students passed with Grade “A” in Primary School Completion Examination (PSC)
• 51 Functional Literacy centres for adolescent and adults
• 988 adolescent and adult learners are in functional literacy centres
• “Listen to Learn” project teaches English through recordings of textbooks by English elocutionists delivered through mobile devices
Disaster Risk Reduction and Climate Change Adaptation
Community-Managed Disaster Risk Reduction
Infrastructure Development
Water, Sanitation & Hygiene: Community-based water treatment plants
• 3,894,750 man days of emergency relief distributed
• 2,686 houses reconstructed
• 12 plinths (cluster villages) raised for flood preparedness. 288 households relocated
• Village transformation project after cyclone SIDR
• Community Managed Maintenance Program for Water & Sanitation, irrigation & bio-fertilizer production
• Water treatment plant for large scale agriculture irrigation projects
• 6 water treatment plants for desalination of drinking water in coastal area of Bangladesh
Sustainable Economic Development (SED)
• Unique microfinance model catering to the different needs of our beneficiaries.
• 176 Friendship Char Development Committees (FCDC) and 40% women participation.
• 873 fishermen liberated, improved annual income by 45%
• 7 weaving, dyeing & printing centres
• 1 tailoring centre and 1 embroidery centre
• Livelihood support for Cow-rearing and fattening, vegetable gardening, cultivation of maize, jute, rice and chili, fishing boat, transport boat, horse cart, solar panel, rural electrification, sewing machine, mobile phone, post harvesting equipment, such as irrigation pump, power tiller etc.
Access to Government Institutes
Sustainable Economic Development

Income Generation
Introduce an Educational Curriculum
• Paralegal orientation program organized.
• Global Dignity and Code of Ethics have been addressed over 10,000 students each month.
• 6100 beneficiaries and local communities are taught legal rights and responsibilities.
Cultural Preservation
Friendship Center in Gaibandha
Population: 150,039,000

Major threats: Floods, Drought, Cyclones, Sea level rise

World Index ranking: 5/173

Global Climate Risk: 5/178

By 1980 and 2013, the average Bangladeshi was personally affected by two disasters

Pioneer in disaster preparedness in world

Source: www.give2asia.org
## Housing vulnerability

<table>
<thead>
<tr>
<th>Year</th>
<th>disaster</th>
<th>Houses damaged</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Fully</td>
<td>Partially</td>
<td></td>
</tr>
<tr>
<td>1970</td>
<td>cyclone</td>
<td>3,350,000</td>
<td>Data absent</td>
<td></td>
</tr>
<tr>
<td>1986</td>
<td>flood</td>
<td>196,803</td>
<td>279,212</td>
<td></td>
</tr>
<tr>
<td>1988</td>
<td>flood</td>
<td>1,151,189</td>
<td>2,536,408</td>
<td></td>
</tr>
<tr>
<td>1988</td>
<td>cyclone</td>
<td>788,715</td>
<td>863,837</td>
<td></td>
</tr>
<tr>
<td>1991</td>
<td>cyclone</td>
<td>819,608</td>
<td>882750</td>
<td></td>
</tr>
<tr>
<td>1991</td>
<td>flood</td>
<td>340,043</td>
<td>573,446</td>
<td></td>
</tr>
<tr>
<td>1993</td>
<td>flood</td>
<td>234,393</td>
<td>615,336</td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td>flood</td>
<td>898,708</td>
<td>2,014,017</td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td>flood</td>
<td>218,275</td>
<td>598,818</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>cyclone</td>
<td>290,320</td>
<td>452,886</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>flood</td>
<td>113,252</td>
<td>241,147</td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>flood</td>
<td>984,002</td>
<td>2,456,795</td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>flood</td>
<td>138,076</td>
<td>426,695</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>flood</td>
<td>437,050</td>
<td>309,775</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>flood</td>
<td>115,511</td>
<td>564,527</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>flood</td>
<td>109,147</td>
<td>541,988</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>flood</td>
<td>969,161</td>
<td>3,602,009</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>flood</td>
<td>650,826</td>
<td>1,811,329</td>
<td></td>
</tr>
</tbody>
</table>
Background

• Friendship (Luxemburg and Bangladesh) and IFRC SRU teamed up to organize a workshop in Nov 2014 towards:
  • a preliminary consolidation of shelter knowledge in Bangladesh.
  • The workshop was co-hosted and endorsed by the Government (Department of Disaster Management-DDM) as a step towards the development of more comprehensive national approaches to sheltering.

• The workshop led to one overarching conclusion: the common consensus for development of a national guideline.
Key Stakeholders

Government

Jointly developed by:
- Department of Disaster Management
- Housing and Building Research Institute

National and international NGOs

In collaboration with:
- Friendship

With assistance from:
- International Federation of Red Cross and Red Crescent Societies
- Shelter Research Unit

Donors

Sponsored by:
- Development Cooperation and Humanitarian Action
- Grand Duchy of Luxembourg
- Friendship Luxembourg

With Shelter Cluster and Shelter Actors
At Friendship Center

- Field visits
- Plenary
- Group work
- Knowledge bazaar
- Formulation of key-messages for various aspects of sheltering.

Mrs. Runa Khan Founder and Executive Director of Friendship addressing in the workshop.
The 1st workshop report launched by the Honorable Minister for Disaster Management & Relief in Bangladesh. 31st of March 2015

Government, local NGO’s, INGO’s, UN agency & IFRC members attended. 43 Participants from 11 different geographic locations attended.
• DDM formed partnership with the Housing and Building Research Institute (HBRI) to lead for design; Friendship worked as an instrumental in this partnership

• The decision taken to organize a workshop to discuss again in a broad stakeholder setting that would form the bulk of the national guidelines.
Rationale

• **Bangladesh is predisposed to numerous natural extremities** due to its geographic location, climate change, and meteorological features.

• **Predominantly housing is the most affected paradigm**, facing the utmost adverse impacts of nature.

• Although Bangladesh has shown responsive approaches to disaster risk reduction and management, **lack of an inclusive policy and guideline for rural housing at a national level** is **obstructing the successful outcome** of the overall process in most of the cases.

• an inevitable **demand** has been felt to **formulate a national guideline** and design manual for rural areas specially areas prone to natural extremities.

• this **guideline** is to assist both the housing **facilitators and end users living in extreme natural conditions**.
Rationale

MINIMUM STANDARDS
Objectives of the Guidelines

• Overall: To assure investment in post disaster serves to **advance the rural housing stock** of Bangladesh, pre and post disaster, to substantially **improve the living conditions** of the rural population, to **increase resilience** to future disasters and to introduce **environmentally sustainable** mode

• Specific:

1. **Raise awareness** on adequate and more resilient rural housing

2. **Promote and facilitate optimal use of resources** available for rural housing: people, skills, knowledge, materials, funds and land

3. **Stimulate the improvement** of the rural housing stock

4. **Clarify standards** for the technical aspects of improving the rural housing stock

5. **To promote innovative building materials and construction technologies**
## Methodology

<table>
<thead>
<tr>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site visit</td>
</tr>
<tr>
<td>Review best practices</td>
</tr>
<tr>
<td>Working together GO-NGOs</td>
</tr>
<tr>
<td>Consult community and Regional workshop</td>
</tr>
<tr>
<td>Expert review</td>
</tr>
</tbody>
</table>
Nov 2014
Regional workshop
At Gaibandha
Oct 2015
GO-NGO Coordination meeting
Regional workshop
At Kalapara
Regional workshop At Sunamgonj
Target Groups

- The people living in areas exposed to extreme natural phenomena like cyclone, flood, river erosion etc.
- The house owners
- Local artisans
- Site supervisors, Engineers,
- NGO, donors and other facilitators

while providing the necessary housing assistance.
Content of the Guidelines

• VOLUME 1: BACKGROUND

• VOLUME 2: MINIMUM STANDARDS

• VOLUME 3: HOUSE DESIGNS
# National guidelines for rural housing in disaster-prone areas

Ministry of Disaster Management and Relief
Ministry of Housing and Public Works

## CONTENT TABLE

1. Housing Policy of Bangladesh
2. Vision and mission
3. The guidelines in practice
4. Vulnerability mapping
5. Performance standards
6. Technical standards, best practices
   1. Flood
   2. Cyclone
   3. Earthquake
   4. River erosion
   5. Landslide
7. Process standards
8. Related issues
9. Capacity building
VOLUME 1: BACKGROUND
VOLUME 1: BACKGROUND

CHAPTER 1: CONTEXT OF THE DEVELOPMENT OF THE NATIONAL GUIDELINES

CHAPTER 2: VISION, OBJECTIVES AND TARGET GROUP

CHAPTER 3: HOUSING VULNERABILITY AND CAPACITY IN BANGLADESH

CHAPTER 4: POLICY FRAMEWORK OF THE NATIONAL and INTERNATIONAL GUIDELINES

CHAPTER 5: HOW TO USE THE GUIDELINES
Coherence to be sought with other policies:

- Embankments,
- Water and sanitation,
- Livelihoods creation in rural areas,
- Climate change,
- Land management,
- Forestry management,
- Engagement of NGOs etc:
VOLUME 2: MINIMUM STANDARDS
Overview of standards:

1. MINIMUM STANDARDS FOR ADEQUATE HOUSING

2. MINIMUM STANDARDS FOR IMPLEMENTING AGENCIES

3. MINIMUM TECHNICAL STANDARDS FOR EMERGENCY SHELTERING

4. MINIMUM TECHNICAL STANDARDS FOR DURABLE HOUSING (At least 25 YEARS OF STRUCTURAL DURABILITY)
<table>
<thead>
<tr>
<th>Minimum Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Security of tenure is guaranteed for a set period of time of at least 25 years</td>
</tr>
<tr>
<td>2</td>
<td>Access to safe water and sanitation solutions are to be provided</td>
</tr>
<tr>
<td>3</td>
<td>All housing is built with materials and techniques that allow easy maintenance, repair and duplication</td>
</tr>
<tr>
<td>4</td>
<td>All housing and sites are adapted to the local hazard profile to resist recurrent disasters over 20 years</td>
</tr>
<tr>
<td>5</td>
<td>All housing offers a comfortable and healthy internal climate</td>
</tr>
<tr>
<td>6</td>
<td>All housing is adapted to special and specific needs of its inhabitants</td>
</tr>
</tbody>
</table>
### Minimum Standard 1

Security of tenure is guaranteed for a set period of time of at least 25 years:

- The current situation of tenure is to be assessed;
- Where security of tenure is absent, it needs to be obtained for at least 25 years (through relocation, deeds or rental agreements within the means of the household or other);
- Proof and documentation of security of tenure is to be provided to the inhabitants.

### Minimum Standard 2

Access to safe water and sanitation solutions are to be provided:

- One up to the standard toilet is to be provided per household;
- Access to ample safe water is to be provided within 300 meter from the house site.
## 4. MINIMUM TECHNICAL STANDARDS FOR DURABLE HOUSING

**Technical Standard 1: Threat:**
Areas exposed to severe cyclonic storms of hurricane intensity (above 118 km/h), or exposed to severe cyclonic storms (88 to 117 km/h)

<table>
<thead>
<tr>
<th>Standard for site organisation:</th>
<th>Reduce exposure to winds by planning trees with a vertical root system and grasses and shrubs on the edges of the communal plinth / reinforce edges communal plinth in areas of storm surge risk</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard for foundations:</strong></td>
<td>Foundation poles are interconnected by 5 layer brick work or a similar bounding technique OR Foundation poles have a T-footing, or a similar technique of anchorage in the soil, minimum depth from plinth level 4 feet</td>
</tr>
<tr>
<td><strong>Standard for bracing:</strong></td>
<td>Cross-bracing is to be provided in all planes of the house: in the walls, in all planes of the roof structure and in the roof plane</td>
</tr>
<tr>
<td><strong>Standards for tie down and joints:</strong></td>
<td>All joints to be reinforced, by using double bolting, metal plate, folded reinforcement bars or technology of similar strength</td>
</tr>
<tr>
<td><strong>Standards for treatment and application of materials:</strong></td>
<td>etc.</td>
</tr>
</tbody>
</table>
For each area, the applicable disasters are different, as are the living practices, the available materials, the landscape etc.
Formation of House Module

1. **Plinth and Structural Frame**
   - **Ferrocement**/weather coated MS Flat Bar/
   - weather coated MS L-section Bar/
   - weather coated MS Round Rebar
   - as Bracing Element

2. **Facade addition with Structural Frame**
   - Space for Storage/
   - Temporary Emergency Shelter

3. **Addition of Roof Structure**
   - **Ferrocement**/Coated MS Section Purlin
   - **Ferrocement**/Coated MS Section Rafter

4. **Complete Built Form**
   - Non Load Bearing Facade
   - Cement Stabilized Earthen Plinth/
   - Stabilized Earthen Plinth with
   - FC Wrapping
Formation of House Module

1. Structural Framework
   - Ferrocement Beam
   - Ferrocement Circular Hollow Column (8" diameter)
   - MS L-section Bar/MS Rebar/MS Tensile Bracing
   - FC Stump/Pad Footing
   - FC Ground Beam

2. Structural Framework with Roof Structure
   - FC Rafter
   - FC Purlin

3. Addition of Facade Element
   - Non Load Bearing Facade

4. Complete Built Form with Roof Structure
   - Gable Roof Framework
4.6.1.2C Roofing Elements

Hipped (Chouchala) Roofing Elements

- Ferrocement Corrugated Sheet
- Cast in-situ Ferrocement Roof
- CGI Sheet

Gable (Dochala) Roofing Elements

- Ferrocement Folded Plate
- Ferrocement L-Panel
- Processed Thatched Roof
Expert review workshop
13 Feb 2016
Challenges!

Housing/Shelter Actors

- Government
- Universities
- UN Agencies
- Shelter and other Cluster
- International NGOs
- National NGOs
- Local NGOs
- Private sectors
- Media
- Local experts

Best practices and Concept

- Government Commitment for better Environment and maximum land use
- Different geographic and disaster zone
- Multi-hazards
- Socio-Cultural, Gender, women, children aspect
- Disability, senior citizens
- Affordability
- Materials Availability, transportation
- Technology
- Indigenous knowledge
- Monitoring mechanism
- Experiences vs modern knowledge
- And many more

FRIENDSHIP Coordinates for common understanding, technical Assistance and team work and creates a platform for GO-NGOs
“Realization leads to responsibility”

- Runa Khan, Founder & Executive Director, Friendship
Thank you

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