In the Name of God, The Compassionate, The Merciful
A Brief Review on Bam Reconstruction Program

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Housing Foundation of Iran
Disaster Proneness of Iran

Disasters such as floods, earthquakes, storms, landslides, etc. pose a grave threat to residential areas in Iran.
Bam earthquake

- Date: December 26 - 2003
- Time: 05:26:56 local hours (01:56:56 GMT)
- Magnitude: Mw6.5 on the Richter scale
- The earthquake resulted in more than 30,000 lives and about 25,000 injuries.
Bam Earthquake, and it’s Significant Features

- Shallowness of it’s Epicenter and Severe Destruction
- Earthquake Occurrence in a Relatively Large City with Historical and Cultural Traits
- Heavy Human Losses and Casualties in a Concentrated Zone
Bam

Before the earthquake
Image of Bam

Bam before earthquake
Image of Bam

AERIAL PHOTOGRAPH OF BAM CITY BEFORE EARTHQUAKE

Bam Citadel
The Fabric of the city

Bam before earthquake
The Urban fabric of Bam
Typical Architecture of the city
Cultural & Historical places

Bam before earthquake
Cultural & Historical places (Bam Citadel)
Livelihood

Bam before earthquake
Bam

After earthquake
Destroyed Areas

Bam after earthquake
- Number of death: around 31850
- Number of Casualties: around 25000
RESCUE & RELIEF OPERATIONS
RESCUE & RELIEF OPERATIONS
The deaths were buried during traditional religious ceremonies in the cemetery.
The dead were buried during traditional religious ceremonies in the cemetery.
Total estimation of financial damages in different sections about **1.5 billion dollar**
# Structural Damages

<table>
<thead>
<tr>
<th>TOTAL DAMAGED UNITS</th>
<th>50722</th>
</tr>
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<tbody>
<tr>
<td>TOTAL</td>
<td></td>
</tr>
<tr>
<td>URBAN RESIDENTIAL &amp; COMMERCIAL UNITS</td>
<td>TO BE RECONSTRUCTED</td>
</tr>
<tr>
<td></td>
<td>TO BE REPAIRED</td>
</tr>
<tr>
<td>RURAL RESIDENTIAL UNIT</td>
<td>TO BE RECONSTRUCTED</td>
</tr>
<tr>
<td></td>
<td>TO BE REPAIRED</td>
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</tbody>
</table>
The high volume of debris in destroyed buildings
DEBRIS REMOVAL

Bam after earthquake
Emergency shelter

Bam after earthquake
Temporary housing
making prefabricated conex with an area of 18-20 square meters, equipped with water heater, air conditioning, and sanitary services in the area and camps for the survivors.
Temporary housing

Camps with masonry buildings
temporary housing adjacent to the destructed houses
temporary shelter using indigenous local materials
Livelihood of people

After earthquake
Reconstruction of Bam
To set up Steering Committee in order to reconstruction of Bam

- Following the proposal of the Cabinet and order of president the steering committee was set up as a headquarter for adopting policies and reconstruction process of Bam which was headed by Minister of Housing and Urban Development and secretariat by the president of Housing Foundation.
The Organizations and Ministries Management chart for the Bam Reconstruction

- **Government Cabinet**
- **Steering Committee for Reconstruction of Bam**
  - The chairman: MOHUD
  - The secretary: HF
- **Bam Architectural Council**
- **Related Organizations and Ministries**
  - NGOs
  - Kerman's General Government and related organizations
  - Other Ministries and related organizations
  - People of Bam
  - Housing Foundation of Islamic Revolution
  - Ministry of Interior
  - Ministry of Housing & Development
Reconstruction approaches

- Reconstruction without development

- Reconstruction as an opportunity to have a fundamental changes in Bam.

- Reconstruction as an opportunity to have a plan in order to enable Bam through the development framework of country.
Fundamental Questions After the Earthquake:

The Bam:

1- Where will be reconstructed?
2- Who will reconstruct it?
3- How will be reconstructed?
Where will Bam be reconstructed?

- Relocating (X)
- In-Situ Construction (✓)
How will be reconstructed?

The Bam:

- The role of people
- Design Procedure
- Contractors
- Control and supervision system
- Relocating
- In-Situ Construction
- The role of NGOs
- The role of Government
- Construction System
- Resources
Who will reconstruct Bam?

- Reconstruction by the Government
- Reconstruction by People
- Participatory Reconstruction
Participatory Reconstruction

The Role of Government

- Enabling people through providing:
  - Grant & Loan Facilities
  - Technical Guidance and Support
  - Appropriate Plans
  - Resources
  - Special Supports for the Poor and Disabled People

The Role of People

- Construction Management
- Supervision & Proceeding
- Participation for Provision of Their Building’s Plan and Approving it
The fields under the governmental assistance

- Debris management
- Preparing plans for rural and urban communities.
- Preparing necessary structure plans conforming the native architectural aspects
- Inviting working groups to participate
- Assisting to establish soil mechanics and materials laboratories
The fields under the governmental assistance

- Performing appropriate technical control over the native technical inspectors in building construction
- Supplying and distributing materials such as steel, cement and assisting in construction new small building materials production plants
- Use of mass construction buildings and it’s management where is possible.
- Producing the appropriate base for the firms and experts cooperating in construction activities, considering the national standards and building codes and having auxiliary solutions such as establishing technical and engineering centers.
- Reviewing the applicant applications and introducing them to the banks for getting loans.
Participatory Reconstruction:
Control and supervision system

Establishment of a Comprehensive Supervisory Network by Making Use of Provincial Building Engineering Organization and Engineers of Reconstruction auxiliary Headquarters:

- Site Supervision by the Construction Engineering Organization.
- Overall Supervision by the Engineers at the Headquarters and auxiliary quarters.

🔹 Set up of the Soil Mechanic Laboratories to control the Quality of Materials:
  - Quality Control of sources and origins of the materials.
  - Quality Control of Materials during the Implementation, by the Inspectors of the Quality Control Companies.
Technical Services, Materials Exhibition and Housing Samples Complex
Establishment of a complex in order to provide Technical Services, Materials Exhibition and Housing Samples with the following criteria:

- Resistant
- Economical
- Climatic & Environmental Compatibility
- Long Life Operation
Bam reconstruction policies

- Reconstruction management and community participation policies
- Financial policies
- Construction technology policies
- Policies related to construction materials and their production
- Architectural planning and design policies
- Reconstruction organization and administrative policies
## Reconstruction operations

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>CREDIT AMOUNT</strong></td>
<td><strong>1.8 billion $</strong></td>
</tr>
<tr>
<td>By Government &amp; donors</td>
<td></td>
</tr>
<tr>
<td><strong>Residential units</strong></td>
<td><strong>5.2 million m²</strong></td>
</tr>
<tr>
<td><strong>Recovered Agriculture area</strong></td>
<td><strong>625 ha.</strong></td>
</tr>
<tr>
<td><strong>Educational buildings</strong></td>
<td><strong>194 units</strong></td>
</tr>
<tr>
<td><strong>Governmental buildings</strong></td>
<td><strong>81 units</strong></td>
</tr>
<tr>
<td><strong>Religious buildings</strong></td>
<td><strong>52 units</strong></td>
</tr>
<tr>
<td><strong>Hospital &amp; health center</strong></td>
<td><strong>35 units (20000 m²)</strong></td>
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### Reconstructed buildings

<table>
<thead>
<tr>
<th>Category</th>
<th>Units</th>
</tr>
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<tbody>
<tr>
<td>Urban units</td>
<td>32189</td>
</tr>
<tr>
<td>Rural units</td>
<td>29516</td>
</tr>
<tr>
<td>Public commercial units</td>
<td>6757</td>
</tr>
<tr>
<td>Urban building retrofit repaired</td>
<td>1407</td>
</tr>
<tr>
<td><strong>Total units</strong></td>
<td><strong>69869</strong></td>
</tr>
</tbody>
</table>
Thank you
For your attention
Technical Services, Materials Exhibition and Housing Samples Complex
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Sample buildings
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Sample buildings
Reconstruction process
Reconstruction process