

**In the Name of God, The Compassionate, The Merciful**

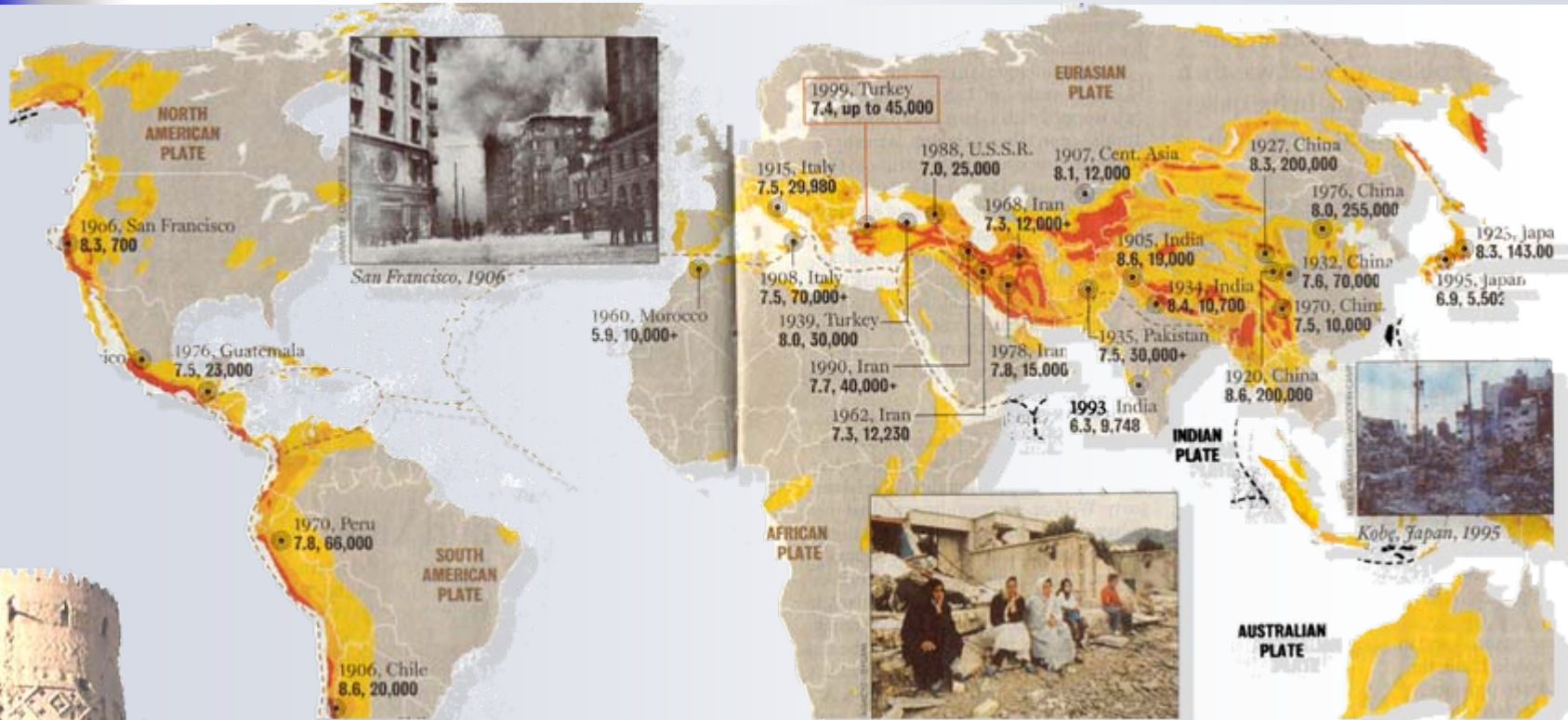
# A Brief Review on Bam Reconstruction Program

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Housing Foundation of Iran



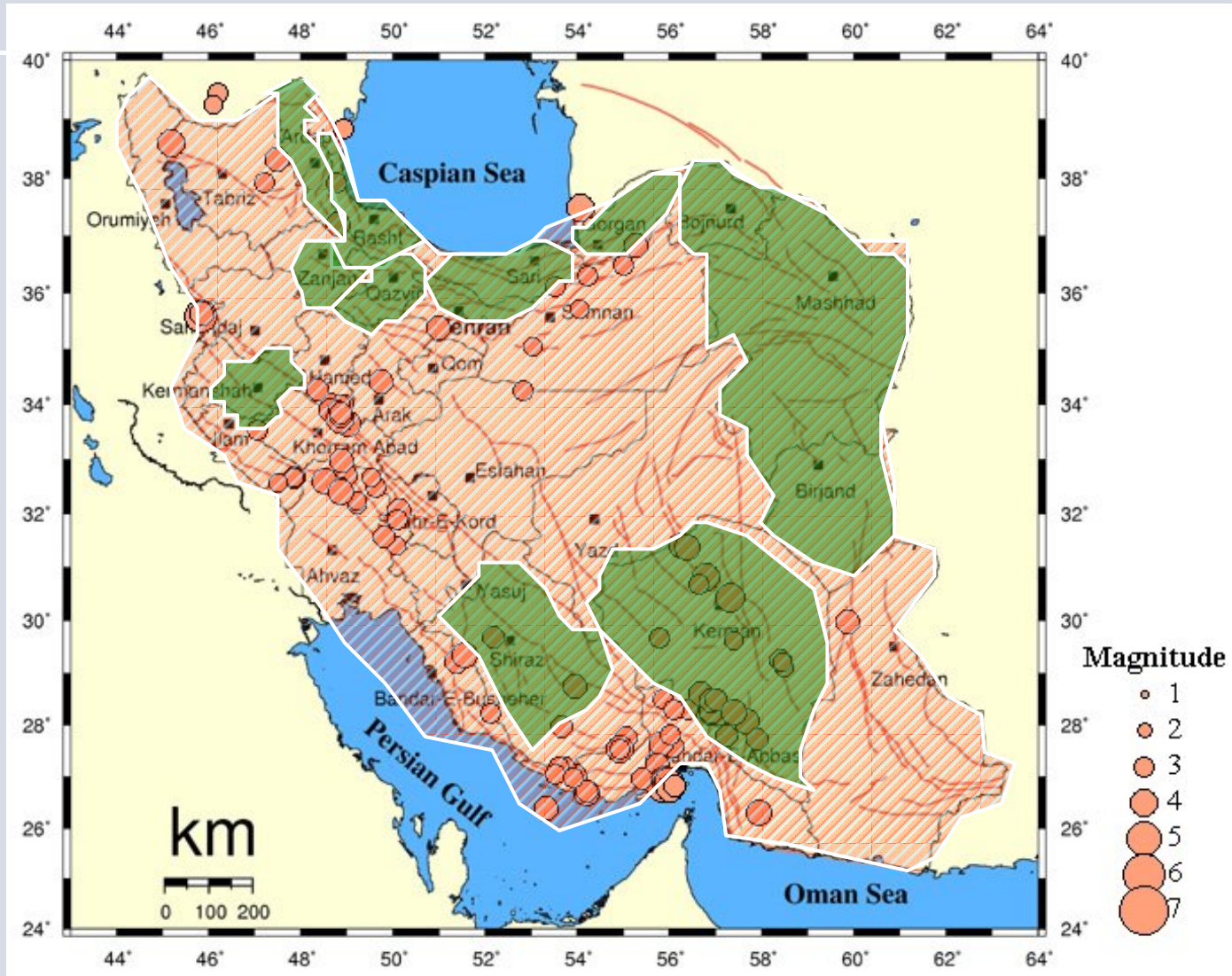
# Disaster-Proneness of Iran



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

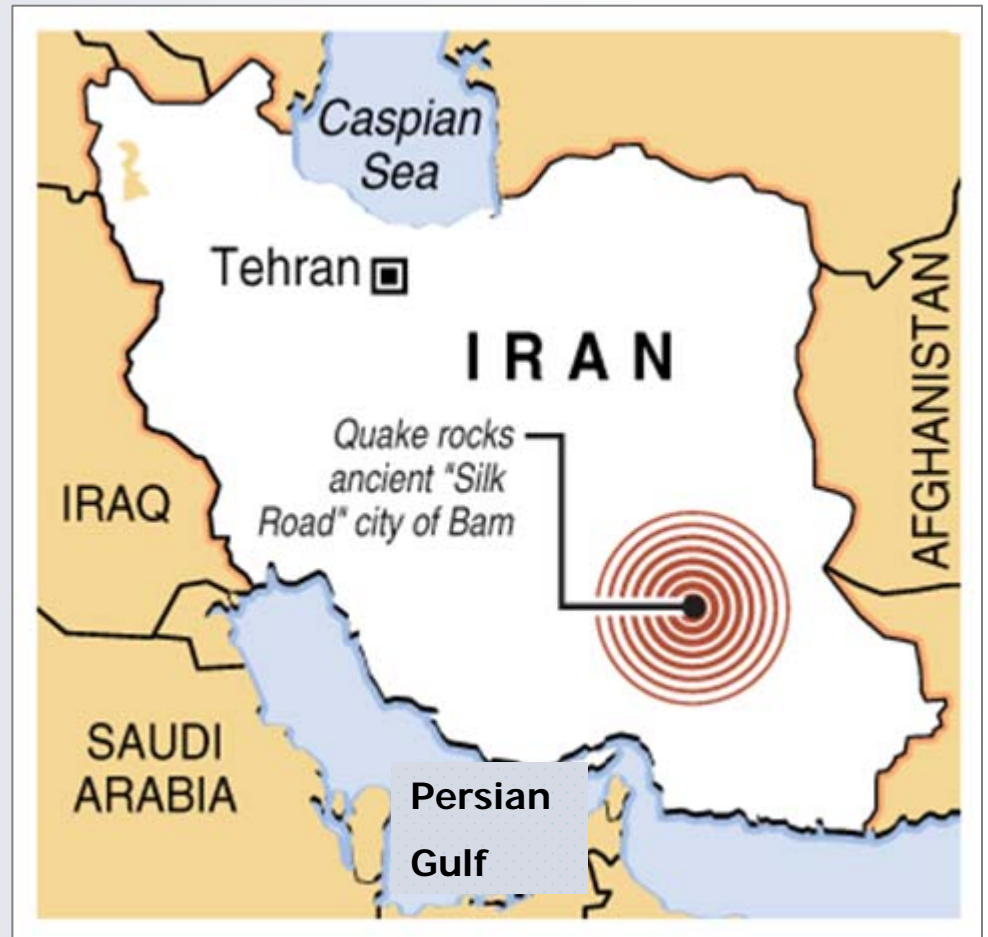


# Reconstructed area



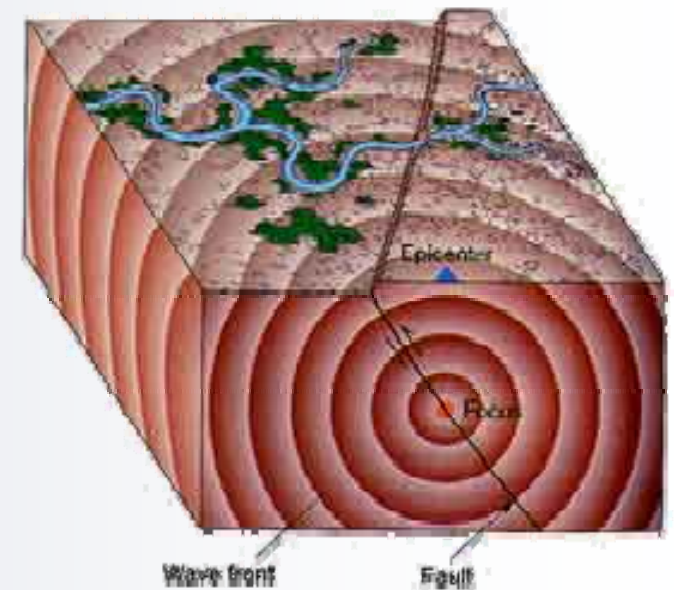
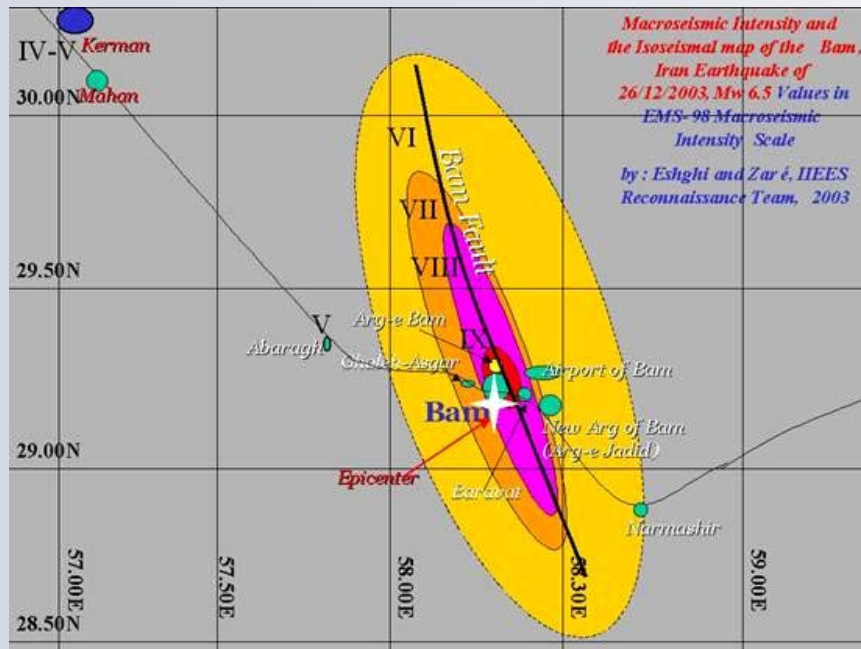
# Bam earthquake

- 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

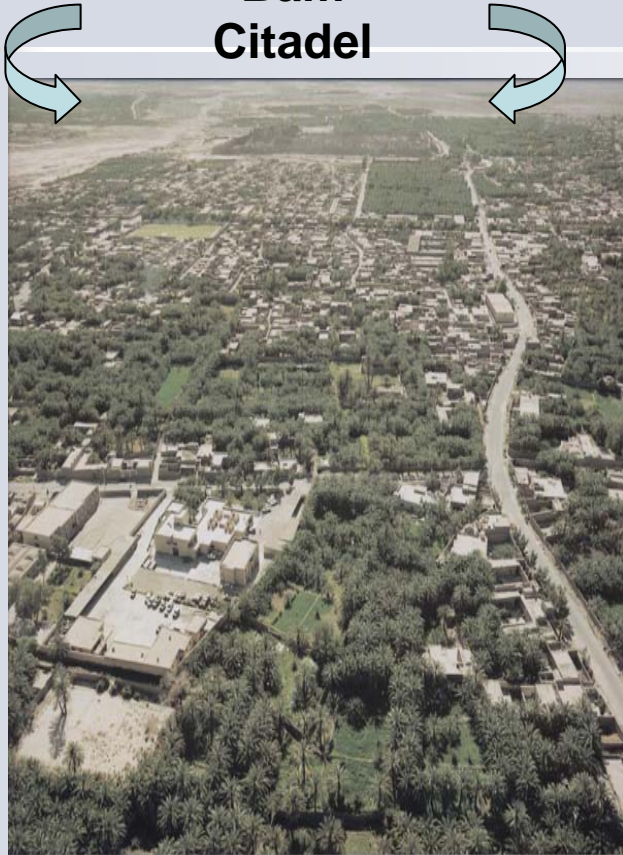


**Bam before earthquake**



# Image of Bam

Bam  
Citadel

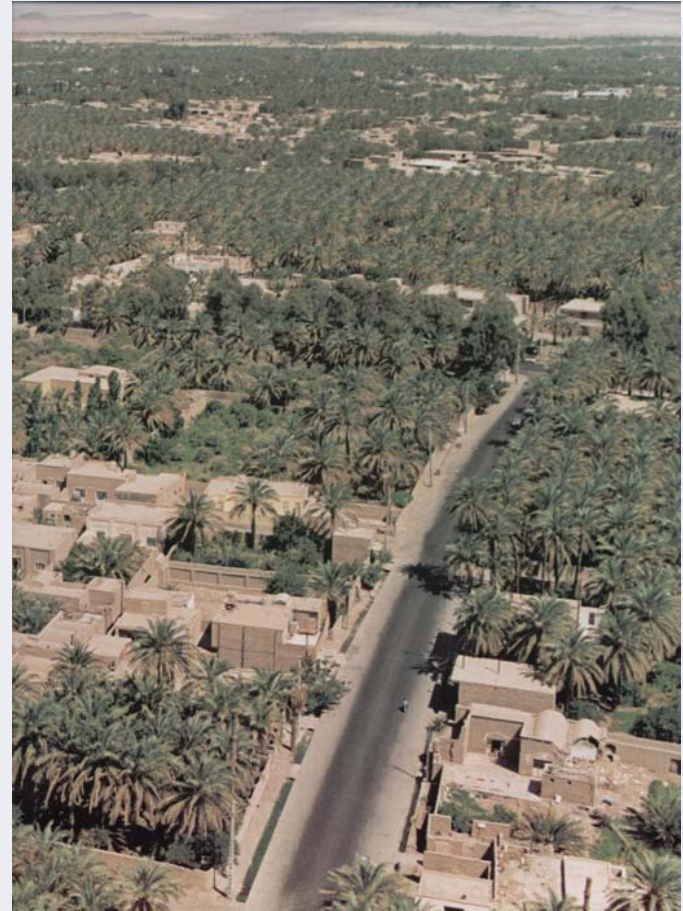
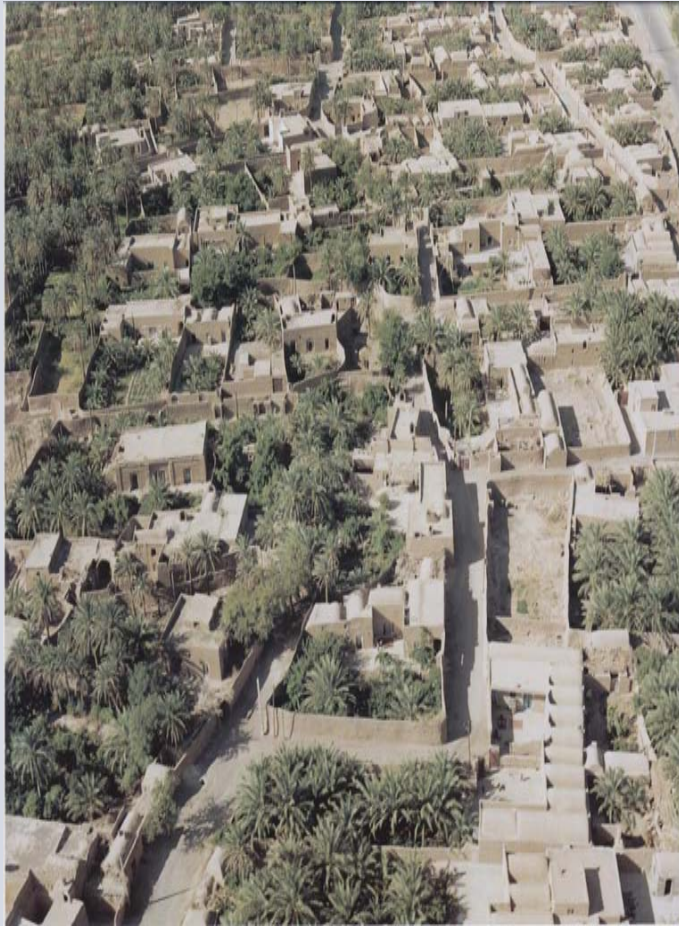


**AERIAL PHOTOGRAPH OF BAM CITY BEFORE EARTHQUAKE**

Bam before earthquake

# The Fabric of the city

**Bam before earthquake**



# The Urban fabric of Bam

Bam before earthquake



# Typical Architecture of the city

Bam before earthquake



# Cultural & Historical places

Bam before earthquake



107 جاسم غھبانپور Jasem Ghazbanpour



# Cultural & Historical places

Bam before earthquake

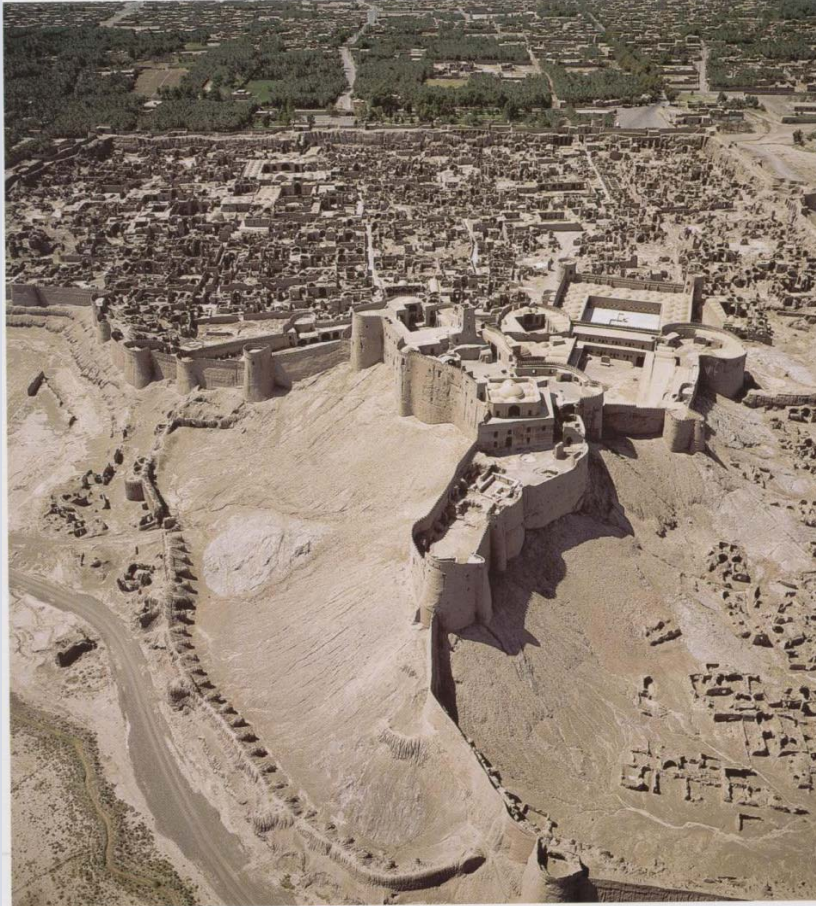


۹۷ Amir Ali Javadian ۲۱ امیر علی جوادیان



# Cultural & Historical places (Bam Citadel)

Bam before earthquake



۵۵ Mojtaba Aghale Sarbarzeه مجتبی آغایں سربرزهه



# Livelihood

Bam before earthquake



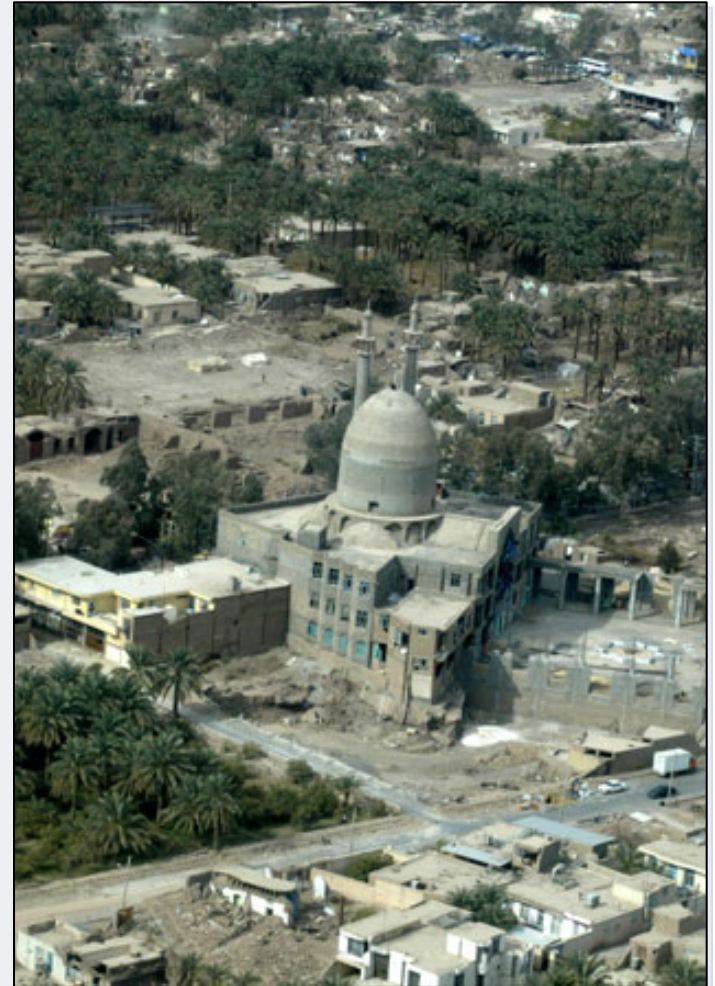


**Bam**

**After  
earthquake**

# Destroyed Areas

Bam after earthquake



- Number of death: around 31850
- Number of Casualties : around 25000

Bam after earthquake



# **RESCUE & RELIEF OPERATIONS**

# RESCUE & RELIEF OPERATIONS



The deaths were buried during traditional religious ceremonies in the cemetery.

Bam after earthquake



The dead were buried during traditional religious ceremonies in the cemetery.

Bam after earthquake



# Financial Damages

Total estimation of financial  
damages in different sections  
about **1.5 billion** dollar



# Structural Damages

TOTAL DAMAGED UNITS		
<b>TOTAL</b>	<b>50722</b>	
<b>URBAN RESIDENTIAL &amp; COMMERCIAL UNITS</b>	<b>TO BE RECONSTRUCTED</b>	<b>25562</b>
	<b>TO BE REPAIRED</b>	<b>828</b>
<b>RURAL RESIDENTIAL UNIT</b>	<b>TO BE RECONSTRUCTED</b>	<b>24332</b>
	<b>TO BE REPAIRED</b>	<b>0</b>



# The high volume of debris in destroyed buildings

Bam after earthquake



# DEBRIS REMOVAL

Bam after earthquake



# Emergency shelter



Bam after earthquake

# **Temporary housing**

## 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

Temporary housing



Camps with masonry buildings

## temporary housing adjacent to the destroyed houses

Temporary housing





# temporary shelter using indigenous local materials



Temporary housing

# Livelihood of people

After earthquake

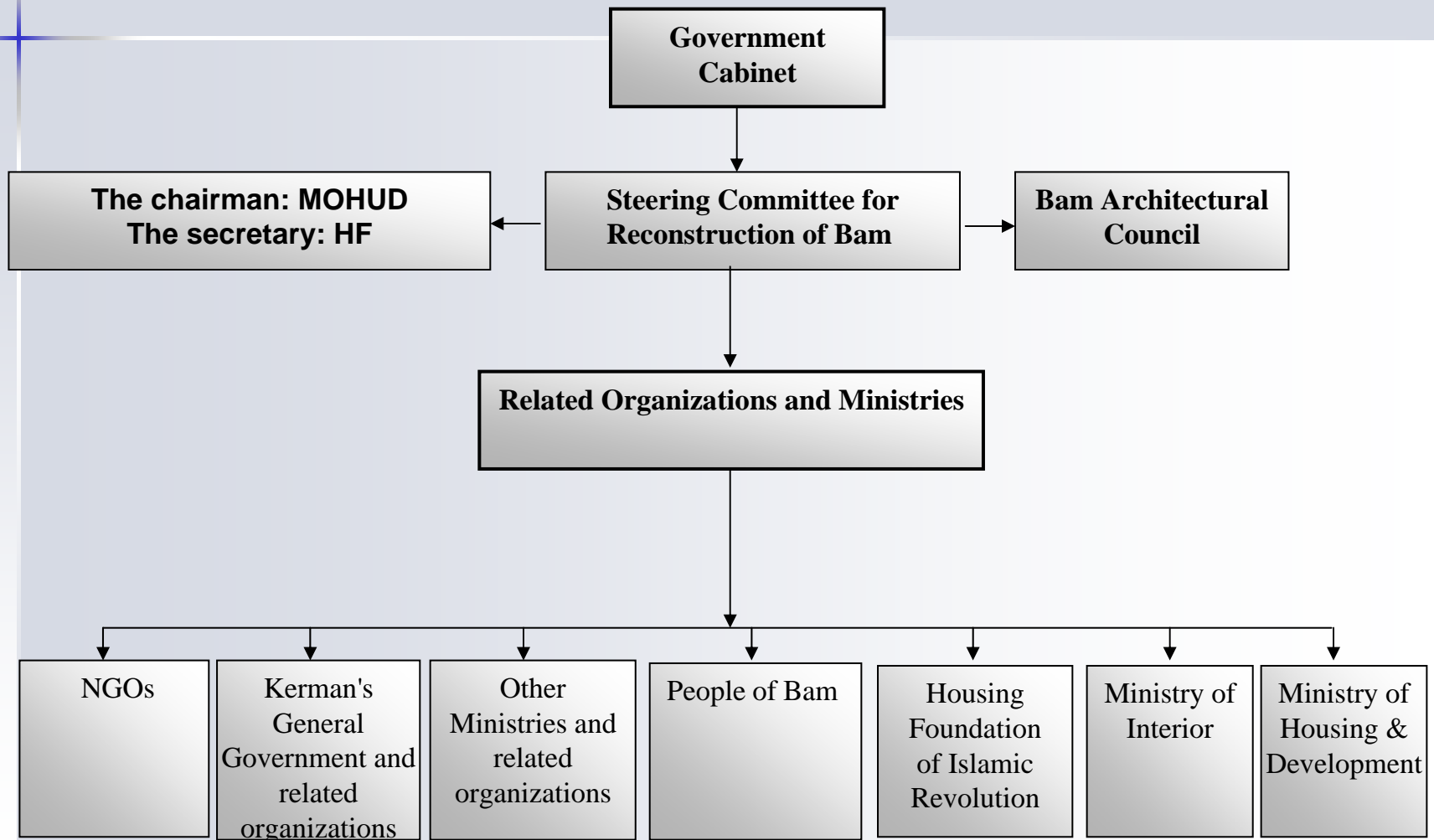


# Reconstruction of Bam

## **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



# 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?

Reconstruction process

Relocating

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 Government

Construction System

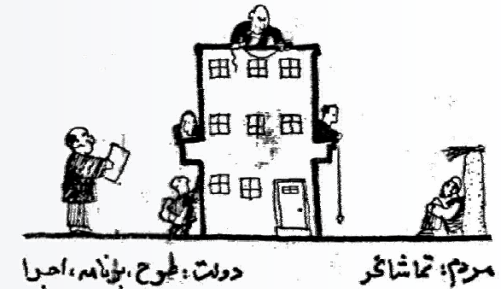
Resources

The role of NGOs



# 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 Headquarter 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

Reconstruction process

بناد مسکن انقلاب اسلامی  
شهرت ۱۰۰ متر

مجموعه خدمات مهندسی  
و نمایشگاه فن آوری و مصالح ساختمانی  
شهرستان بهم

ساختمان خدمات مهندسی

سایت مجموعه

مشاور: مهندسین مشاور نقش کوثر

# 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

<b>CREDIT AMOUNT</b> By Government & donors	1.8 billion \$
<b>Residential units</b>	5.2 million m <sup>2</sup>
<b>Recovered Agriculture area</b>	625 ha.
<b>Educational buildings</b>	194 units
<b>Governmental buildings</b>	81 units
<b>Religious buildings</b>	52 units
<b>Hospital &amp; health center</b>	35 units (20000 m <sup>2</sup> )

# Reconstructed buildings

Urban units	32189
Rural units	29516
Public commercial units	6757
Urban building retrofit repaired	1407
<b>Total units</b>	<b>69869</b>







بانی

تعمیرات

تعمیرات

قیار



Thank you  
For your attention

# Technical Services, Materials Exhibition and Housing Samples Complex

Reconstruction process





# Technical Services, Materials Exhibition and Housing Samples Complex

Reconstruction process



Return



# Technical Services, Materials Exhibition and Housing Samples Complex



# Technical Services, Materials Exhibition and Housing Samples Complex



# Technical Services, Materials Exhibition and Housing Samples Complex



Return



# Technical Services, Materials Exhibition and Housing Samples Complex



[Return](#)

# Technical Services, Materials Exhibition and Housing Samples Complex



Sample buildings



# Technical Services, Materials Exhibition and Housing Samples Complex

Sample buildings



# Technical Services, Materials Exhibition and Housing Samples Complex

## Sample buildings





# Technical Services, Materials Exhibition and Housing Samples Complex



Sample buildings



# Technical Services, Materials Exhibition and Housing Samples Complex



Sample buildings



Return

# Reconstruction process



Reconstruction process





Return

