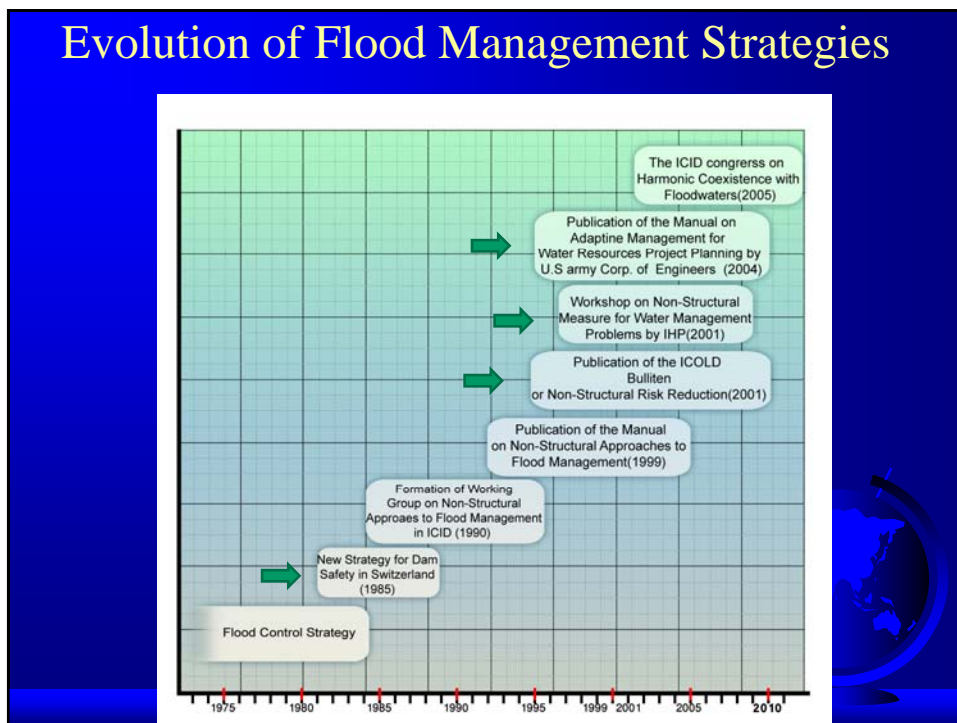




Adaptive Flood Management

Kamran Emami
KuritKara Engineers
Tehran, Iran



Challenges of flood Engineers

- ❑ Substantial Increase of Flood Risk
- ❑ Uncertainty in all aspects

ADAPTIVE MANAGEMENT FOR WATER RESOURCES PROJECT PLANNING

Panel on Adaptive Management for Resource Stewardship

Committee to Assess the U.S. Army Corps of Engineers Methods of
Analysis and Peer Review for Water Resources Project Planning

Water Science and Technology Board

Ocean Studies Board

Division on Earth and Life Studies

NATIONAL RESEARCH COUNCIL
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Adaptive management Principles (2004)

- . **Adaptability** (Change Threat to Opportunity)
 - **Flexible Decision Making** (uncertainties)
 - **Monitoring and vigilance**
 - **Learning while doing**
 - **Application of New knowledge and technologies**
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Adaptive management Principles (2004)

- . **Avoiding costly irreversible mistakes**
- **Updating the Objectives**

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Adaptive management Principles (2004)

.Resilience

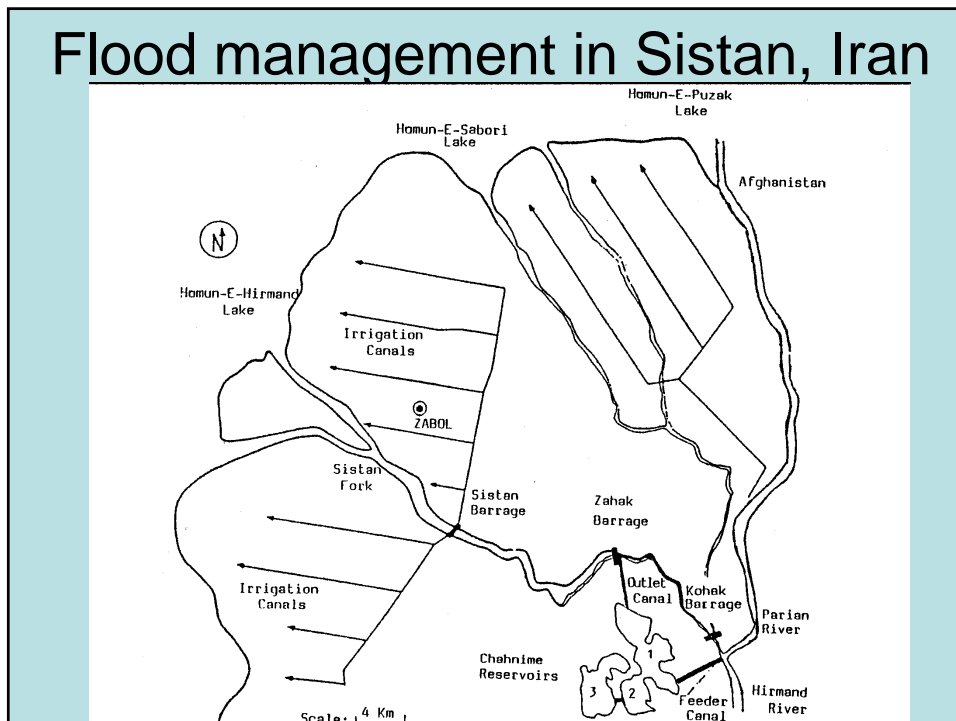
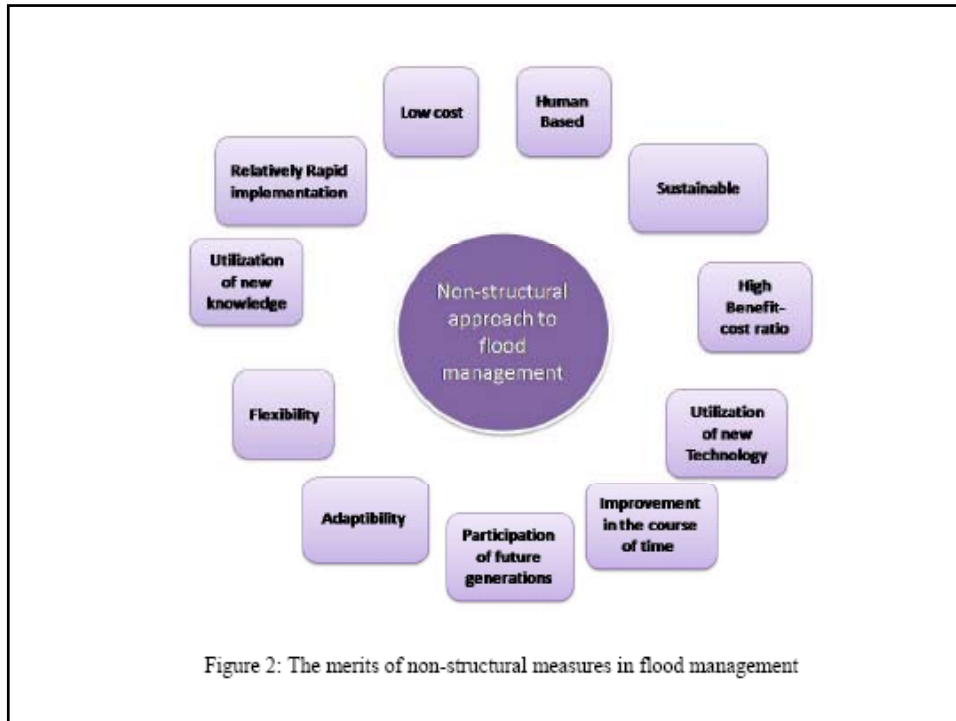
- Harmony with Environment (step by step)
- Passive and Active AM
- Stakeholders Participation
- Enhanced Real time reactions

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TABLE 2.3 Trends in the Evolution of Civil Engineering Design Practice

Design Element	Nature of Change	
	From Traditional	Broadening To
Scope	Project	System of projects
Purpose	Single purpose	Multiple and sometimes conflicting objectives
Means	Structural	Nonstructural
Focus	Construction	Long-term Management
Risk Recognition	Little	Extensive

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Successes of AFM in Early Impoundment of Large dams in Iran



Successes of AFM in Early Impoundment of Large dams in Iran



-A Proposal for a Book to be prepared by WG-CAFM

Chapter	What?	When?	Who
one	Floods Challenges	1 month	?
Two	Adaptive Management	1 month	Emami
Three	Adaptive Flood Management	2 months	Emami
	Case Study: Pakistan		
	Case Study: Japan		
	Case Study: Thailand		
	Case Study: Australia		
	Case Study: U.S.		
	Case Study: China		
	Case Study: Netherland		
	Case Study: Germany		
	Case Study: ----		
	Case Study: -----		
	Case Study: -----		
	Conclusions		

Conclusions

- Based on experiences of application of AM in several larges projects it can be concluded that:
- Adaptive flood risk Management is an effective, efficient and versatile tool.
- AM emphasize of Non-structural approaches enhance adaptability, flexibility and sustainability.

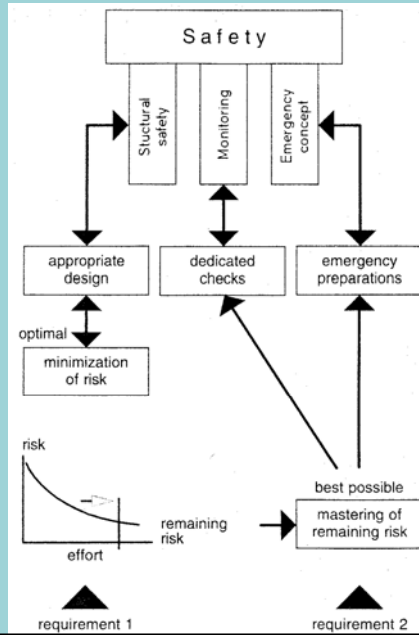
Basic Requirements:

- Efficient and reliable Water Managers and experts
- Comprehensive and reliable Monitoring System
- Preparedness and Plans for Emergencies
- Regulations to ensure flexibility and adaptability
- Resources and Training

-A Proposal for a Book to be prepared by WG-CAFM

Chapter	What?	When?	Who
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	Case Study: ----		
	Case Study: -----		
	Case Study: -----		
	Conclusions		

Dam Safety Strategy in Switzerland



The image shows the cover of a bulletin titled 'NONSTRUCTURAL RISK REDUCTION MEASURES'. The subtitle is 'Benefits and costs of Dams'. It is identified as 'Bulletin E02' and published in 2001 by CIGB and ICOLD. The cover features a photograph of a dam with water flowing through its spillways. To the right of the cover, the title is written in Arabic: 'بولتن سده'. A purple arrow on the left points towards the cover.

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INTERNATIONAL HYDROLOGICAL PROGRAMME

Non-structural measures for water management problems

*Proceedings of the International Workshop
London, Ontario, Canada
18 – 20 October 2001*

Edited by Slobodan P. Simonovic

IHP-V | Technical Documents in Hydrology | No. 56
UNESCO, Paris, 2002



Evolution of Flood Management Strategies

The concept of non-structural measures was some 50 years ago first used in the context of flood control, as a means to reduce the ever increasing damages, without unduly expanding the costly infrastructure. In that sense, NSM were perceived rather as complementary additions to the essentially structural solutions to flood control, in order to reduce costs and enhance efficiency. The Workshop marks an important shift in these perceptions: it has become obvious, that the approach to flood damage reduction is increasingly non-structural: structural, engineering solutions appear as indispensable complements to the essentially non-structural, integrated water resources management, of which flood damage reduction is but an integral part.