DAM SAFETY CHALLENGES: AN INSTITUTIONAL DIAGNOSIS.

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Safe DAM: Development Assurance for Mankind
Unsafe DAM: Dangerous Awful Monster

No of large dams as per World Register of large dams : 58266
China: 23842 (87085, >30m ht-4860 nos)
USA: 9265 (84000)
India: 5102 (4858 completed)
Japan: 3116
Brazil: 1392
Dam Safety Programme.

- **Vision:** a future in which the public safety, economic strength, environment and national security of the nation are not threatened by the risk from dam failure.

- **Mission:** to reduce the risks to life and property from dam failure in the country through the establishment and maintenance of an effective National Dam Safety Programme that brings together the expertise of the resources in achieving dam safety hazard reduction.
Safety Management Cycle.

1. Policies and Procedures
2. Roles and Responsibilities
3. Qualification of players
4. Training and Communication
5. Monitoring and Tracking
6. Meaningful Action
IMPORTANT INSTITUTIONS.

- **INTERNATIONAL COMMISSION ON LARGE DAMS (ICOLD)**
  A Non Governmental Organisation provides forum for exchange of knowledge and experience in dam engineering. Leads the profession in setting standards and guidelines to ensure that dams are built and operated safely, efficiently, economically and are environmentally sustainable and socially equitable.

- **FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)**
  Administrator on national policy issues affecting dam safety in USA. Annual National Dam Safety programme is submitted to congress.

- **ASSOCIATION OF DAM SAFETY OFFICIALS (ASDSO)**
  Moved from a voice of dam safety officials to leadership role in dam safety. Provide assistance to state dam safety programs. Publishes journal of dam safety.

- **THE BUREAU OF RECLAMATION (BOR)**
  Controls 475 dams and dikes in western states of US provides technical assistance on dam safety.

- **THE US ARMY CORPS OF ENGINEERS (USACE)**
  Maintains and updates national Inventory on dams and manages the portfolio of 694 dams.
DAM SAFETY IN INDIA.

- Beginning of dam safety programme.
- National Committee on Dam Safety (NCDS)
  - Interstate Sub Committees
- Role of Central Water Commission
- Role of States
  - Periodical inspection and Review
  - Phase-I investigation
  - Phase-II investigation
  - Hydrological review
  - Structural review
  - Preparing data books, O & M manuals
  - Preparing EAP
  - DSRP
  - Review once in 10 years
  - Rehabilitation works
  - Trainings/Workshops
  - Dam Safety Organisation/Cell
  - State Dam Safety Committee
Institutions connected in Dam Safety Programme in the Country

- IMD / NRSA/BIS
- IITs / NITs Technical Institutions
- World Bank
- INCOLD / CBIP
- GOI, CWC
- State Governments. PWD / WRD
- CWPRS / CSMRS State Research Institutions
- Private Companies
- Public Sectors Companies / Municipal Corporation
STAKEHOLDERS OF DAM SAFETY PROGRAMME AND THEIR ROLES

• Primary stakeholders
• Secondary stakeholders
• Tertiary stakeholders

Role can be as user or, contributor or, decision maker

• Single role stakeholders
• Multi-role stakeholders
NEED OF POLICY FRAMEWORK

- Urban and rural pressure
- Influence of climate change and variability
- Pressure from advocacy groups
- National Water policy 2012
  - Separate infrastructure maintenance cost-suitable percentage of infrastructure development and collected water charges
  - Flood Forecasting and Downstream flood management
  - Communities to be involved in flood and drought mitigation, preparing and updating of EAPs
  - IWRM principle for planning, development and management of water resources. Institutions at Centre and States.
LEGAL INSTRUMENTS

Dam Safety Act

• for ensuring dam safety in the country, Standing committee (1982) submitted “Report on Dam Safety Procedures” in 1986. The committee recommended enactment of Dam Safety Legislation. First dam safety bill was prepared in 1987 and circulated to NCDS. Draft bill was modified in 2002 and circulated to all member states. Govt.of Bihar enacted Dam safety Act 2006 in line with the bill. AP and WB legislative assemblies made resolution empowering Parliament to pass Dam safety Act. Once enacted, it shall apply to other states if resolution to that effect is passed by houses of Legislature.

  – The bill seeks to enjoin responsibility on Central and State Governments and owners of dams to set up institutional mechanism for ensuring safety of such dams.
  
  – It defines the duties and functions of these institutions in relation to surveillance, inspection, O & M, Technical documentation, reporting.
  
  – Addresses the issues of EAP and disaster management and comprehensive dam safety evaluation.
SUSTAINABLE DAM SAFETY AND INTER-GENERATIONAL CHALLENGE

- Fund Availability (Challenge fund and private sector participation)
- Availability of design storm and catchment response data
- Enhancing technical capability in areas of Design flood review and tackling the new IDF
- Flood Forecasting using telemetry
- Preparation of EAPS
- Dam Risk Analysis capability
- Fixing monitoring instruments in existing dams and analysis of data
- Prioritizing investment according to risk
- Transfer of trained operating officials
- Availability of O & M manuals with all operating instructions
- Preserving documents and drawings
- Effective collaboration with technical institutions
- Sustainable catchment management
STRENGTHENING THE DAM SAFETY INSTITUTIONS

• DSARP(1991-1999) experience
  – Restructuring of DSOs
  – Appropriate logistic support
  – Specialized study capability
  – Effective DSRP
  – Training needs
PRIORITY AND PERFORMANCE

• Need for storage reservoirs
• Consequences of flow alterations
• How the institutions performed
• Need of building social network of trust
CONCLUSION

• International practice vs Indian practice
• Need of international collaboration (Smart dams)
• Effective coordination mechanism
• Availability and access to accurate and consistent data
• Evaluation of projects
• Participatory approach for dam safety management.
Questions and suggestions Please ?
THANK YOU
FOR PATIENT HEARING