Implementation of the Flood Directive

Role of dams in flood mitigation
ICOLD position and experiences

Dr. Enrique Cifres
Chairman
Committee on “Role of dams in River Basin Management”
¿What is ICOLD?

The International Commission on Large Dams (ICOLD) is a non-governmental International Organization which provides a forum for the exchange of knowledge and experience in dam engineering.

ICOLD members are essentially practising engineers, geologists and scientists from governmental and private organizations, consulting firms, universities, laboratories and construction companies.

We have National Committees from 88 countries with approximately 10 000 individual members.

Since 1928
Technical Committee

Committee on seismic aspects of dam design
Committee on hydraulics for dams
Committee on dam surveillance
Committee on the environment
Committee on dam safety
Committee on Engineering activities in the planning process for water resources projects
Committee on sedimentation of reservoirs
Committee on operation, maintenance and rehabilitation of dams
Committee on the public awareness and education
Committee on register of dams and documentation
Committee on Dams for hydroelectric energy
Committee on dams and floods
Committee on role of dams in the management of river basins
Committee on Dams and Water Transfers
Committee on global climate change and dams

Bulletins:
2006
Role of Dams in Flood Mitigation
A review
The annual cost to the world economy, of flooding and other water-related disasters, is between US$ 50 and US$ 60 billion.

The 2002 floods in Europe claimed 100 lives and caused US$ 20 billion in damage.
In Asia, between 1987 and 1997, floods claimed an average of **22,800 lives per annum** and caused an estimated US$ 136 billion in economic damage.

- Floods accounted for **half** of the total disasters.
- Water-borne and vector disease outbreaks accounted for **28%** and
- Drought accounted for **11%** of the total disasters.

It is estimated that **one billion** people, one sixth of the global population - the majority of them among the world's poorest inhabitants - **live on flood plains** today.
XX Century

direct deaths
1931 – 145,000
1935 – 142,000
1954 – 30,000

>400,000 direct casualties
Indirect: related diseases, plagues, economic losses, poverty...

Yangtse River

-206 a.c.
Dinastía
Han

216 floods

Every 10 years

T = 100 years
WHICH ROLE CAN DAMS PLAY FACING FLOOD CONSEQUENCES?

Reservoir MODIFIES the natural streamflow regime. In most of the cases dams can improve the inflow conditions at risky areas. That means also a modification on suspended solid flows.

(some 15,000 dams)
<80-90’s

Structural measures
• Induced false safety

• Growth of vulnerability

The increasing pressure of urban and industrial development on metropolitan areas means, besides a **growth in the value of settled capital**.

Investments on protection measures against floods, structural or not, has to be based on a concept of sustainability, so that the creation of infrastructures **do not generate an acceleration of the vulnerability** of the territory.

Non structural measures:
- Incentives to leave flood plains,
- Land use management
- Appropriate warning systems,
- Insurance policies, etc
<80-90’s

Structural measures

90’s

Non structural measures
Just management
<80-90’s

Structural measures

90’s

Non structural measures
Just management

Late 90’s and XXIst cent

Both plus proactive strategies
PPP – key point for ICOLD
What has to be learnt?

- Lack of **implication** of potential **benefited** people who trust that the administration promotes the solution of its interests. In most of the cases, public participation is held looking for legitimacy of those proposals that have not been made with that open starting position.
- **Equity in costs and benefits** means to known **externalities** that need very complex and not agreed procedures. For instance, **gained value** of the land after flood control schemes. (WIN-WIN concept)
- It’s absolutely necessary to gain **credibility** from stakeholders and that is only possible believing in the process yourself. Playing the role of a fair **arbitrator** between confronted positions and not trying to defend just a proposal means to believe in the public participation as a democratic tool more than in your own criteria.
- **Transparency** and well defined rules and calendars are also essential as well as the knowledge “a priori” of the range of possibilities, boundary conditions and the scope of the discussion. Too wide scopes, larger than permitted, can be interpreted as promising possibilities that once have to be rejected become in **frustration**.
- However, there will **always** be someone who remains frustrated, including those **who for each solution find a problem**.
PUBLIC PARTICIPATION IMPROVEMENT IS NEEDED!!

Classical PPP Alternative

Diagram showing the improvement process with barriers and implementation stages.
Thank you for your attention

Dr. Enrique Cifres
Chairman
Committee on “Role of dams in River Basin Management”