

# *Managing Watersheds for Urban Resilience*

*Dr Mark Smith*

Director

IUCN Global Water Programme

Gland, Switzerland



*For 2000-2006*

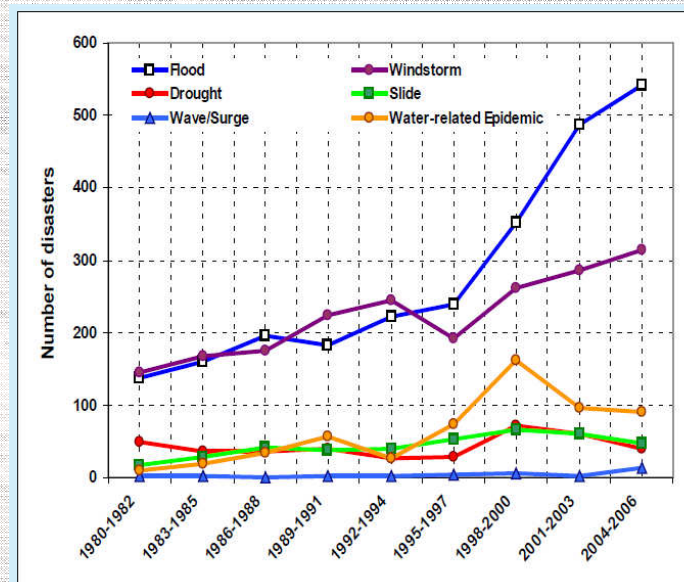
- 2163 water-related disasters
- 290,000 fatalities
- 1.5 bn affected
- \$422 bn damages

*For 1900-2006*

- 90% of 1000 'most-fatal' disasters

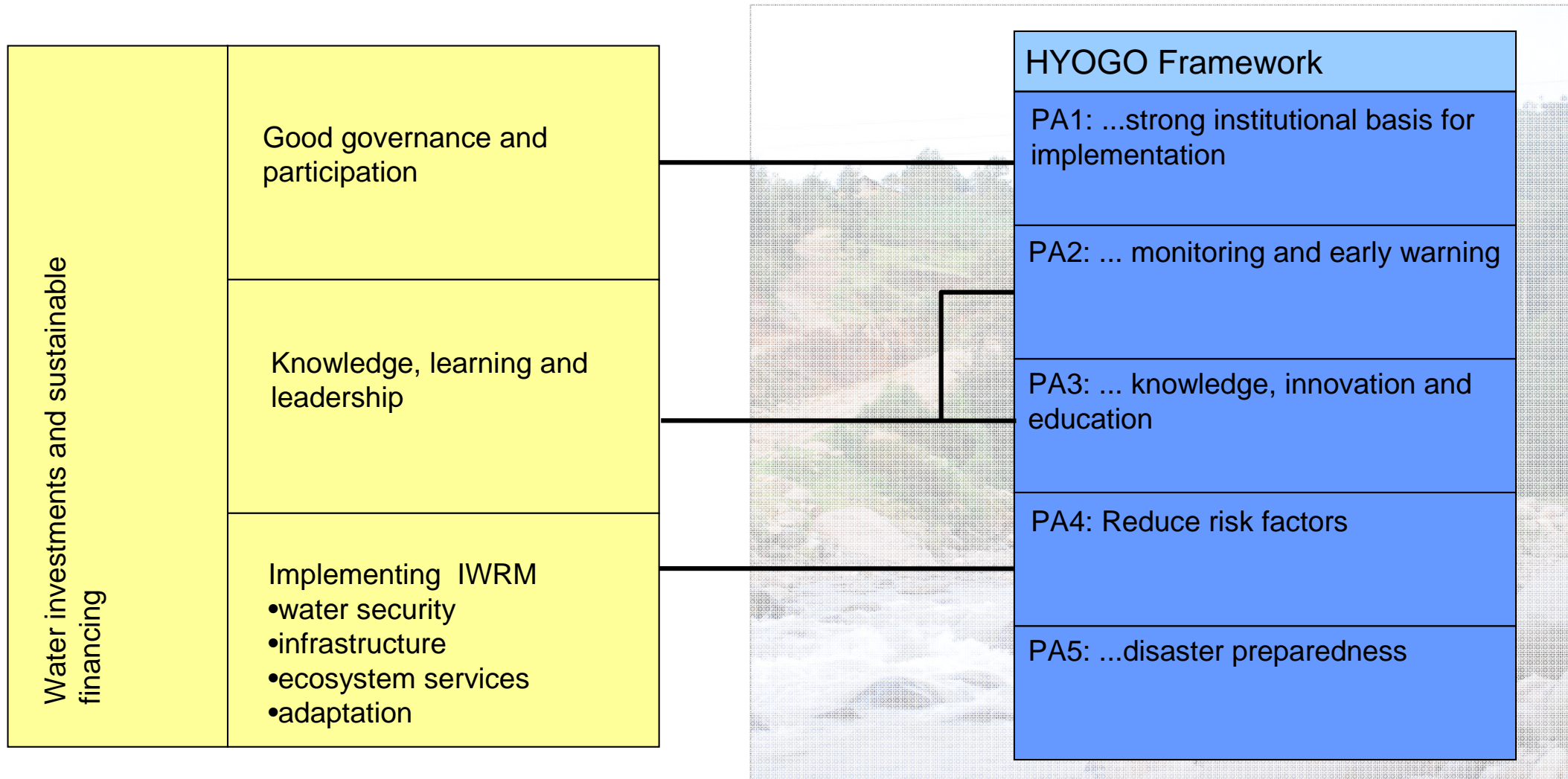


*Water-related disaster events, 1980-2006*



Source: Adikari & Yoshitani (2009)

# The role of water resource management



# Ecosystem services: nature as infrastructure



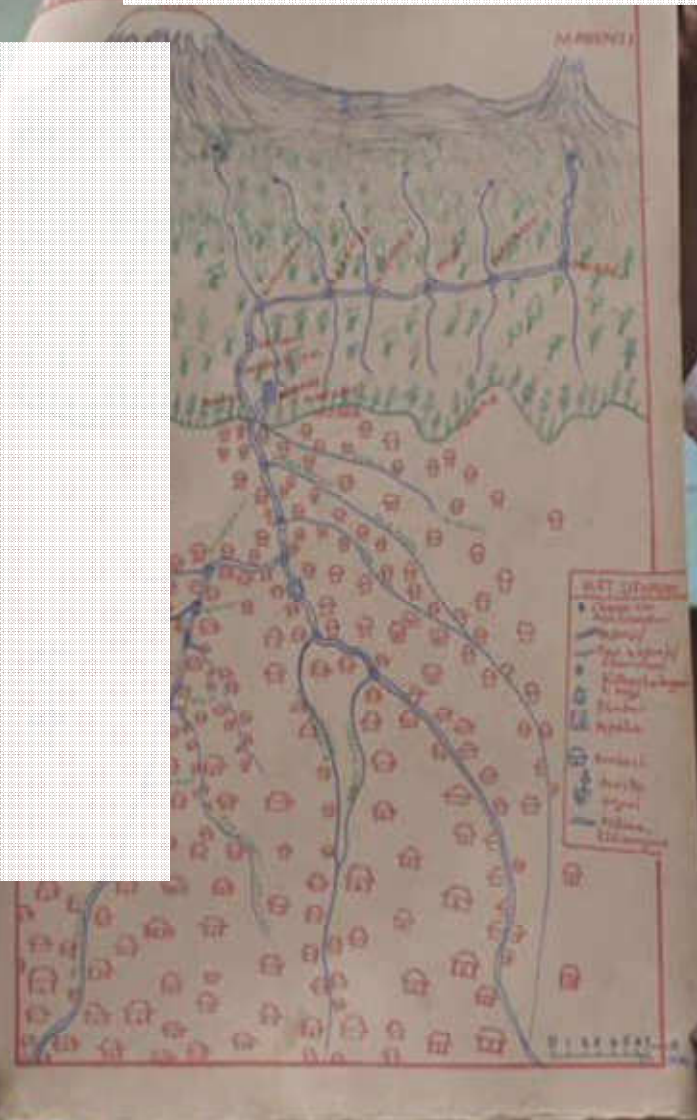
- Built water infrastructure
  - water storage
  - flood defence
  - sea walls
  - protects life and property

- Healthy watersheds
  - store water
  - buffer flows
  - coastal protection
  - water supply
  - support income & enterprise



*Resilient watersheds*

1. Diversity
2. Sustainable infrastructure
3. Self-organisation
4. Learning





# WRM implementation: Tacaná, Guatemala

- governance reforms
- watershed restoration
- spring protection
- diversified farming systems
- water supply
- enterprise development
- disaster preparedness
- early warning



# Resilience shift

- deforested watersheds
- degraded farming systems
- social upheaval
- downstream disaster
- weak coordination



- local coordination of priorities
- landscape restoration & diversification
- social entrepreneurship
- municipal – provincial liaison
- disaster planning

# Recommendations: watersheds for urban resilience

- integrate WRM in urban development
  - in Hyogo implementation
- watersheds as infrastructure
  - built components
  - ecosystem services
- resilient watersheds
  - climate resilience
- upstream-downstream partnerships
  - watershed management
  - institutions and governance
  - finance: eg. PES, trust funds

