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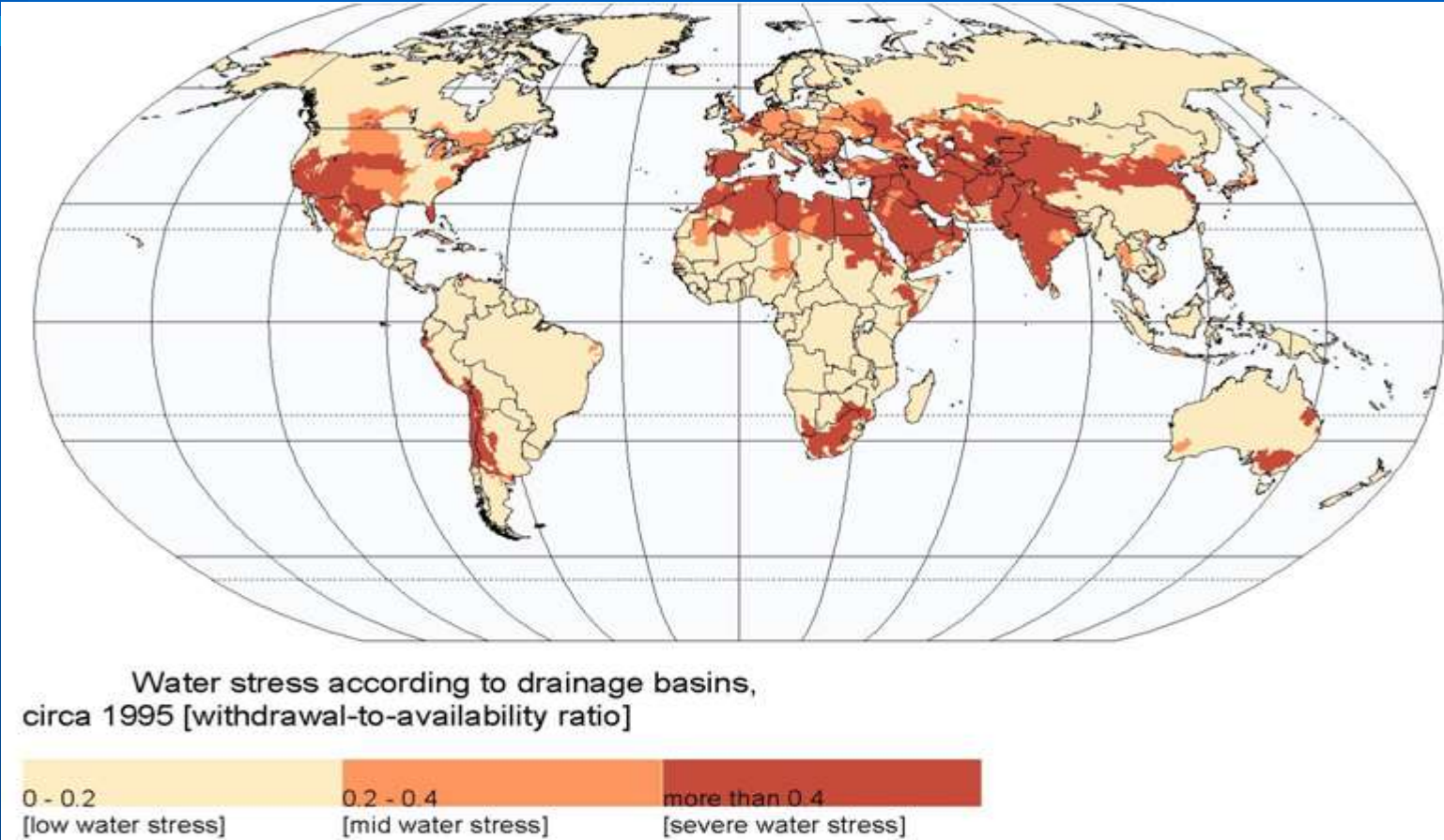
Water Planning for Water Security

-in the Timor-Leste context-

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Water Stress



From now to 2025, 2/3 of the world's population will live in countries under large water stress

Water Security

DEFINING SECURITY

Water: Means to Other Social Ends

Our English Dictionaries define *security* as:

“freedom from danger, from fear or anxiety, from want or deprivation.”

Humans have always been searching for security in their relations with water:

- trying to be sure we have good water, in the right quantity at the proper time and place.
- Predicting floods, reserving sources for droughts, using water to help us generate wealth and avoid deprivation.

Adapted from Delli Pricoli, 2011

◆ UNESCO

Water security is defined as the capacity of a population a) to ensure access to adequate quantities of water of acceptable quality for sustaining human and ecosystem health on a watershed basis, and b) to ensure efficient protection against water related hazards (floods and droughts).

In this context, water security is an increasing concern arising from population growth, drought, floods, degradation of water quality, and climate change (IHP-VIII “*Water security : Responses to local, regional, and global challenges*”)



Key Words for Water Security

- ◆ **Ensuring**
 - Water Supply in terms of both quantity and quality
 - Healthy aquatic ecosystem
 - Sustainable development and economic growth
- ◆ **Protecting civil society from**
 - Water related disasters, especially driven from climate change



Water Planning

The Water Planning is to ensure that water will be available to all in the long-term future for water security is complicated. No one knows for sure, for example, how much rainfall there will be in any given year, or when the next period of drought might begin.

Planning types : Water allocation plans
Long term plans
Regional demand and supply statements



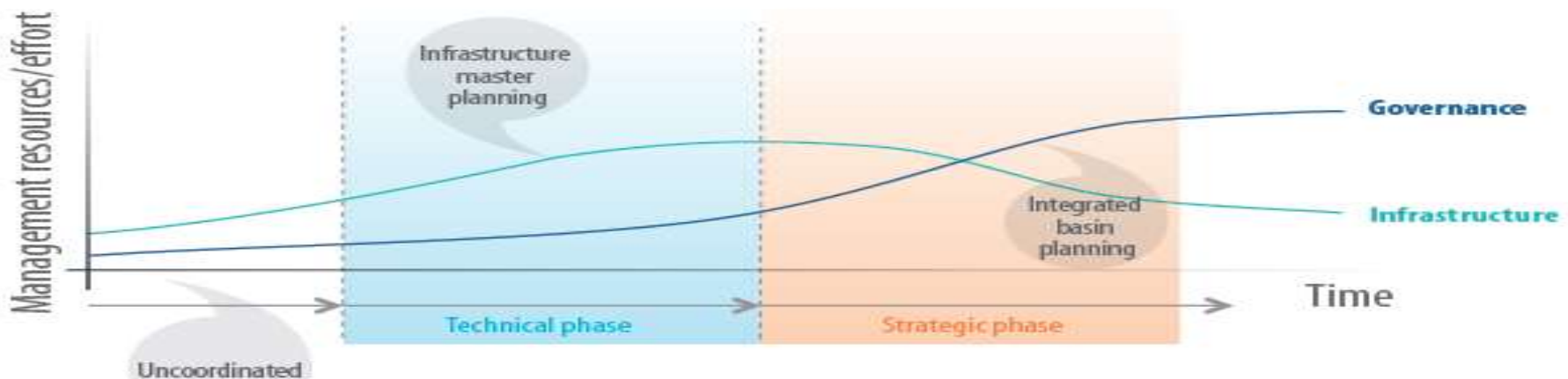
Water Planning



River Basin Water Planning

Basin planning is organized typically pass through three phases:

- **Uncoordinated:** Early development, where ad hoc control and enforcement against minimum standards is at best applied, rather than coherent basin wide planning.
- **Technical:** Infrastructure development and operational planning, where technical engineering solutions are the priority.
- **Strategic:** Multidisciplinary planning, where economic, ecological and management solutions are applied.



Historic phases of basin planning

River Basin Water Planning

- **Basin planning** is the process of identifying the way in which a river and its limited natural resources may be used to meet competing demands, while maintaining river health. It includes the allocation of scarce water resources between different users and purposes, choosing between environmental objectives and competing human needs, and choosing between competing flood risk management requirements.
- **Basin planning** is ultimately the process of:
 - assessing and prioritizing issues of concern to be managed within a basin
 - deciding on the way in which these priorities should be managed to achieve social objectives over time
 - specifying the way in which different competing purposes (such as abstraction, hydropower, flood control and navigation) may develop or use the basin water resources.



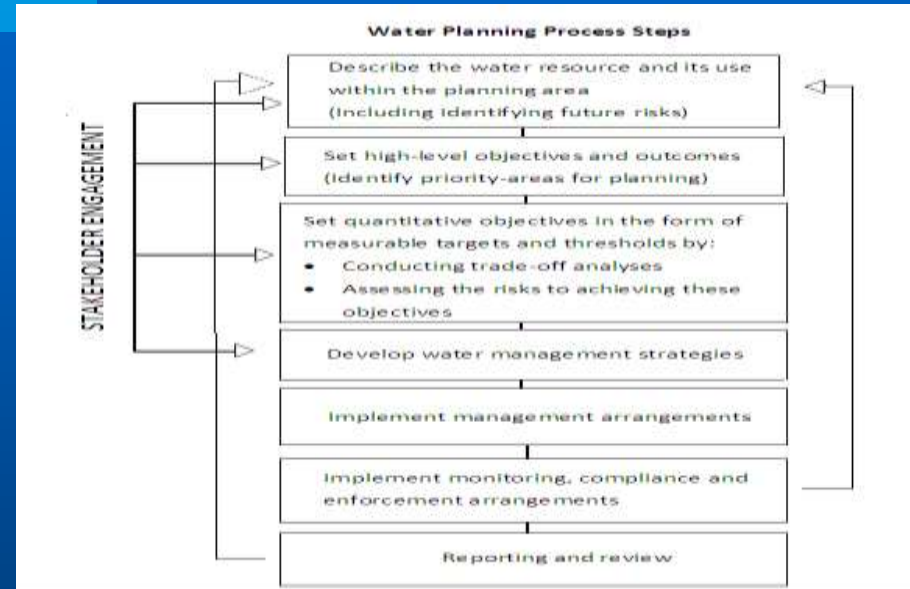
- **Basin planning** has historically been prompted by the need to manage the challenges associated with one or more of the fundamental basin-scale water-related issues:
 - Water allocation, reconciliation and utilization planning has tended to be the focus in more arid or seasonally variable basins where population and development has driven water demands.
 - Water quality planning has been the focus in highly developed urban, industrial or mining dominated basins, as well as those with intensive irrigation.
 - Flood risk management has tended to be the focus in higher rainfall basins, particularly where there is significant downstream development (people and property).

River Basin Water Planning

Overarching principles for water planning

Overarching principles:

- *All water plans should have a statutory base.*
- *All water plans should include a clear water budget.*
- *Water planning processes should consider all forms of water use, including those that are not currently subject to water access entitlements.*
 - *Monitoring is essential.*
- *Surface and groundwater should be managed in an integrated manner.*
 - *Specific/special water needs should be recognised.*
- *Rights of existing uses and users should be recognised.*



- *All water access rights should be clearly defined.*
 - *All decision making should be transparent and explicit.*
- *Stakeholders should be engaged throughout the planning process.*
 - *Consider other relevant plans.*
- *Use knowledge-based decision making.*
 - *Apply a risk-based approach.*
- *Use professional judgement as appropriate.*
 - *Adequate resources.*

River Basin Water Planning

Ten golden rules of basin planning

The following ten golden rules have been distilled from the international lessons and experience with basin planning over the past century.

These rules (or principles) are:

Rule 1: Develop a comprehensive understanding of the entire system.

Rule 2: Plan and act, even without full knowledge.

Rule 3: Prioritize issues for current attention, and adopt a phased and iterative approach to the achievement of long-term goals.

Rule 4: Enable adaptation to changing circumstances.

Rule 5: Accept that basin planning is an inherently iterative and chaotic process.

Rule 6: Develop relevant and consistent thematic plans.

Rule 7: Address issues at the appropriate scale by nesting local plans under the basin plan.

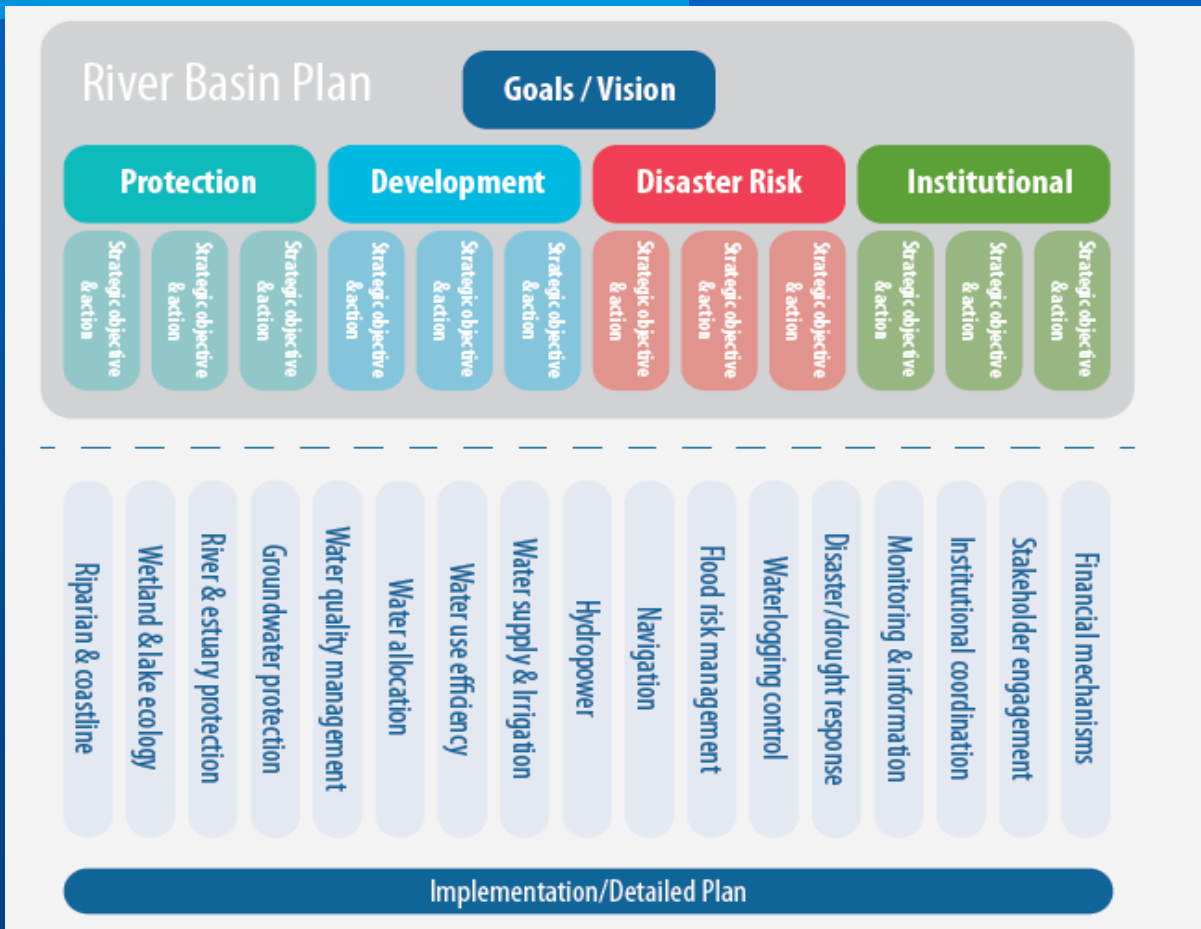
Rule 8: Engage stakeholders with a view to strengthening institutional relationships.

Rule 9: Focus on implementation of the basin plan throughout.

Rule 10: Select the planning approach and methods to suit the basin needs

River Basin Water Planning

Content and structure of a basin plan



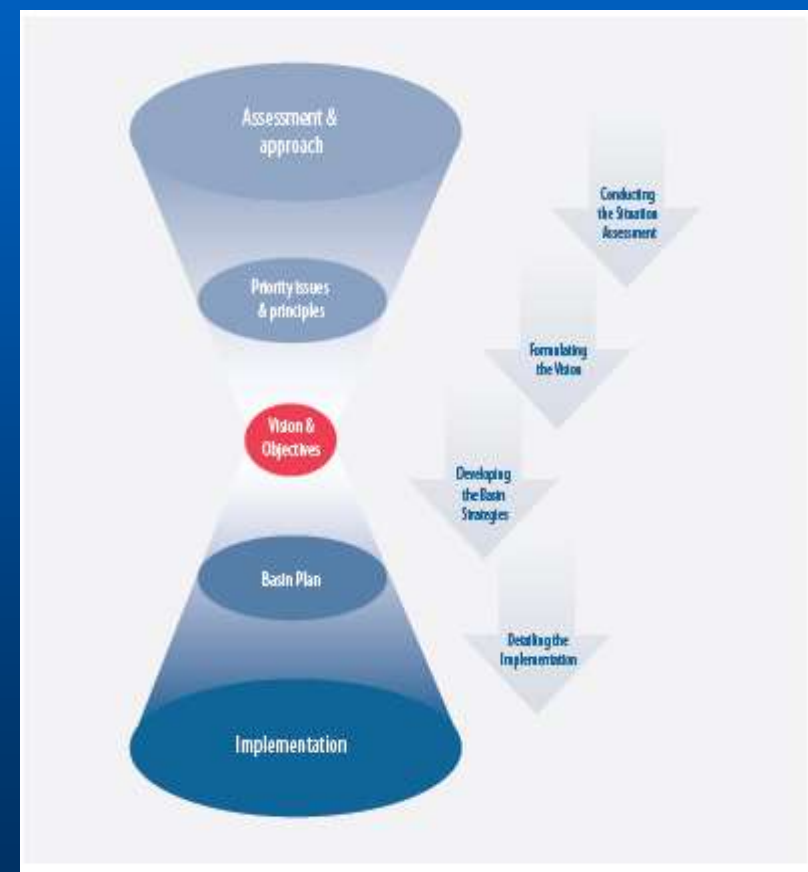
Interface between the elements of the basin plan and supporting thematic plans

River Basin Water Planning

Basin planning process

Basin planning process represented in four key stages:

- *Conducting a situation assessment to gain an understanding of the current and future conditions in the basin, as well as identifying and prioritizing the key issues.*
- *Formulating a vision and goals: that is, spelling out the desired state of the basin over the long term, together with goals (preliminary objectives) and principles to achieve this over time.*
- *Developing basin strategies: specifying a coherent suite of strategic objectives and outcomes related to protection, use, disaster and institutions, designed to achieve the vision.*
- *Detailing the implementation: defining actions that give effect to the basin strategies and should ultimately achieve the vision and objectives.*



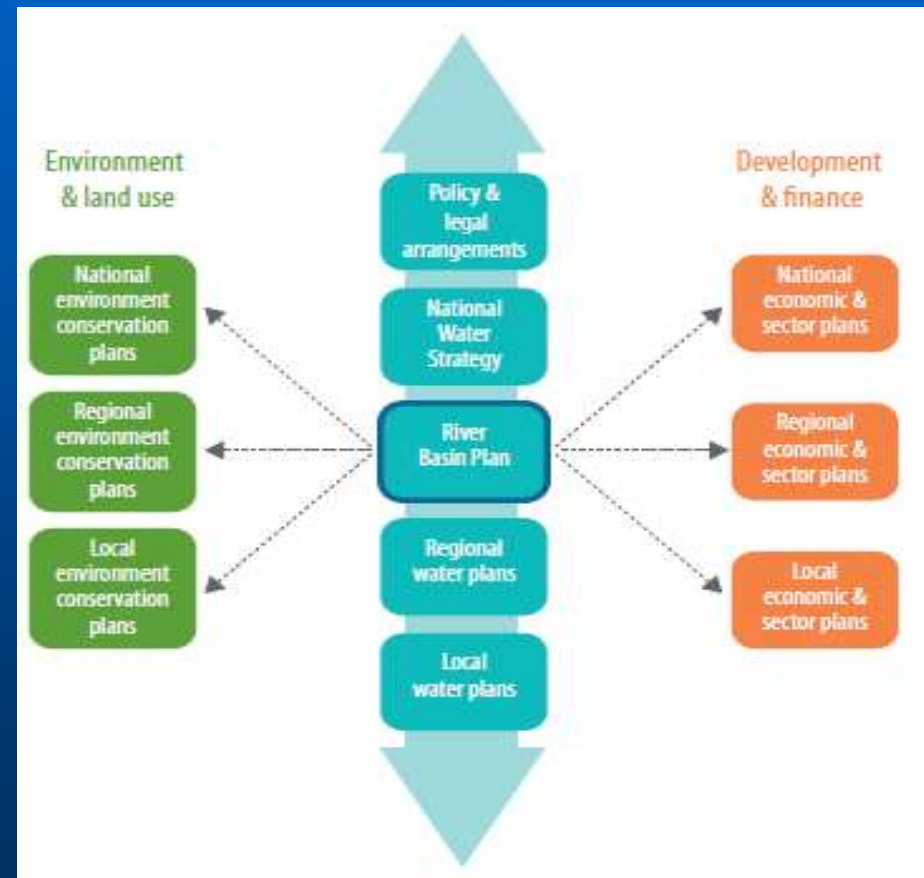
Basin planning process

River Basin Water Planning

Overall framework for basin planning

Basin plans need to consider both:

- *Horizontal alignment, between the basin plan and plans from outside the water sector such as economic, spatial and environmental plans. These plans are likely to be at a range of scales, from national development and environmental laws and planning, through regional to local-scale plans. Typically, the geographical boundaries of the basin plan and these broader plans will not be aligned.*
- *Vertical alignment, between the basin plan and other national and local plans in the water sector.*



Framework for basin planning within its broader environment

River Basin Water Planning

Basin planning systems

- **Protection and conservation system:**

- environmental flow/regulation
- river coastline and riparian zone protection, utilization and rehabilitation
- water quality management
- wetland, lake and estuary protection
- fisheries management
- catchment protection and soil conservation.

- **Water use and development system:**

- water allocation
- water use authorization, control and enforcement
- water conservation and demand management (efficiency)
- water resources supply infrastructure
- water resources demand management
- agricultural or urban supply and distribution schemes
- hydropower infrastructure
- navigation

- **Disaster risk management system:**

- flood mapping
- flood risk management
- water logging and drainage control
- extreme drought event management
- pollution incidents.

- **Institutional management system:**

- institutional development and capacity building
- stakeholder engagement, awareness and communication
- information and monitoring
- economic instruments.



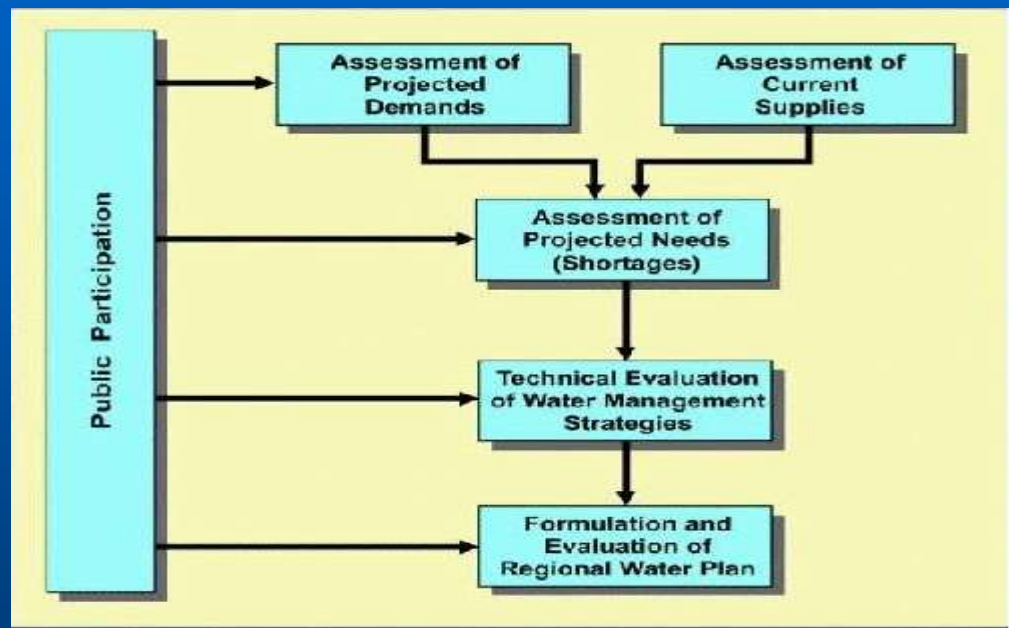
Four strategic systems of basin planning

River Basin Water Planning

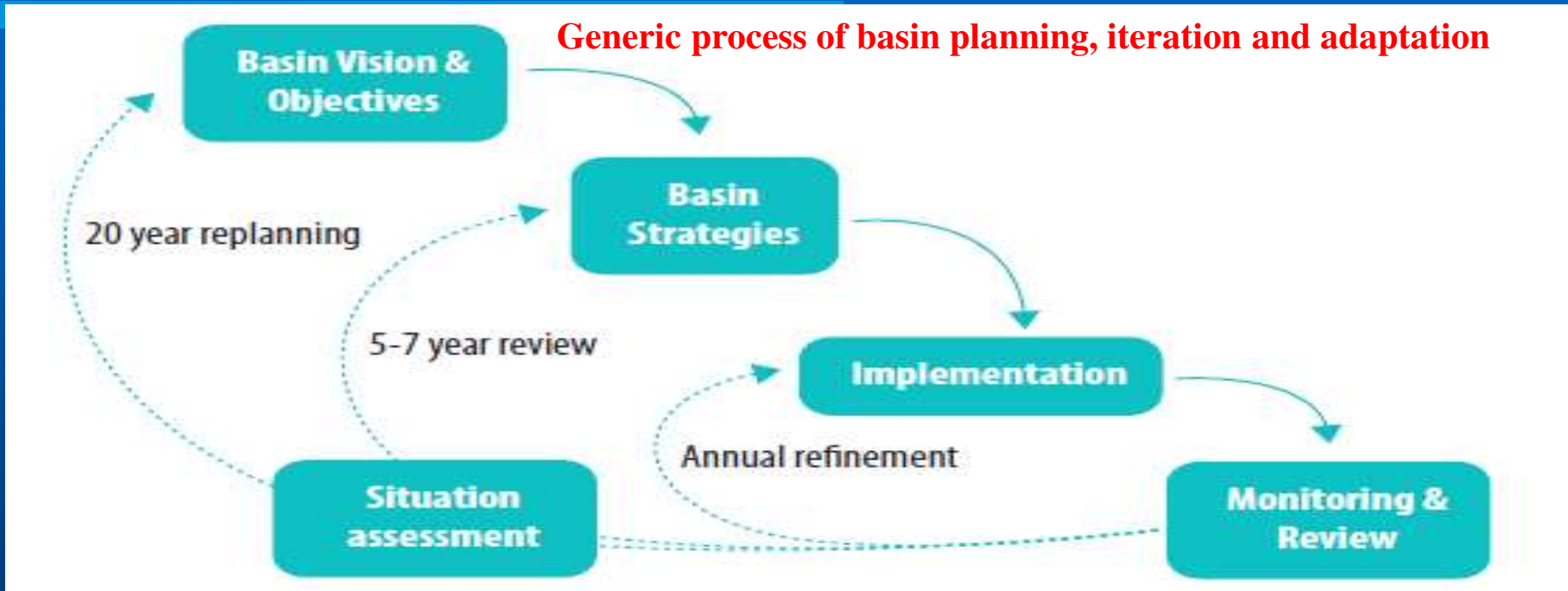
Planning process cycle



planning (plan) implementing (do)
 monitoring (check) reviewing (act).



River Basin Water Planning



Basin Planning Practices in AP Region

■ Central Asia

Kazakhstan and the Kyrgyz Republic

- Chu-Talas River Basin

■ South Asia

Pakistan

- Indus River Basin
- Groundwater basin of Balochistan

Bangladesh

- Tanguar Haor Basin

Sri Lanka

- Mahaweli River Basin
- Kotmale River Basin

■ Oceania and the Pacific

Australia

- Murray-Darling River Basin
- South East Queensland
- Yarra River Basin

Pacific Islands

- The Marshall Islands
- Palau
- The Solomon Islands and Vanuatu

■ East Asia

People's Republic of China

Mongolia

- Onon River Basin

Japan

- Yoshino River Basin
- Tama River Basin
- Tsurumi River Basin

Republic of Korea

- Nakdong River Basin

■ Southeast Asia

- 3S River Basin-Sesan, Sre Pok and Sekong

- Mekong River Basin

- The Mekong River Commission

Philippines

- Laguna Lake Basin
- Davao River Basin

Malaysia

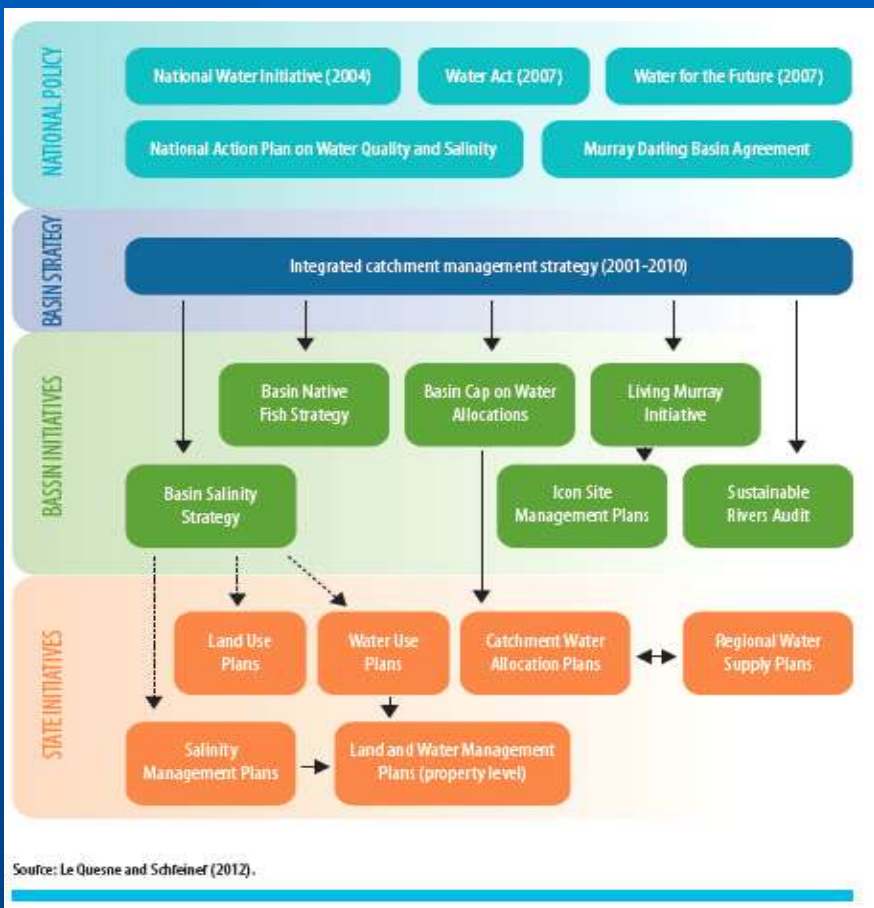
- Langat River Basin
- Kinabatangan River Basin

Indonesia

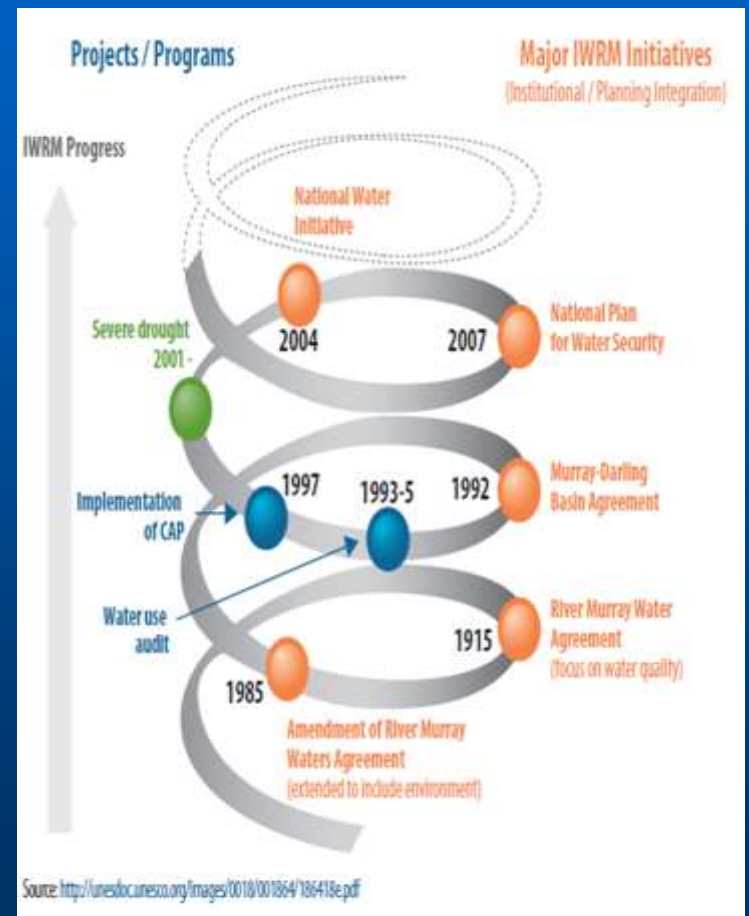
- Citarum River Basin
- Bengawan Solo Basin
- Brantas River Basin

River Basin Water Planning

International Practices



WP Plans with Murray-Darling IWRM Plan

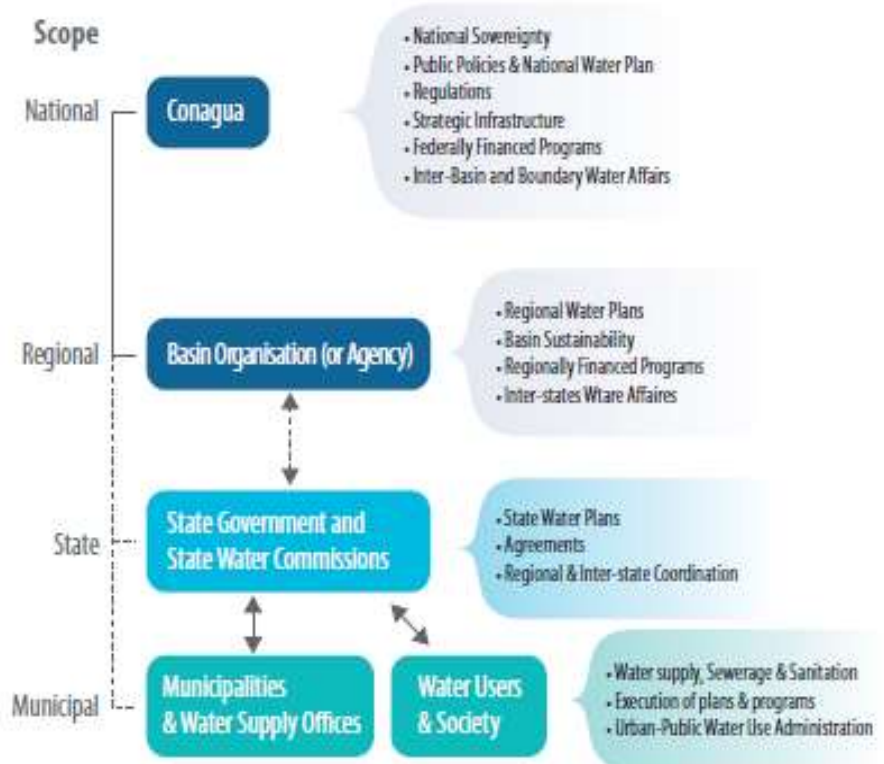


Long-term planning in Murray-Darling basin

River Basin Water Planning

International Practices

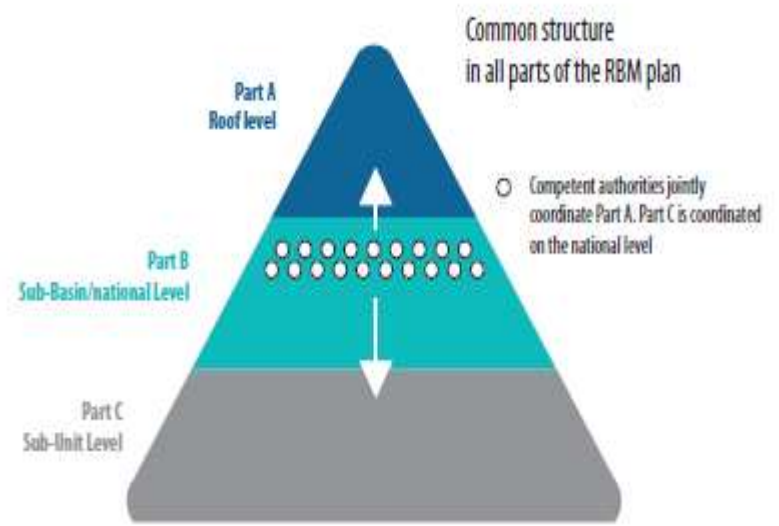
Bottom-up Planning Process & Institutional Cooperation



Water Planning Levels in Mexico

In transboundary basins the planning process outlined in the WFD is divided into three parts. Part A – or the roof level – is undertaken for each river basin by an implementing agent, Part B – the sub-basin or national level – is undertaken by 'competent authorities', while Part C – the sub-unit level – includes the detailed plans for groups of water bodies. The level of detail required by these plans increases towards the lower levels,

with Part A summarizing the plans outlined in Part B, and Part B summarizing the plans in Part C. Part C is managed at a local level, coordinated with Part B at the national level. The process is intended to be driven primarily by the competent authorities at a national level, summarized upward to the roof level, and coordinated downward to the sub-unit level – but within the common framework of the WFD.



Source: ICPRD (2009b).

Nesting in Basin Planning under the EU Water Framework Directive



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