


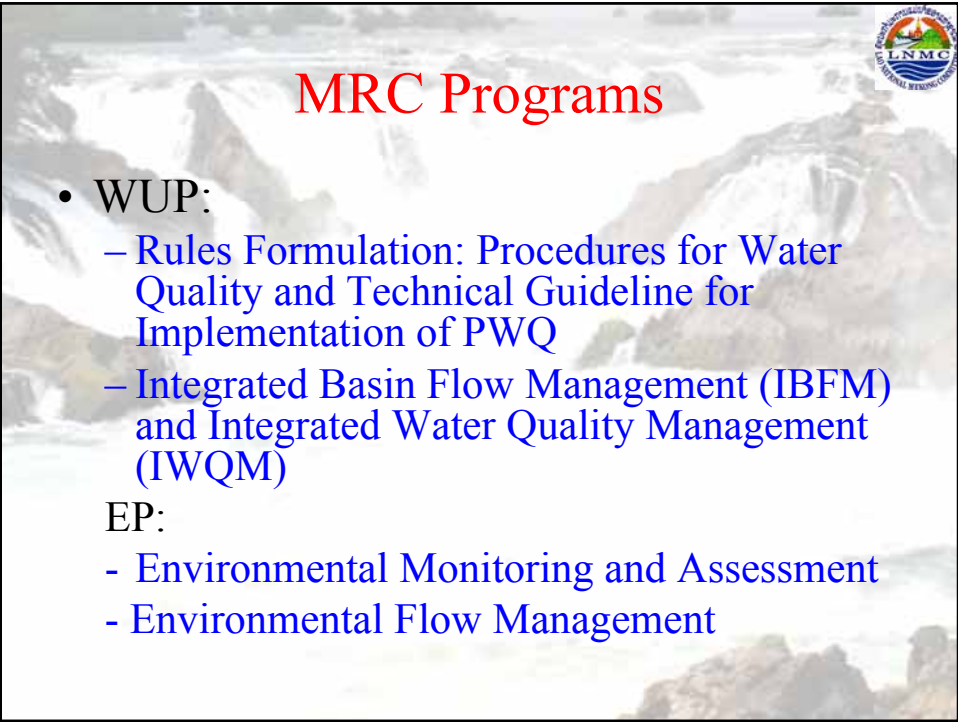
**River Basin Management, Environmental Water
Quality standards and water monitoring system
of the MRB**

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Secretariat




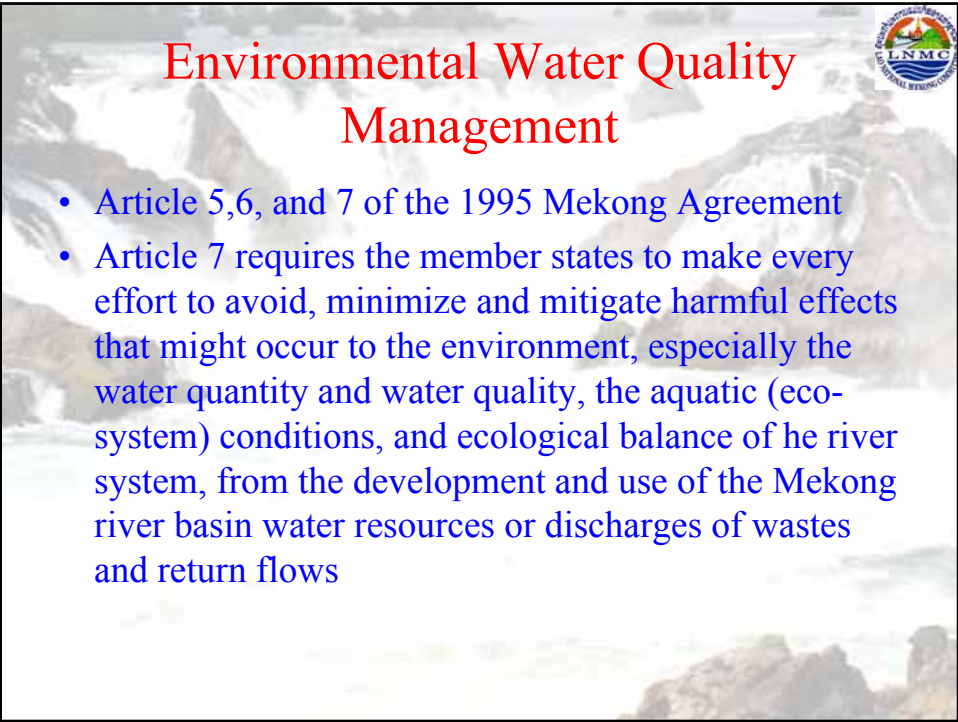
**River Basin Management
Framework**

- **1995 Mekong Agreement: signed by four member countries : C,L,T,V.**
- **Establishment of the Mekong River Commission: Council, Joint Committee and Secretariat**
- **National Mekong Committee in each member country**



MRC Programs

- WUP:
 - Rules Formulation: Procedures for Water Quality and Technical Guideline for Implementation of PWQ
 - Integrated Basin Flow Management (IBFM) and Integrated Water Quality Management (IWQM)
- EP:
 - Environmental Monitoring and Assessment
 - Environmental Flow Management



Environmental Water Quality Management

- Article 5,6, and 7 of the 1995 Mekong Agreement
- Article 7 requires the member states to make every effort to avoid, minimize and mitigate harmful effects that might occur to the environment, especially the water quantity and water quality, the aquatic (eco-system) conditions, and ecological balance of the river system, from the development and use of the Mekong river basin water resources or discharges of wastes and return flows

Water Quality Monitoring Programme



Water quality monitoring commenced in 1985 in 3 countries, and 1993 in Cambodia

Funding has been provided mainly by Sweden

Water Quality Objective



- *"The water quality objective of the member States is to maintain the water quality of the Mekong River so it is suitable for:*
- *domestic and primary human contact use,*
- *irrigated agriculture,*
- *industry, and*
- *aquaculture and wild catch fisheries"*
- **Objectives: focus on addressing the issues of anthropogenic toxicants that may present hazards to fish (aquatic eco-system) and human health**



Environmental Water Quality Standard

- **IWQM Strategy developed by WUP and EP**
- **This will support drafting of Procedures for Water Quality (PWQ) and TG for Implementation of PWQ according to beneficial uses**



Environmental Water Quality Standard

- Point sources where there is direct pollutants into the river system e.g. domestic and industrial wastes
- Non-Point (Diffuse) sources where pollutants are carried in surface runoff or via ground water to the river system e.g. agriculture runoff, irrigation drainage
- Beneficial uses that need to be managed e.g. drinking water quality, recreational water quality.
- Indicators of WQ: Toxicant concentration, PH, Nutrient concentration, bacterial concentration



Water Quality Monitoring System

102 sites were initially monitored:

- 18 sites on main river (including 4 on Bassac)
- 35 sites on tributaries
- 5 sites in wetlands
- 44 sites in Viet Nam Delta*



Water Quality Monitoring System

In September 1997 the Secretariat developed a project through the subcommittee on WQ to:

- extend the WQ database
- develop a legal framework for WQ: Rule for Water Quality
- develop an integrated WQ and pollution control programme
- Develop an institutional and HR strengthening programme



Water Use Monitoring System

Made recommendations on:

- Revising the sampling network
- Upgrading laboratory capacity
- Need for a diagnostic study
- Data analysis and interpretation
- Upgrading of MRCS capacity



Environmental Water Quality System

- Water Quality Diagnostic Study (WQDS)
- Nutrient levels in the Mekong mainstream and main tributaries are quite low, with the exceptions of localized areas that reflect high population and/or poor sewage treatment
- Low or non detectable levels of pesticides,
- Low to moderate contamination with heavy metals
- Dioxins/Furans were found in some locations, but at levels that pose ecotoxicological



Water Quality Monitoring System

Revised network has 48 primary sampling sites

MRCS pays 25% of WQ analysis costs

Data are forwarded to MRCS annually



Water Quality Monitoring System

- In 2004 a QA/QC programme was commenced, to improve laboratory procedures and ensure quality control



Water Use Monitoring System

From 2004 EP started to develop capacity of laboratory staff to provide annual reports on the Water Quality Network at the EP Annual Technical Meeting.



Water Quality Monitoring System

Constraints:

Water chemistry is not conservative
(unlike water volume)

Limited laboratory capacity Limited
staff capacity

Toxicant Criteria for Mekong River Water for protection human health



- **Indicator** Arsenic (As) 0.01-0.05 mg/l
- Cadmium (Cd) 0.001-0.01 mg/l
- Chromium (Cr VI) 0.05 mg/l
- Lead (Pb) 0.01-0.05 mg/l
- Mercury (Hg Total) 0.0005-0.002 mg/l
- Cyanide (CN) 3 0.005-0.01 mg/l
- DDT 0.001-0.01 mg/l
- **Total dissolved solids (TDS)* 500-800 mg/l**

Thank you for your kind attention

