Wetlands Management

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Bangkok 29 July 2004

What are wetlands?

- Wetlands are areas on the earth that are wet?
- Areas where water influences the environment and the associated plant and animal life.

Wetlands

Wetlands

Wetlands




Wetlands according to Ramsar

- **"areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres".**

- In addition,
  - **"may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six metres at low tide lying within the wetlands".**

Rice fields are also Wetlands

Wetlands are horrible places!

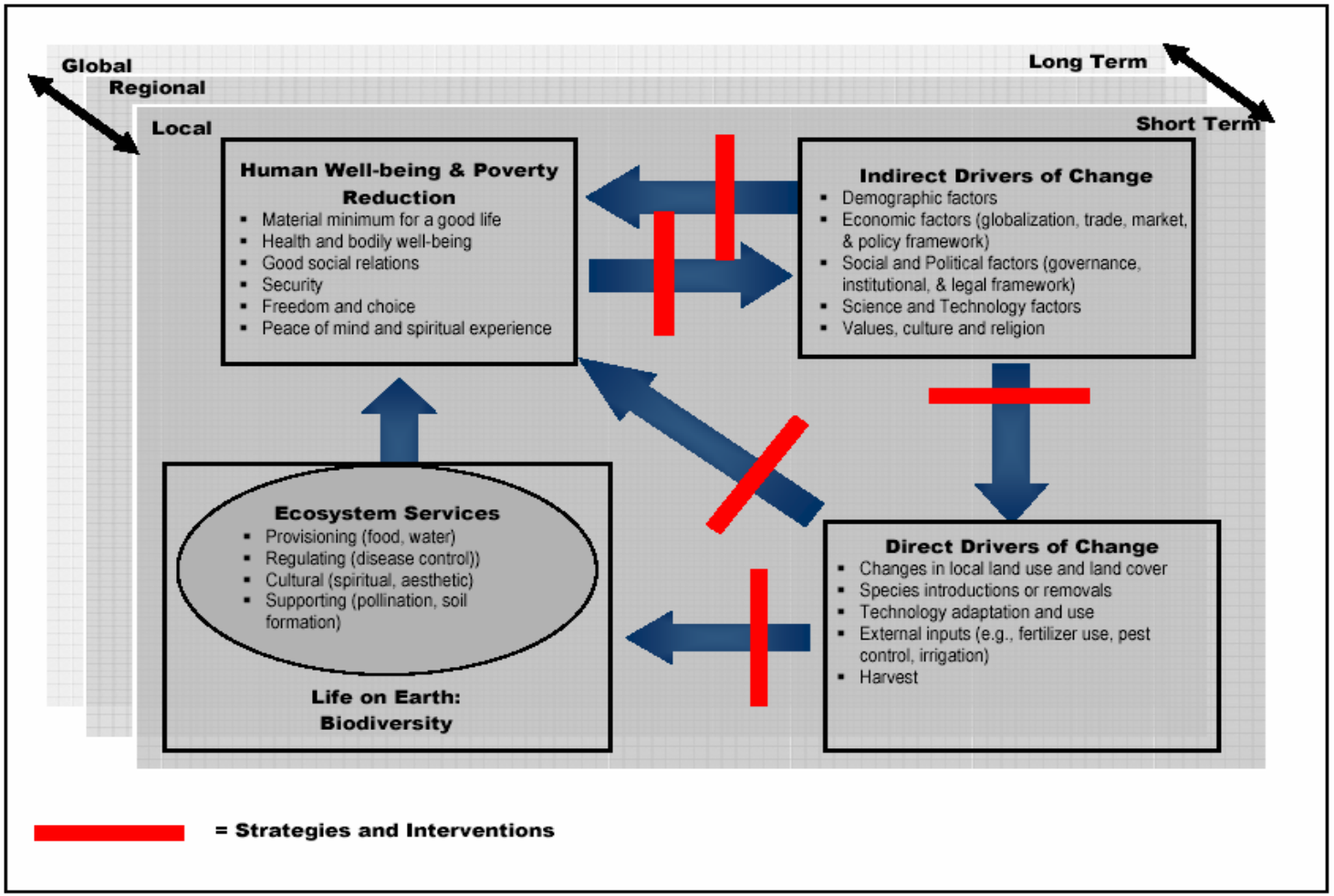
- **Wetlands are dirty mosquito infested swamps!**
- **Wetlands are just wasted a wasted opportunity ! – We should drain them and then we have more land to grow crops!**




Wetland Values and Functions

- 4 main types of services provided by wetlands
  - Provisioning (Food, Freshwater, Fibre and Fuel, Biochemical, Genetic resource)
  - Regulating (Climate, hydrological flows, Pollution control and Erosion, Natural Hazards)
  - Cultural (Spiritual, recreational, aesthetic and educational)
  - Supporting (Soil formation, nutrient cycling, pollination)

Wetland Ecosystems and Human Well Being



Wetlands and Water Resources

- In the past
  - Wetlands - the domain of ecologists and naturalists
- Water resources - hydrological and engineering disciplines.

- Although closely linked linked - has developed as separate disciplines

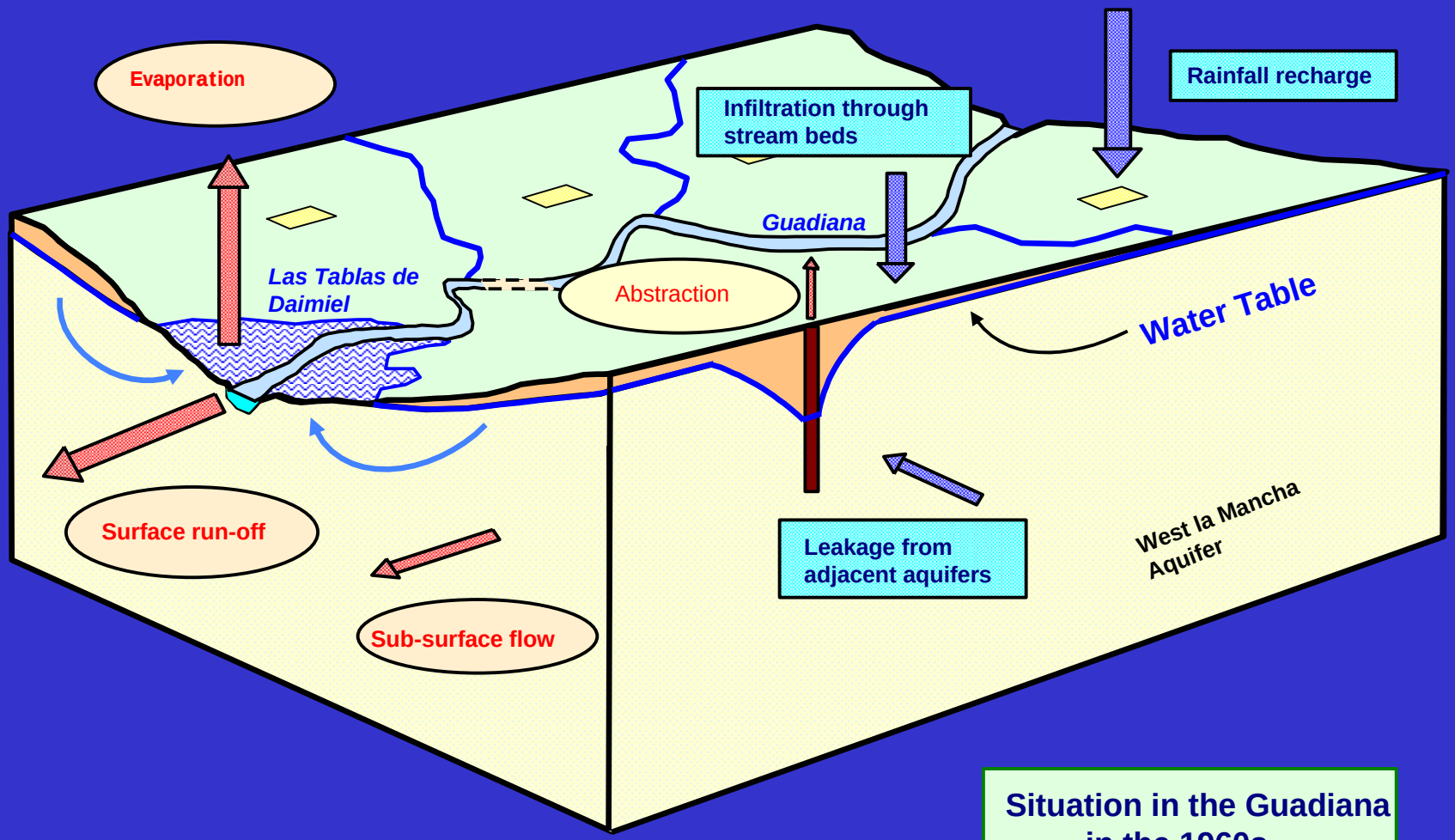
- Wetlands are capacitors, buffers and connectors.

Wetlands as capacitors and buffers

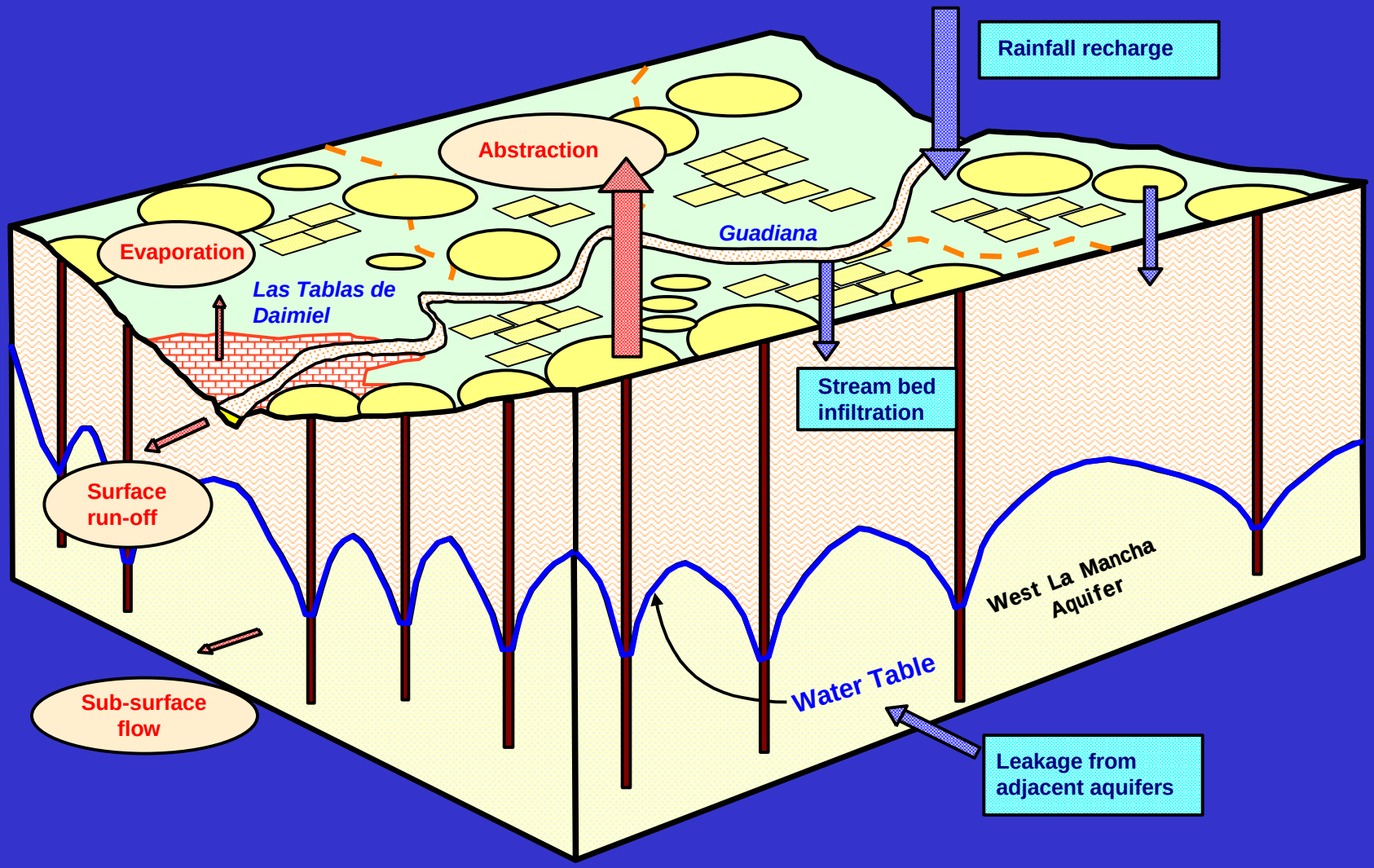
- Wetlands as capacitors
  - renewable natural resource base
- Wetlands as buffers
  - water conservation in the watershed – upper catchment (allows time for infiltration and maintenance of water quality)
  - Traps for surface runoff – reducing erosion and maintain integrity of catchment and water quality delivered to downstream communities
  - Lakes in the lower catchment – surrounding wetlands as a buffer
  - Sponge – ameliorate floods (e.g. peat swamp forest)

Wetlands as connectors

- - between habitats, ecosystems and biomes
- - e.g. for migratory birds, fish and people
- - Connectivitiy between life support systems through wetlands
- - water cycle through wetlands – link with life support systems
- - Evapotranspiration water from wetlands and floodplains condenses in the cooler upper catchment creating morning mist – on hot days, enough to support permanent vegetation cover (to avoid erosion)
- - through groundwater and water table (vertical connectivity) – interdependence.



Situation in the Guadiana in the 1960s



Situation in the Guadiana in the 1990s

Wetlands are on the decline

- changes in land use/cover due to vegetation clearance,
- drainage and infilling;
- the spread of infrastructure whether for urban,
- tourism and recreation,
- aquaculture,
- agriculture,
- industrial or even military purposes;
- the introduction and spread of invasive species;
- hydrologic modification to inland waters;
- over-harvesting, particularly through fishing and hunting;
- pollution,
- salinisation and eutrophication;
- global climate change

The Ramsar Convention on Wetlands

- - an intergovernmental treaty 2 February 1971 in Ramsar, Iran
- - Ramsar is the first of the modern global intergovernmental treaties on conservation and wise use of natural resources
- - Tools and guidance on wetland conservation and wise use
- - Recently – guidelines on water allocation

The Ecological Character of Wetlands

- Maitenance or improvement of ecological character is usually the long term goal of the management of e.g. a Ramsar site (Because of all the functions and services to human well being)

- Ramsar defines ecological character as:
- "*Ecological character is the sum of the biological, physical, and chemical components of the wetland ecosystem, and their interactions, which maintain the wetland and its products, functions, and attributes.*"

- And
- "*Change in ecological character is the impairment or imbalance in any biological, physical, or chemical components of the wetland ecosystem, or in their interactions, which maintain the wetland and its products, functions and attributes.*"

The Management Planning Process

- An integrated management planning process
- Define objectives of site management;
- identify and describe the management actions required to achieve the objectives; determine the factors that affect, or may affect, the various site features including functions;
- define monitoring requirements for detecting changes in ecological character
- demonstrate that management is effective
- maintain continuity of effective management;
- resolve any conflicts of interest
- obtain resources for management implementation
- enable communication within and between sites, organizations and stakeholders; and ensure compliance with local, national and international policies.

Integrated model of selected tools for the management of wetlands

Description of the site at time of designation (see Section B)

- Description using the Ramsar Information Sheet and justification against Criteria for designation
- Detailed site map
- Ecological character of the site defined (Resolution VI.1)

Update of description

- Updated site description and definition of ecological character every six years (or sooner as appropriate)

Development of management plan for the site (see Section C)

- Management plan developed applying the Ramsar Guidelines (Resolution 5.7) and VIII.14 (see Section C)) and including the site description and map
- Maintenance of ecological character provides basis of management actions and monitoring regime (see below)
- Developed in consultation with stakeholders, leading to the establishment of a cross-sectoral management committee

Management actions

- Regular monitoring as part of ongoing site management activities and to provide feedback to regular reviews of the management plan
- [As appropriate, design restoration or rehabilitation as a management response (Resolution VIII.16, see Secvtion H)]
- As appropriate – advise the Bureau or the Conference of the Contracting Parties of changes in ecological character, or the likelihood of same, include the site in the Montreux Record[2] and undertake [Ramsar Advisory Mission[3] (RAM)] (see Section G)
- Based on [RAM] report revise management plan, modify management approach and intensify monitoring effort to detect further changes (positive or negative) to the ecological character
- Seek removal of the site from the Montreux Record when appropriate (Resolutions VI.1 & VIII.8)

Ongoing monitoring and impact assessments

- Monitoring regime forms part of management plan and provides basis for regular reviews of the management plan (Resolution VI.1) (see Section D)
- Wetlands Risk Assessment undertaken where indicated by monitoring (COP7 Resolution VII.10, see also Section E)
- Impact assessment undertaken as required for proposed activities associated with the site either within the site boundaries or external to it which may have negative impacts (see Handbook 11)

1 This Figure has been reproduced and updated from Ramsar COP7 DOC. 25, available from the Secretariat's Web site at http://ramsar.org/cop7_doc_25_e.htm.).

2 The full name for this, as established by Resolution C.5.4., is *"The record of Ramsar sites where changes in ecological character have occurred, are occurring, or are likely to occur (Montreux Record)"*.

3 The Ramsar Advisory Mission (RAM) was formerly called the Management Guidance Procedure (MGP).

Wetland and site management within IRBM and ICZM

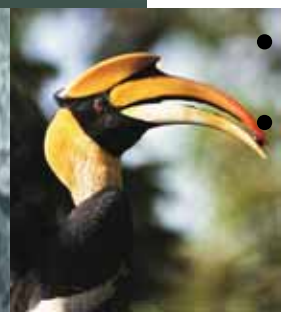
- Wetlands are adapted to the hydrological regime
- Vulnerable to change
- Successful management of wetland sites requires maintenance of the sources of water
- Insufficient water reaching wetlands, due to climate change, land use change, abstractions, storage and diversion of water for public supply, agriculture, industry and hydropower, are all major causes of wetland loss and degradation.
- The river basin will normally different land types, including wetlands, forests, grasslands, agricultural and urban areas.
- River basin not always the appropriate management unit

Wetland and site management within IRBM and ICZM

- The aim of IRBM or IWRM is to bring together stakeholders at all levels, from politicians to local communities, and to consider water demands for different sectors within the basin

- Achieving water allocation for wetlands - a long process that needs careful planning including training and awareness-building about the benefits of wetlands

- IRBM – and opportunity to promote wise use of wetlands



E.g. The Task force on IRBM for the Yangtze River

- The Yangtze
- – third longest river in the world
- 6000 km and more than 400 million people depend upon it
- Loss of natural functions – due to fragmentation and degradation
- Lack of knowledge on wetland values among DM
- Floods in 1996 and 1998
- 4000 people died
- Damage 25million US$
- Chinese govt – 32 character policy – work with nature and not fight it

E.g. The Task force on IRBM for the Yangtze River

- Interventions:
- A ban on logging in the upper catchment
- Restoring wetlands in the Yangtze floodplain
- Maintaining river courses
- Returning cultivated steep slopes to forest
- Reinforcing embankments




E.g. The Task force on IRBM for the Yangtze River

In 2002

- China established IRBM task force

Mandate:

- review legislation and make recommendation
- review river basin practice
- promote relevant economic tools e.g. water rights and water pricing
- promote stakeholder participation and community involvement
- information sharing
- communication and education

- High chance of success

The functions of Wetland Management Planning

- ***To identify the objectives of site management***
- ***To identify the factors that affect, or may affect, the features***
- ***To resolve conflicts***
- ***To define the monitoring requirements***
- ***To identify and describe the management required to achieve the objectives***
- ***To maintain continuity of effective management***
- ***To obtain resources***
- ***To enable communication within and between sites, organizations and stakeholders***
- ***To demonstrate that management is effective and efficient***
- ***To ensure compliance with local, national, and international policies***

Stakeholders including local communities and indigenous people

- Wetland management -should be as inclusive as possible from the planning stage.
- Involvement of local communities and indigenous peoples
- Levels of involvement
  - labour
  - information
  - consultation
  - participation
  - management
- Management plans should be regarded as public documents
- Need for translation of the plan throughout the process of development

The precautionary approach for wetland management

- the best available evidence should indicate that the activity will not be a threat to the features of the ecological character of the site.

- Rio Declaration on Environment and Development adopted by the United Nations Conference on Environment and Development (UNCED), which affirms that
  - "In order to protect the environment, the precautionary approach shall be widely applied Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."

Mgt Planning is a process

- Management planning must be regarded as a **continuous**, long-term process.
- It is important to recognize that a management plan will grow as information becomes available.
- Planning should begin by producing a minimal plan that meetsthe requirements of the site
- Don't waste time collecting endless amounts on information.

Inputs, outputs and outcomes

- **Inputs** (**Resources**).
- **Outputs** (**Policies**, **management plans**, **management**)
- **Outcomes**. (**Condition of the features of the ecological character of the site and other management objectives**)

- The only means of judging whether or not inputs and outputs are adequate is by considering the outcomes of management. When this has been done, and only then, it will be possible to determine whether the management is appropriate.

Adaptable management

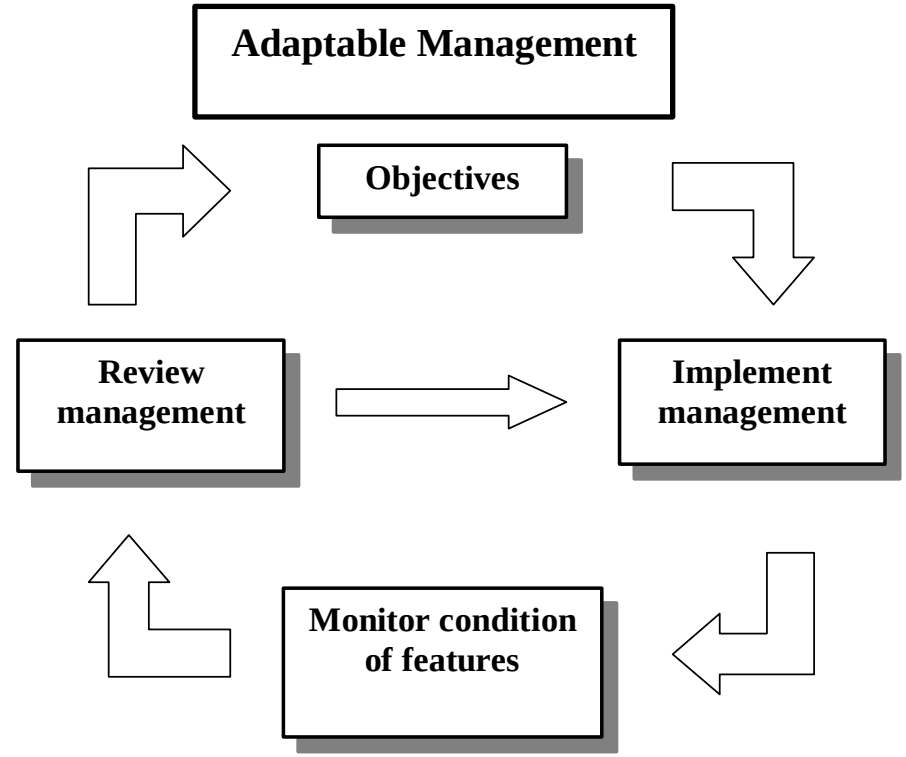


Figure 2. The adaptable management cycle

Management units, zonation and buffer zone

- **Through full involvement of stakeholders**, including local communities and indigenous peoples
- A full and detailed rationale should be made to explain the basis for establishing and delineating zones
- A concise description of the functions and/or restrictions applied within each zone must be prepared as part of the management plan;
- zones should be identified **with a unique and**, **if possible**, **meaningful code or name**: but in some cases, a simple numerical code may be adequate
- **map showing the boundaries** of all zones must be prepared;
- where possible, zone boundaries should be **easily recognizable and clearly identifiable on the ground**:(for example, fence lines and roads) provide the best boundaries, and boundaries based on dynamic features, such as rivers, mobile habitats, and soft coastlines, must be identified with some form of permanent marker locations mapped using a Global Positioning System (GPS).

Format of the management plan

- Preamble/policy
- Description
- Evaluation
- Objectives
- Action Plan

Designing a monitoring programme

Wetland Risk Assessment

The Chilika Case Study

The Thai Baan Research - Community Participation

- Community based resource assessment and mapping
- Community understanding of ecosystems and functions
- Community ownership of the process

(VIDEO Presentation)

Conclusion

- Wetland management – a multi-sectoral and multi-disciplinary approach as a component of the IWRM, IRBM, IWWRM
- Needs to cut across spatial and temporal scales – from site to basin level ….
- A continuous evolving process adapting to change
- Environmental flows and water allocation – not just amount of water (e.g. 10%)but actual mimic of the water regime (spatial and temporal)- e.g. fish migrations in NE Thailand – Chiang Kong.
- It is vital that river basin planners and managers recognize that wetland ecosystems are key elements within a basin and are the resource from which the commodity of water is derived, rather than only a competing user of water