Economic valuation of wetlands in the Arab Region

TEEB (The Economics of Ecosystems and Biodiversity) Capacity-building Workshop for North Africa and the Middle East

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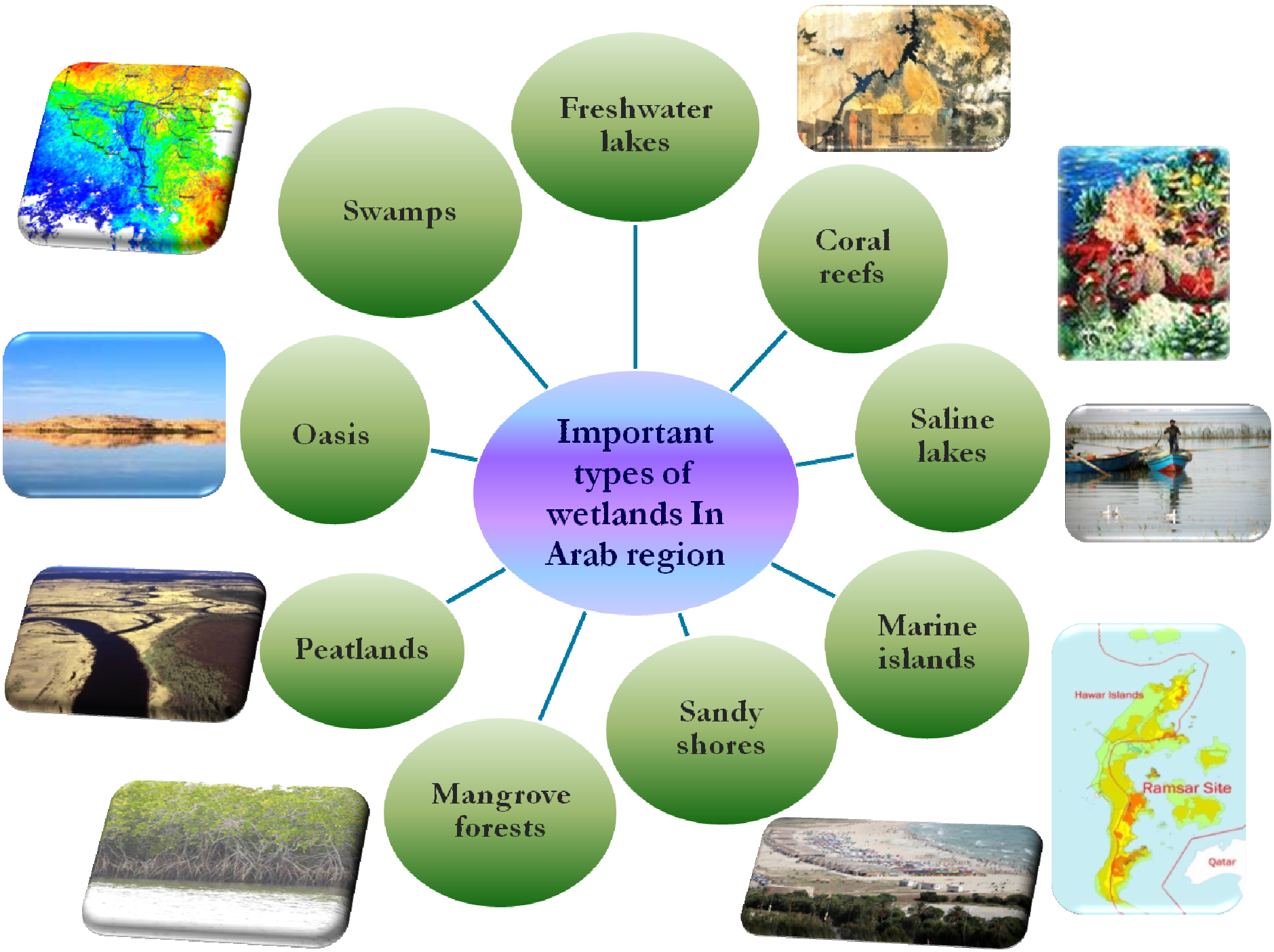
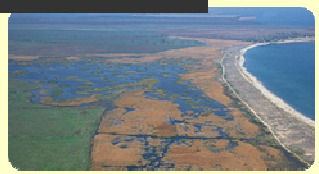

Important types of wetlands In Arab region
Freshwater lakes
Coral reefs
Saline lakes
Marine islands
Sandy shores
Mangrove forests
Peatlands
Oasis
Swamps
Hawar Islands
Ramsar Site
Qatar

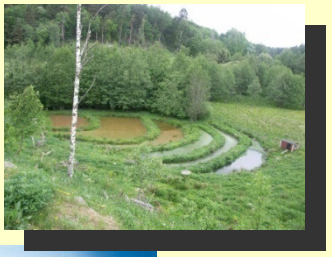
Ecosystem services of the Wetlands

- Flood control

- Recharge of ground water
- Shore protection

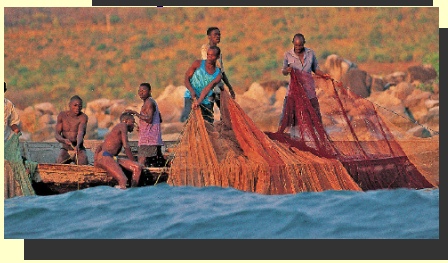


- Storage and recycling of nutrients



- Maintenance of water quality
- Biodiversity storage

- Cultural values
- Tourism & recreation

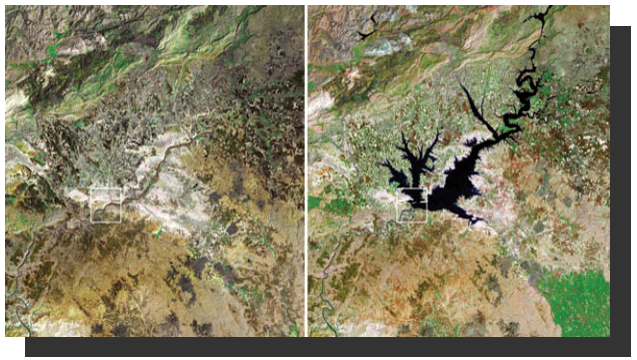


- Mitigation and stabilization of Climate
- Wetlands products

Threats to Arab Wetlands

Human activities

Dams



Pollution

Drying

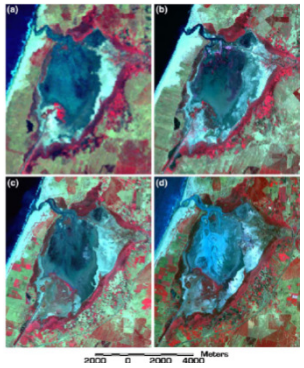
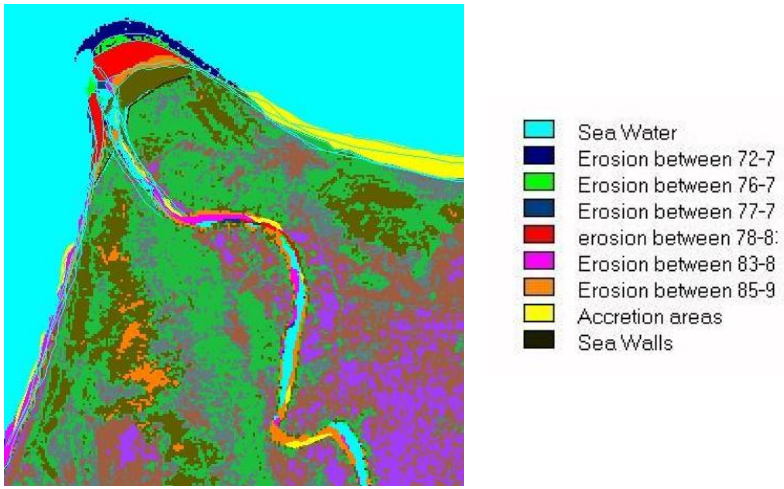


Fig. 5 False colour composite images of Merja Zerga (a) 15/05/1979, Landsat MSS; (b) 07/05/1987, Landsat TM; (c) 06/06/2001, Landsat ETM+; (d) 23/07/2004, ASTER

Dredging

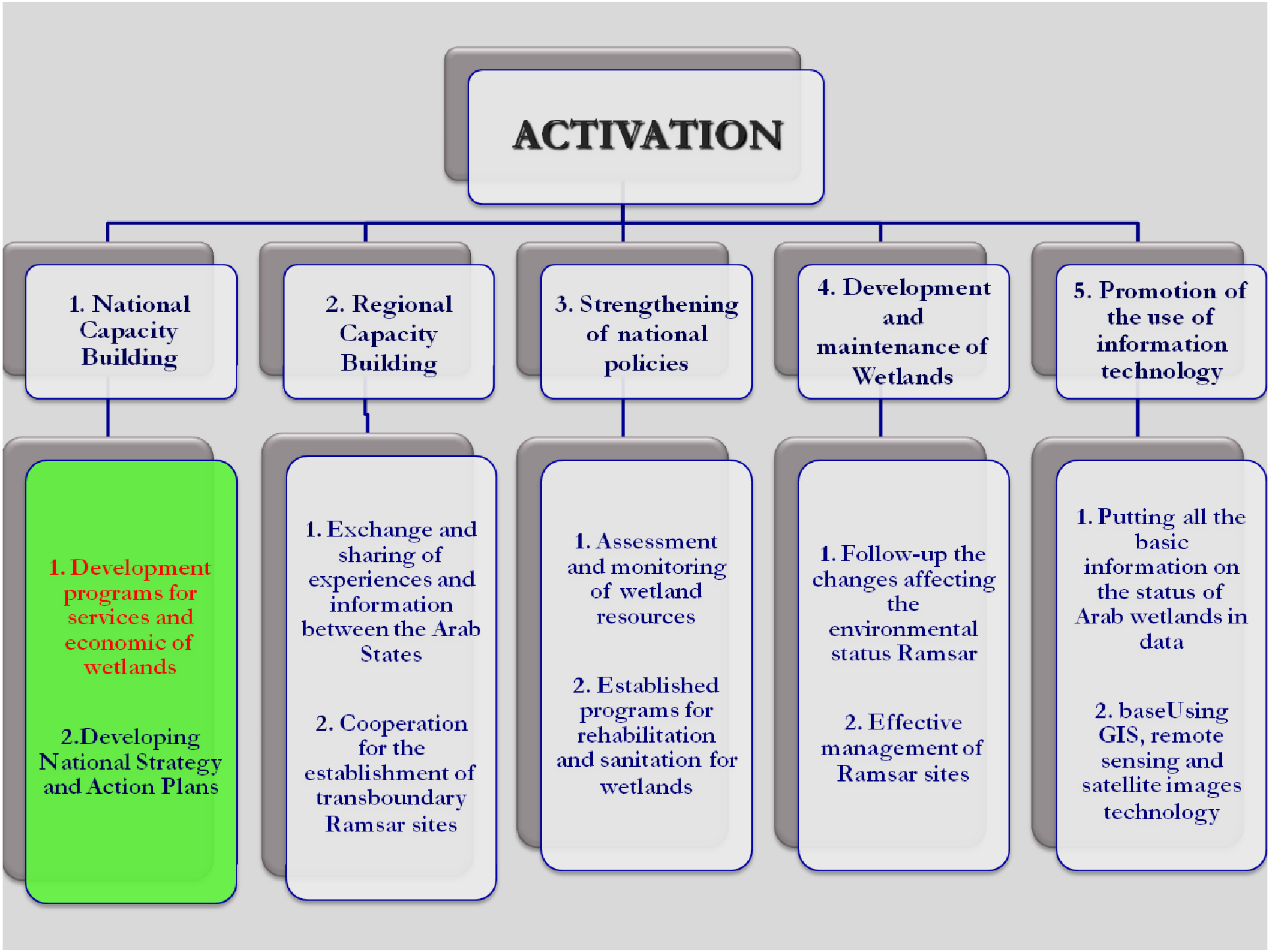
Natural threats

Erosion



Flooding


Challenges
1. Limited National Capacity
2. Weakness of national policy
3. Lack of financial and technical support
4. Lack of information
5. Poor local, regional and international cooperation
1. Lack of putting social, cultural, environmental and economic values of wetlands into account in public and decision makers
2. Weak national capacities in the development of strategies and national action.
1.Lack of development of policies and institutional capacity.
2. No training on protection
3. Slow implementation of rehabilitation programs
4.No national policies towards the risks of invasive species
1.Infrastructure (building, laboratories, field surveys)
2. Data analysis
3. Limited benefit from technical and financial support provided by the Ramsar Convention
1. Absence of sufficient information on the on wetlands
2. Lack of national experience to prepare the development projects for wetlands
1.Poor cooperation between the interested bodies within each country
2.The weakness of links between regional initiatives and Ramsar Convention


ACTIVATION
1. National Capacity Building
2. Regional Capacity Building
3. Strengthening of national policies
4. Development and maintenance of Wetlands
5. Promotion of the use of information technology
1. Development programs for services and economic of wetlands
2.Developing National Strategy and Action Plans
1. Exchange and sharing of experiences and information between the Arab States
2. Cooperation for the establishment of transboundary Ramsar sites
1. Assessment and monitoring of wetland resources
2. Established programs for rehabilitation and sanitation for wetlands
1. Follow-up the changes affecting the environmental status Ramsar
2. Effective management of Ramsar sites
1. Putting all the basic information on the status of Arab wetlands in data
2. baseUsing GIS, remote sensing and satellite images technology

1. Putting the economic value of wetlands in the subject of consideration in the decision-makers in the development of plans of wetlands

2. Help officials in the management and development of policies in improving human well-being

3. The maintenance of biodiversity in wetlands through cooperation with the Arab Union for natural reserves

Definitions of economic values in wetlands ecosystems

The total amount of resources that community benefits from different services of wetlands

The total economic value of 63 million hectares of wetland around the world is estimated at $3.4 billion per year.

	Mangrove	Unvegetated. Sediment	Salt/Brackish Marsh	Freshwater Marsh	Freshwater Woodland	TOTAL
N America	30,014	550,980	29,810	1,728	64,315	676,846
Latin America	8,445	104,782	3,129	531	6,125	123,012
Europe	0	268,333	12,051	253	19,503	300,141
Asia	27,519	1,617,518	23,806	29	149,597	1,818,534
Africa	84,994	159,118	2,466	334	9,775	256,687
Australasia	34,696	147,779	2,120	960	83,907	269,462
TOTAL	185,667	2,848,575	73,382	3,836	333,223	3,444,682

Schuyt and Brander (2004) The economic values of the world's wetlands. WWF

Values in numbers

- The Millennium Ecosystem Assessment gave wetlands a value of US$ 15 trillion in 1997.

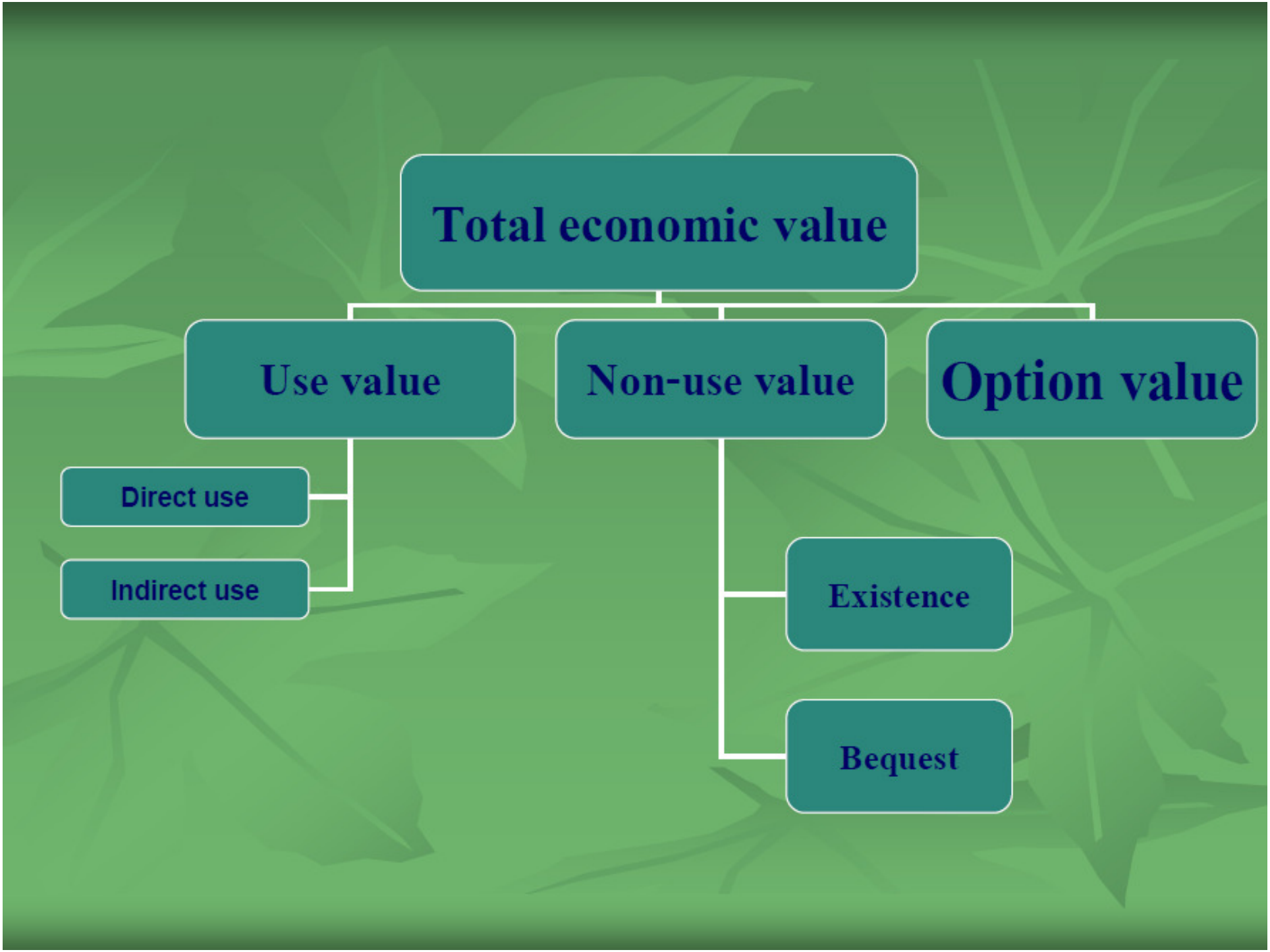
- The role of coastal wetlands in reducing the severity of impacts from hurricanes in the United States found that they provided storm protection services with an estimated value of US$ 23.2 billion per year.

- Based on the sample of 89 case-studies, wetlands in Asia have the absolute highest economic value at $1.8 billion per year.

- In the Caribbean, the shoreline protection services provided by coral reefs are valued at up to US$ 2.2 billion annually.

What valuation can achieve

- A powerful tool that can be used to management and wise use of wetlands
- Helps to give an indication of the real costs and benefits for ecosystem use and degradation and Provides a basis for quantifying the benefits that people receive from wetlands
- An important tool for environmental managers and decision makers to justify public spending on conservation activities and wetland management
- Support for livelihoods through the provision of cost by the government and increase the earned income to the surrounding population
- Help officials in the management and development of policies that affect the wetlands, a useful material benefit to these countries

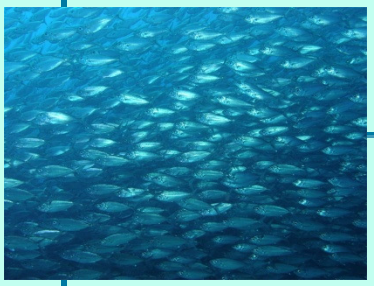

Total economic value
Use value
Non-use value
Option value
Direct use
Indirect use
Existence
Bequest

Direct values

Raw materials and physical products which are used directly for production, consumption and sale

- Energy

- Agricultural production
- Shelter

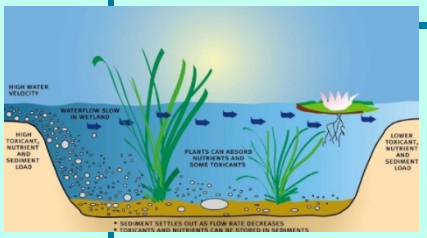


- Foods
- Water supply

- Transport
- Recreational facilities

Indirect values

The ecological functions which maintain and protect natural and human systems through services



Maintenance of water quality

Climate stabilisation

Flood control

Shore protection

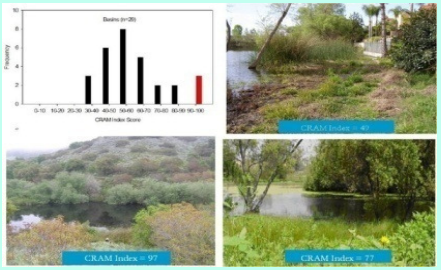
Storm protection

Option values

Pool of species and genetic resources for future possible uses

- Biodiversity

- Industrial applications



- Agricultural applications

- Pharmaceutical applications

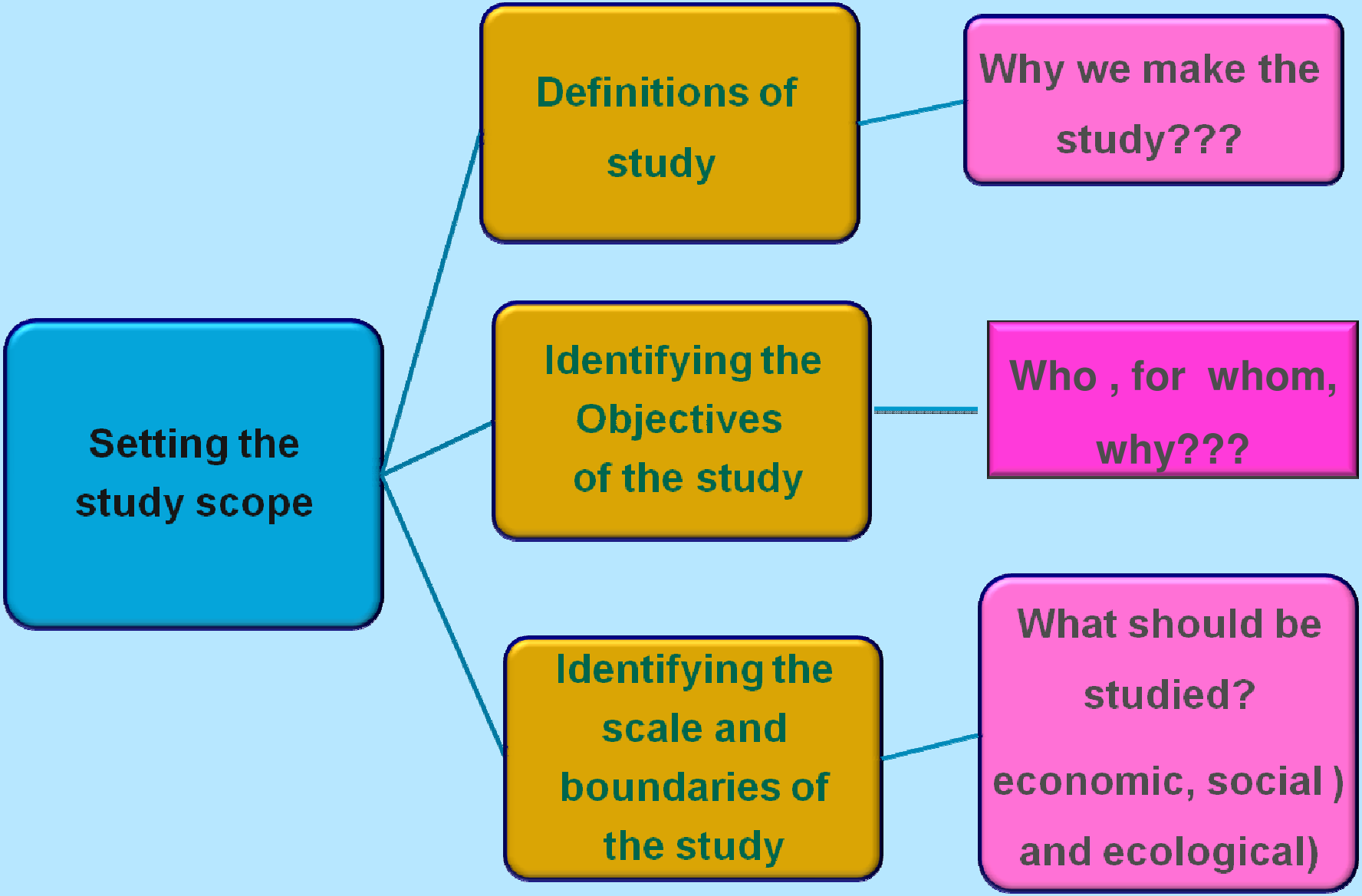
Existence values

The intrinsic value of ecosystems regardless of their current or future use possibilities

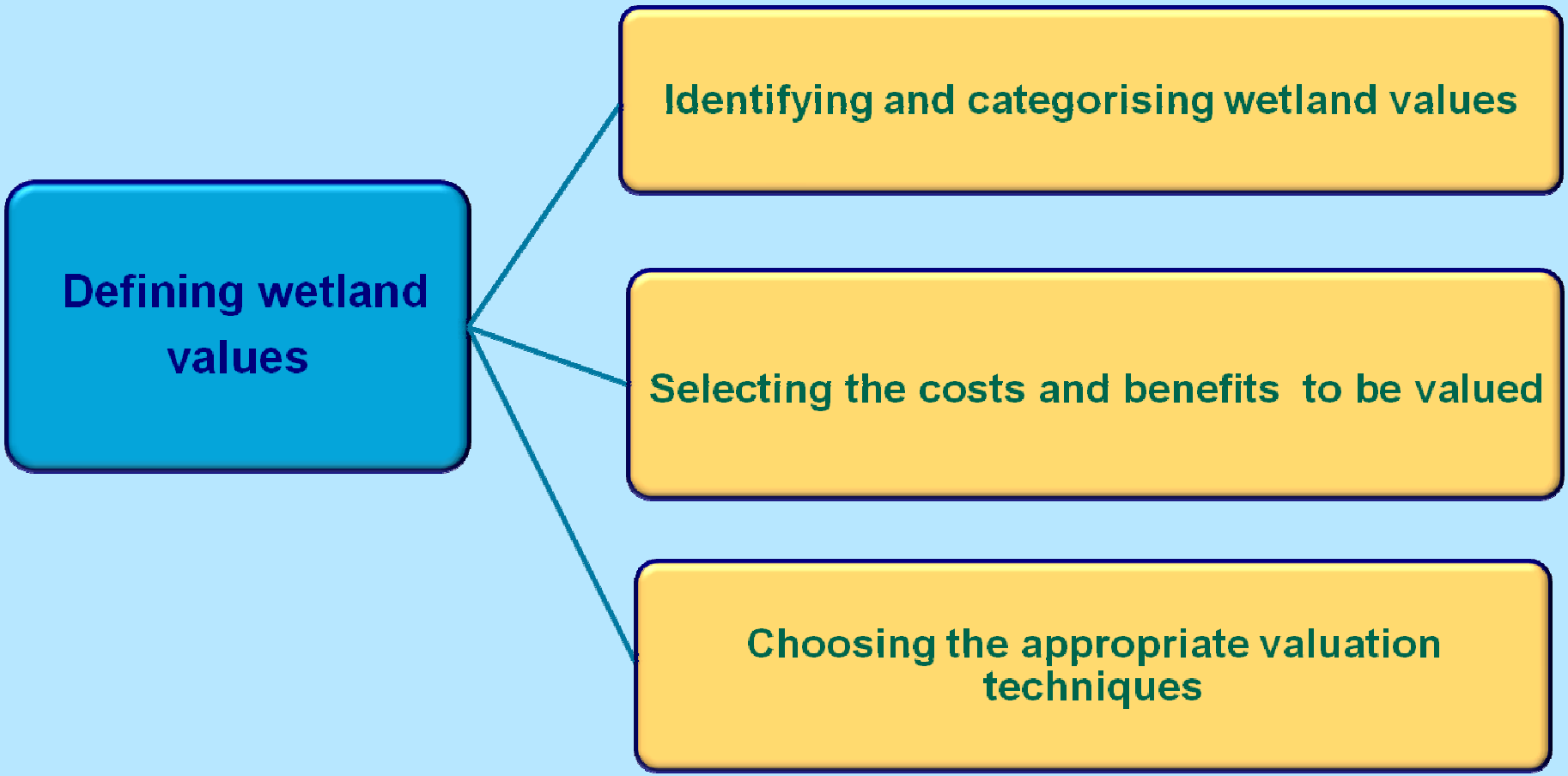
- Cultural significance
- Aesthetic significance
- Heritage significance
- Bequest significance

Economic valuations stages of wetlands

1. Aim of valuation



2. Defining wetland values



3. Selection of valuation methods

Market Price Method

- Direct Use values, especially wetland products

Damage Cost Avoided, Replacement Cost

- Indirect Use Values: coastal protection, avoided erosion, pollution control, water retention…

Travel Cost Method

- For Recreation and Tourism

Hedonic Pricing Method

- Some aspects of Indirect Use, Future Use and Non-Use Values

Contingent Valuation Method

- For Tourism and Non-Use values

Contingent Choice Method

- For most wetland goods and services

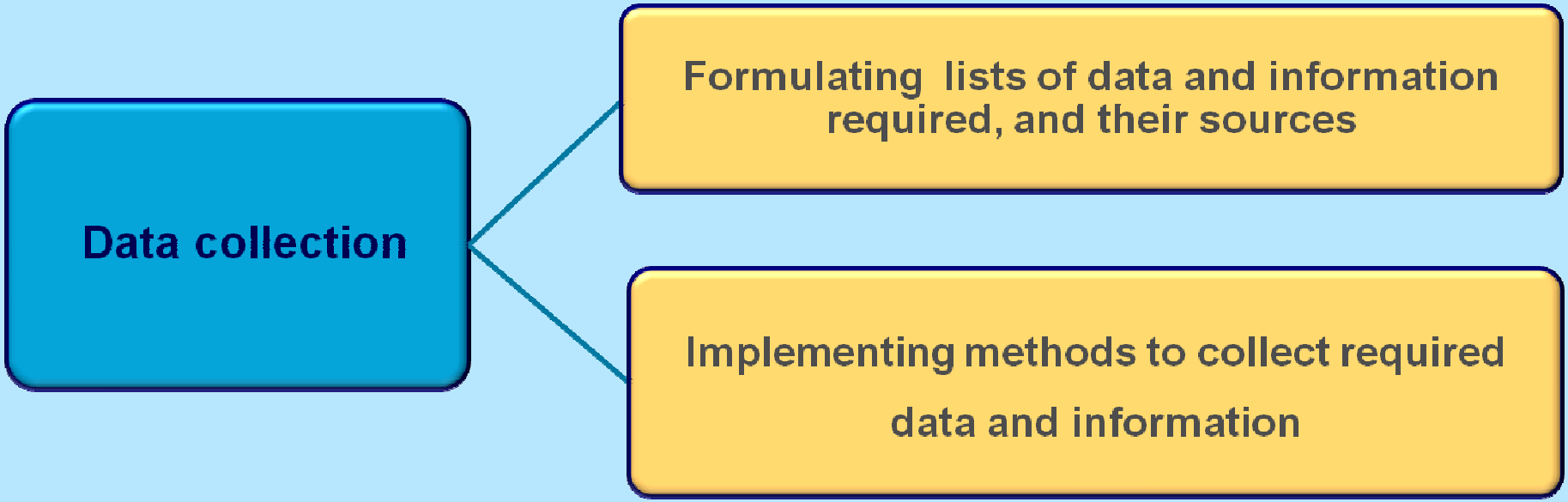
Benefit Transfer Method

- For ecosystem services in general and recreational uses in particular

Productivity Method

- For specific wetland goods and services: water, soils, humidity in the air…

4. Data collection



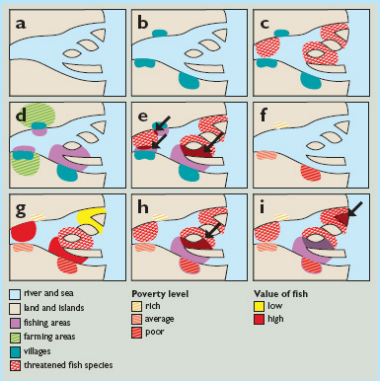
5. Methods of obtaining data

Meetings and workshops

Data of sites directors

Questionnaire

Diagrams, maps



Interviews

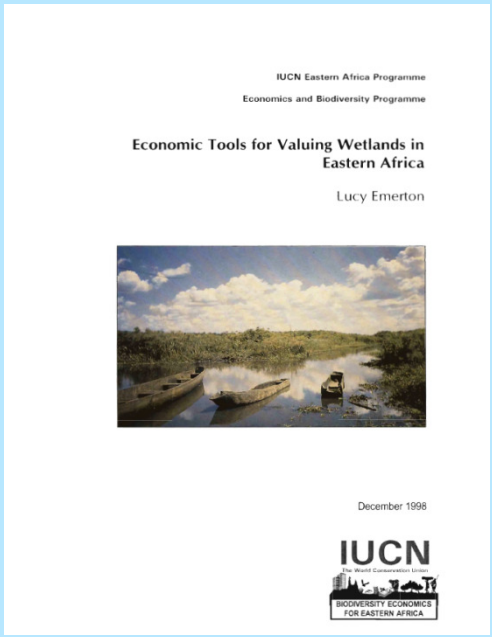
6. Analysing & presenting data

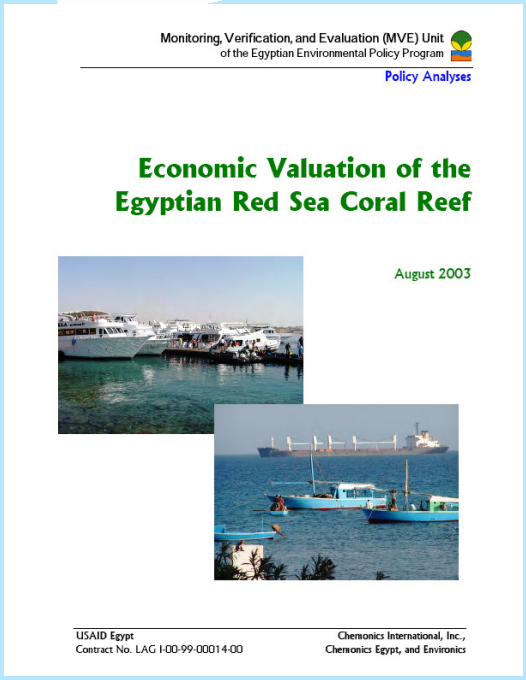
How was associated with results of the evaluation of economic and production environment, hydrology and biodiversity in areas surrounding the wetlands?

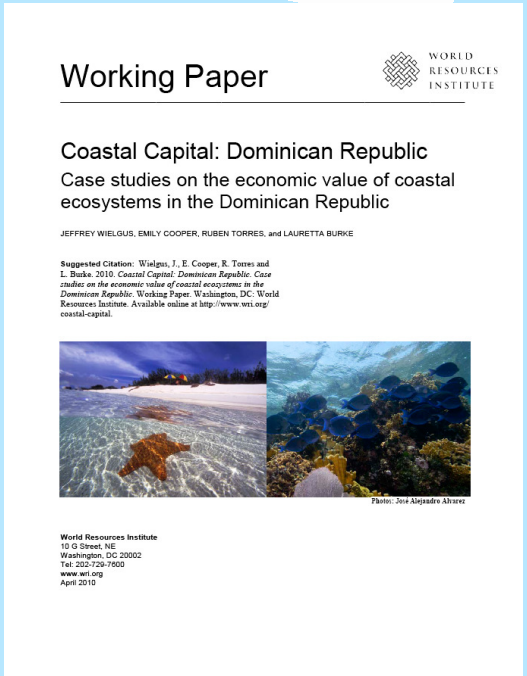
What is the value of the economic benefits of wetlands, and how distributed among the communities and populations?

Is there a need to develop scenarios of economic management to face the threats to wetlands, and support for wetland conservation?

6. Publishing reports







Case studies

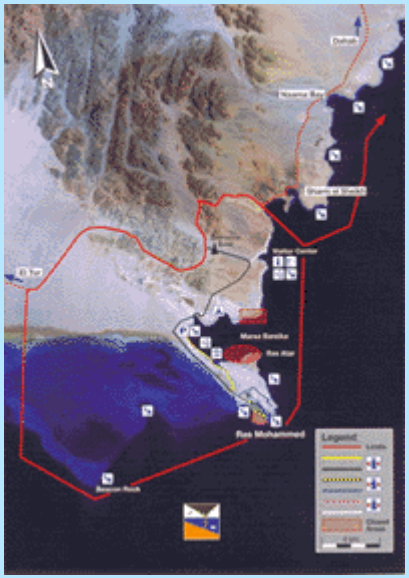
Egypt's mangroves in Ras Mohamad and Nabq

Merja Zerga Lagoon, Morocco

Sabkhet El Kelbia, Tunisia

Socio-economic assessment and economic valuation of Egypt's mangroves

Mangrove forests occur along the Gulf of Aqaba, Ras Mohammed and the coastline and many islands of the Red Sea proper. They occupy about 525 ha in 28 sites: 5 sites along the Gulf of Aqaba and Ras Mohammed in the Sinai Peninsula and 23 sites along the Red Sea proper from Hurghada southwards.



Threats

1. Overexploitation
2. Habitat conservations
3. Alternation of hydrological regime
4. Pollution
5. Recreation activities
6. Dredging and sedimentation

Source: James Spurgeon, Jacobs GIBB Ltd (2002). Socio-economic assessment and economic valuation of Egypt's mangroves

Main values

❑ Direct Use Values:

1.Forest products

- Wood fuel
- Animal browsing
- Traditional medicines and tannins .. etc
- Pharmaceutical
- Genetic resources
- Apiculture

2.Fish and shellfish resources

3.Other wildlife resources

- Shelter
- Feeding area
- Nursery for many other wildlife species

4.Aquaculture

5.Recreation and tourism

6. Landscape value

7. Education and research

❑ Indirect-Use Values

1.Support to off-site fisheries
2.Biological support of off-site habitats and species
3.Shoreline protection function
4.Sediment regulation and accretion
5.Other mangrove functions

❑ Non-use values:

1.Important type benefit, potentially providing significant value to a wide range of stakeholders such as the general public, local communities and tourists

Summary of current and potential values of Egypt's mangroves

Use category	Type of value	Approximate current range of values US$/ha/yr	Potential to increase values at some sites
Direct use – extractive/ partially extractive	Fuel	0 - Low	Low
	Browsing	0 - Medium	Low
	Medicines and tannins etc	0	Low
	Pharmaceutical & genetic	0	High
	Apiculture	0	Low
	Wildlife resources	Medium	Low
	Fish/shellfish	0 - Medium	Medium
Direct use – non-extractive	Recreation and tourism	0 – 180,000	High
	Landscape value	0 – 100,000	Medium
	Education and research	0 - High	Medium
Indirect uses - functions	Support to fisheries	0 - 13,000	Medium
	Support to habitats and species	High	Medium
	Shoreline protection	0 – 1,000	Medium
	Sediment regulation & accretion	0 – 1,000	Medium
	Other functions (e.g. carbon storage)	Low – Medium	Low
Non-use value	Non-use values	350 – 100,000	High

For the current value estimate column, where no monetary values are estimated, "low" may be in the order of US$10s/ha/yr, medium may be US$ 100s/ha/yr and high may be US$ 1,000s/ha/yr.

Non-use value may vary from site to site, but due the high uncertainty of this value, the overall value could range anywhere between US$ 350 and US$ 100,000/ha/yr, with a best estimate of US$ 13,000/ha/yr.

Total Economic Value of mangroves at Ras Mohammed and Nabq

Type of Benefit	Ras Mohammed value in US$/yr (2 ha)	Nabq value in US$/yr (52.5ha)
Off-site fisheries	26,000	450,000
Recreation	130,000	60,000
Coast protection	0	52,500
Sediment regulation	0	52,500
Non-use values	26,000	677,000
Total	182,000	1,290,000
Total /ha	91,000	24,571

Compared to other mangroves, the recreation value per hectare for mangroves at Ras Mohammed could certainly be amongst the highest in the World.

Merja Zerga Lagoon, Morocco

Merja Zerga is a wetland of 7,000 ha, located on the Atlantic coast of Morocco, adjacent to a small coastal town that serves as a centre of attraction for domestic and regional tourism. It consists of a large coastal lagoon with extensive intertidal mudflats, subtidal seagrass and fringing marshes, and can be considered as an coastal wetland.

Threats

- Urban sprawl and demographic growth in the region.
- Overgrazing.
- Overfishing.
- Illegal construction of wells depleting the freshwater influx into the lagoon.

Source: Stuip, M.A.M., Baker, C.J. and Oosterberg, W. 2002. The Socio-economics of Wetlands, Wetlands International and RIZA, The Netherlands.

Main values

❑ Direct–use values

1. Agriculture

2. Breeding of cattle

3. Wetland products
   - Fishing
   - Gathering of clams
   - Harvesting of rush for mats
   - Fuel
   - Roofing

4. Recreation

❑ Indirect–use values

- Protection against coastal erosion and floods

- Water quality improves as it moves via the lagoon to the sea.

❑ Non–use values

The wetland is of international importance because it supports up to 200,000 wintering and staging waterbirds.

Total economic values of Merja Zerga

Values			Persons involved	Net Present Value (million US$)	Net Present Value per ha (US$/ ha)
Direct Use	Agriculture and Wetland products	803 US$/ household/ year	2,500	33	4,780
	Recreation	Included in non-use			
Indirect use		Not estimated			
Non-use + Recreation		19 US$/ person, one time	800,000	15.2	2,171
Total Values				48.2	6,951

This should be considered as the minimum economic value of the Merja Zerga, as the value for the population living outside the area – national or international – was not taken into account

Sabkhet El Kelbia, Tunisia

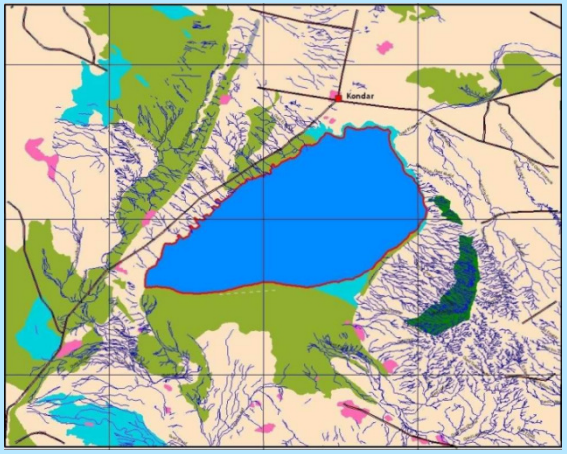
Located near coastal area of Sousse and the lower steppe of central Tunisia.

The marshes and the lake occupy a maximum area of 14,000ha and drain a catchment area of 15,000km2.

The Sebkha is state-owned and 8,000ha of it were declared a Nature Reserve in 1993.

Threats

- Damming of the three main rivers upstream was carried out to control floodwaters and this has cut off all river inputs.
- Siltation
- Rubbish tipping from the nearby small town of Kondar.



Source: Nejib Benessaiah, Mediterranean wetlands socioeconomic aspects, 1998

Main values

- **Direct–use values**

Total = 40.129 USD

1.Grazing.
2.Agricultural products, grains (wheat and barley)
3.Livestock products (milk and meat)
4.Olive products

- **Indirect–use values**

Total = 00.666 USD

This estimated by analysis of percentage of Damage Cost Avoided method for the site.

Total values 40.795 million USD

- Low number of studies
- Technical skills and experience
- No clear policy regarding
- Different methods (Accuracy)
- Management of wetlands not including in planners and decision makers in the decision-making process.
- Conflicts in wetland utilization and degradation of wetlands resources have resulted from a lack of a master plan

The economic value of some wetland in the Arab countries

"Proposal for Pilot study"

Background

In June 2009:

'Cairo Statement'

→ Gave recommendations for the implementation of the Ramsar Convention in the Arab Region.

In November 2009:

CAMRE at their meeting in Marsa Alam, Egypt.

→ Cairo Statement formally approved

In June 2010:

Muscat action plan implement programs

→ One of these programs was economic valuation of wetlands in Arab region.

In December 2010:

Proposal submitted to CAMRE

→ Formally approved

In February, 2011:

Meetings with expertise from Ramsar, IUCN ….etc

The 16th Meeting of the Scientific & Technical Review Panel (STRP)

1. Preparing for workshop include experts in this field and national focal points in the Arab countries.
2. Seek funding from the GEF or UNEP for pilot project to evaluate the feasibility of a bigger project .
3. Working for financing from the World Bank

In May, 2011:

A questionnaire was developed during Fujairah workshop

The results indicated that the participants are willing to hold the study in sites with environmental and economical importance.

Objectives of study

Putting the economic value of wetlands in the subject of consideration in the decision-makers in the development of plans of wetlands

Help officials in the management and development of policies in improving human well-being

The maintenance of biodiversity in wetlands through cooperation with the Arab Union for natural reserves

This study could a model to study the economic values of the components of various ecosystems (desert - forest – sea ..... Etc)

Budget:

100,000 USD$

Experts for training national persons

Travel and meetings and workshops in Arab countries

Salaries and consultancy

Equipments

Coasts of publications

Duration and Payment

Duration

About 14 months.

Studied Sites

A detailed study will be in 6 sites from 6 countries

The sites will be selected according to the availability of data and information

Payment process

The budget will be covered from countries that have study sites

OR

Efforts will be make to obtain funds from some funding organizations

Expected Outputs

The project produced report valuating economic values of different types of wetlands in different Arab countries

The project will be pilot study and lead to the feasibility of a bigger project

Training and new generations of Arab specialists in this important field. Training also involves awareness seminars on results from research efforts helping

Capacity building in environmental economic aspects of wetlands is incorporated into the project.

Applying environmental economics for a range of different stakeholders from local to national level, across government, NGOs, private sector, and academia.


Thank you