Module 17

Integration of EBM into IWRM

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- Ecosystem-based Adaptation involves a wide range of ecosystem management activities to increase resilience and reduce the vulnerability of people and the environment to climate change.

- The adaptation is linked to the security of access to basic human needs, e. g water and food etc., which are services provided by the ecosystems.

- Therefore, human being, or water ecosystems users, should have the ability to integrate efforts to sustain and restore ecosystem functions and promote human rights under changing climate conditions.

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- Experiences showed that EBA can be applied in different landscapes, may be more cost-effective than engineering and technological options often providing multiple benefits,
- It could be combined with engineering approaches so called “grey-green” infrastructure and finally to help decisions makers to recognize where building resilience is the best adaptation response.

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- The evolution of the IWRM framework to encompass ecosystem services would enable the realization of a broader cluster of benefits from well-managed water and related resources.
- These would include flood and drought mitigation, biodiversity and wildlife habitat conservation, food production, etc.

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Assessments mentioned the following Key areas for improvement application of IWRM in Arab region:

- Capacity enhancement
- Civil society involvement
- Adaptive management
- Monitoring and indicator development
- Environmental sustainability

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- The implementation of IWRM in the Arab Countries reveals that after the progress initiating in IWRM planning and establishing an enabling institutional environment for IWRM in many countries.
- The slow progress made was due to a
  - resistance
  - change in mindset,
  - low level of stakeholder's integration,
  - operational approach, and
  - institutional as well as social change, at all levels.

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- The new development and commitments of Arab countries related to Environmental Multilateral Agreement (MEA's) in the management of water resources and the ecosystems conservation scientific finding

- We believe that there is a strong case to be made for the use of Ecosystem-Based Management to assist watershed managers to improve the management of their catchment by combining EBM and IWRM tools for an effective preparedness to adapt their watershed and associated human communities to climate change impacts in the Arab region .

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- Practically, there are twelve principles for the implementation of ecosystem based watershed management.
- Watershed managers in Arab region could make use of their own experiences to assess the compatibility and complementarity of their IWRM measures with these principles and would consider additional necessary measures for a successful integration of EBM in IWRM towards Ecosystem Based Adaptation.

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- **Principle 1**: The objectives of management of land, water and living resources are a matter of societal choice
- **Rationale**

Different sectors of society view ecosystems in terms of their own economic, cultural and society needs. Indigenous peoples and other local communities living on the land are important stakeholders and their rights and interests should be recognized. Societal choices should be expressed as clearly as possible. Ecosystems should be managed for their intrinsic values and for the tangible or intangible benefits for humans, in a fair and equitable way.

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- **Principle 2**

Management should be decentralized to the lowest appropriate level.

- **Rationale:**

Decentralized systems may lead to greater efficiency, effectiveness and equity. Management

should involve all stakeholders and balance local interests with the wider public interest. The closer

management is to the ecosystem, the greater the responsibility, ownership, accountability, participation,

and use of local knowledge.

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- **Principle 3**

Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.

- **Rationale**

Management interventions in ecosystems often have unknown or unpredictable effects on other ecosystems; therefore, possible impacts need careful consideration and analysis. This may require new arrangements or ways of organization for institutions involved in decision-making to make, if necessary, appropriate compromises

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- **Principle 4**

Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem-management programme should:

(a) Reduce those market distortions that adversely affect biological diversity;

(b) Align incentives to promote biodiversity conservation and sustainable use;

(c) Internalize costs and benefits in the given ecosystem to the extent feasible.

- **Rationale:**

The greatest threat to biological diversity lies in its replacement by alternative systems of land use.

This often arises through market distortions, which undervalue natural systems and populations and provide perverse incentives and subsidies to favour the conversion of land to less diverse systems. Often those who benefit from conservation do not pay the costs associated with conservation and, similarly, those who generate environmental costs (e.g. pollution) escape responsibility. Alignment of incentives allow those who control the resource to benefit and ensures that those who generate environmental costs will pay.

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- **Principle 5**

Conservation of ecosystem structure and functioning, in order to maintain ecosystem services , should be a priority target of the ecosystem approach.

- **Rationale:**

Ecosystem functioning and resilience depends on a dynamic relationship within species, among species and between species and their abiotic environment, as well as the physical and chemical interactions within the environment. The conservation and, where appropriate, restoration of these interactions and processes is of greater significant for the long-term maintenance of biological diversity than simply protection of species.

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- **Principle 6**

Ecosystems must be managed within the limits of their functioning.

- **Rationale**

In considering the likelihood or ease of attaining the management objectives, attention should be

given to the environmental conditions that limit natural productivity, ecosystem structure, functioning

and diversity. The limits to ecosystem functioning may be affected to different degrees by temporary,

unpredictable or artificially maintained conditions and, accordingly, management should be appropriately cautious.

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- **Principle 7**

The EBM should be undertaken at the appropriate spatial and temporal scales.

- **Rationale:**

The approach should be bounded by spatial and temporal scales that are appropriate to the objectives . Boundaries for management will be defined operationally by users, managers, scientists and indigenous and local peoples. Connectivity between areas should be promoted where necessary. The ecosystem approach is based upon the hierarchical nature of biological diversity characterized by the interaction and integration of genes, species and ecosystems.

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- **Principle 8**

Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term.

- **Rationale:**

Ecosystem processes are characterized by varying temporal scales and lag-effects. This inherently conflicts with the tendency to favor short-term gains and benefits over future ones.

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- **Principle 9**

Management must recognize that change is inevitable.

- **Rationale:**

Ecosystem change, including species composition and population abundance. Hence, management should adapt to the changes. Apart from their inherent dynamics of change, ecosystems are beset by a complex of uncertainties and potential “surprises” in the human, biological and environmental realms. Traditional disturbance regimes may be important for ecosystem structure and functioning, and may need to be maintained or restored. The ecosystem approach must utilize adaptive management in order to anticipate and cater for such changes and events and should be cautious in making any decision that may foreclose options, but, at the same time, consider mitigating actions to cope with long-term changes such as climate change.

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- **Principle 10**

The EBM should seek the appropriate balance between, and integration of, conservation and use of biological diversity.

- **Rationale:**

Biological diversity is critical both for its intrinsic value and because of the key role it plays in providing the ecosystem and other services upon which we all ultimately depend. There has been a tendency in the past to manage components of biological diversity either as protected or non-protected.

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- **Principle 11**

The EBM should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.

- **Rationale:**

Information from all sources is critical to arriving at effective ecosystem management strategies. A much better knowledge of ecosystem functioning and the impact of human use are desirable. All relevant information from any concerned area should be shared with all stakeholders and actors. Assumptions behind proposed management decisions should be made explicit and checked against available knowledge and views of stakeholders.

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Prin**ciple 12**
The EBM should involve all relevant sectors of society and scientific disciplines.

Rationale:
Most problems of biological diversity management are complex, with interactions, sides-effects and implications, and therefore should involve the necessary expertise and stakeholders at the local, national, regional and international level, as appropriate.

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EBM principle	Rational	IWRM measures already tacked	Gaps in the implementation of IWRM measures	Measures that should be taken to ensure complementarity	Unit Responsible to ensure the complementarity	Monitoring process
Principle 1 Societal Choice	Public participation in the production, review and update of the river basin management plans	introduction of public participation procedures	information is provided to selected stakeholders but no active and comprehensive participation of stakeholders	Institutionalize the active participation of stakeholders in the decision making process. Better comprehensivenes s of stakeholders	Catchment Manager office	Report of the catchment manager to stakeholders.
Principle 2 Decentralization						
Principle 3 Adjacent and others ecosystems						
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Exercise

In groups elaborate ,using chart in slide 23, how you can integrate EBM in IWRM in your catchment.