

WATER, WETLANDS, BIODIVERSITY AND CLIMATE CHANGE

Managing the avoidable and avoiding the unmanageable

The main impact of climate change will be on the hydrological cycle, hence on *water*.

Adaptation

Wetlands provide resilience to the harmful effects of climate change

Wetlands lessen the impact of extreme weather events due to climate change; for example:

- healthy wetlands absorb floods, decreasing the incidence and severity of catastrophic flooding
- coastal wetlands protect ecosystems and communities from storms and sea-level rise
- Wetlands are crucial freshwater reservoirs in regions where climate change increases drought

These responses are very often more sustainable and cost-effective than traditional engineering approaches

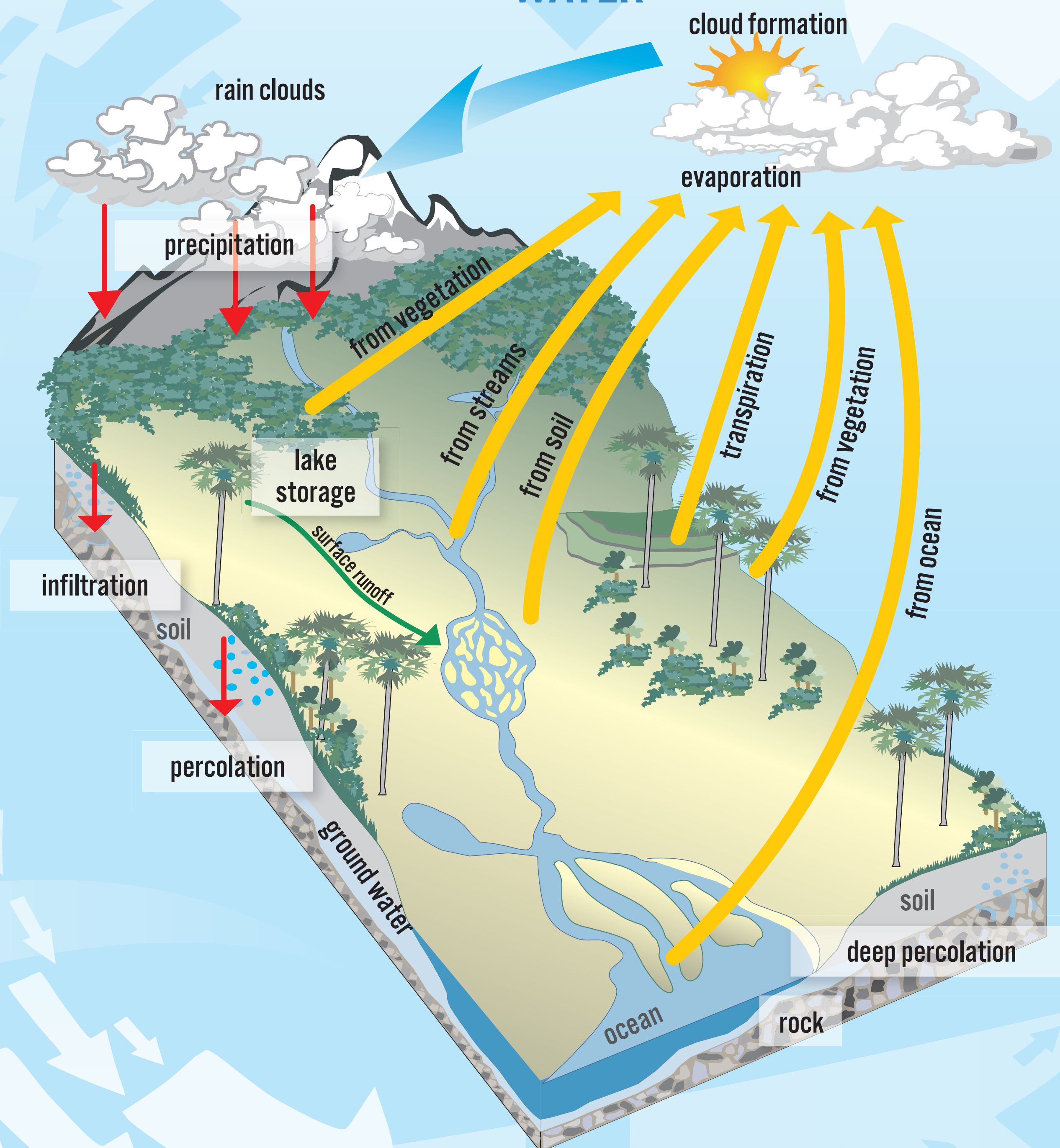


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CLIMATE CHANGE

affects

WATER



affects

WETLANDS

Mitigation

Improved wetlands management is a means of naturally combating the onset of climate change

The significant current emissions of CO₂ from increasing areas of unsustainably managed wetlands must be curtailed.

Rehabilitation of wetlands can significantly mitigate CO₂ emissions from existing degraded wetlands.

INTERESTING FACTS ABOUT WETLANDS AND CARBON STORAGE

Wetlands only cover about 6% of the Earth's surface, but contain about 35% of global terrestrial carbon.

Peatlands, only one wetland type, are the most efficient carbon stores of all terrestrial ecosystems; they store twice the carbon present in the forest biomass of the world and the storage is much longer-term.

Peatland emissions in South-east Asia far exceed the fossil fuel contributions of greenhouse gases from major polluting countries

Investments in reducing carbon emissions from wetlands can be up to 100 times more cost effective than for other mitigation options.

The Importance of Wetlands

ECOSYSTEM SERVICES

Wetlands are crucial for pollution control, nutrient recycling, soil formation, groundwater recharge, climate regulation, erosion control, regulation/moderation of extreme flooding and drought events and the supply of food and freshwater.

Their role in water supply and regulation makes them particularly central to human development. Climate change will have an impact upon all of these services through its impacts upon the hydrological cycle (e.g., rainfall patterns).

The Role of Biodiversity

SUPPORTING ECOSYSTEM SERVICES

Biodiversity includes the diversity of species, genes and ecosystems. In the diagram opposite "biodiversity" is not only the trees that are seen – but includes the diversity and functions of the whole ecosystem of which they are part.

Biodiversity underpins the provision of ecosystem services. Maintaining ecosystem integrity and health is essential to maintaining ecosystem services. Loss of diversity means loss of services and therefore reduced human welfare.

The Vulnerability of Wetlands

SCENARIOS FOR WETLANDS

Wetlands are already amongst the world's most threatened biomes and support the highest proportion of endangered species.

The rate of loss of freshwater biodiversity (1970-2000) was almost double that of marine and terrestrial biomes.

Demands on water will escalate the threats to the biomes, species, and the services they provide. Climate change will significantly increase these drivers of loss both directly and indirectly.

What needs to be done?

THERE ARE SOLUTIONS

- KEEP** the carbon stored in wetlands where it is.
- REHABILITATE** wetlands to reduce carbon emissions and restore biodiversity and sustainable livelihoods.
- RAISE AWARENESS** of water-wetland-biodiversity linkages.
- ENGAGE** the full range of public and private sector stakeholders and promote multi-convention cooperation.
- PROVIDE POSITIVE INCENTIVES** for sustainable wetland management that promote their full

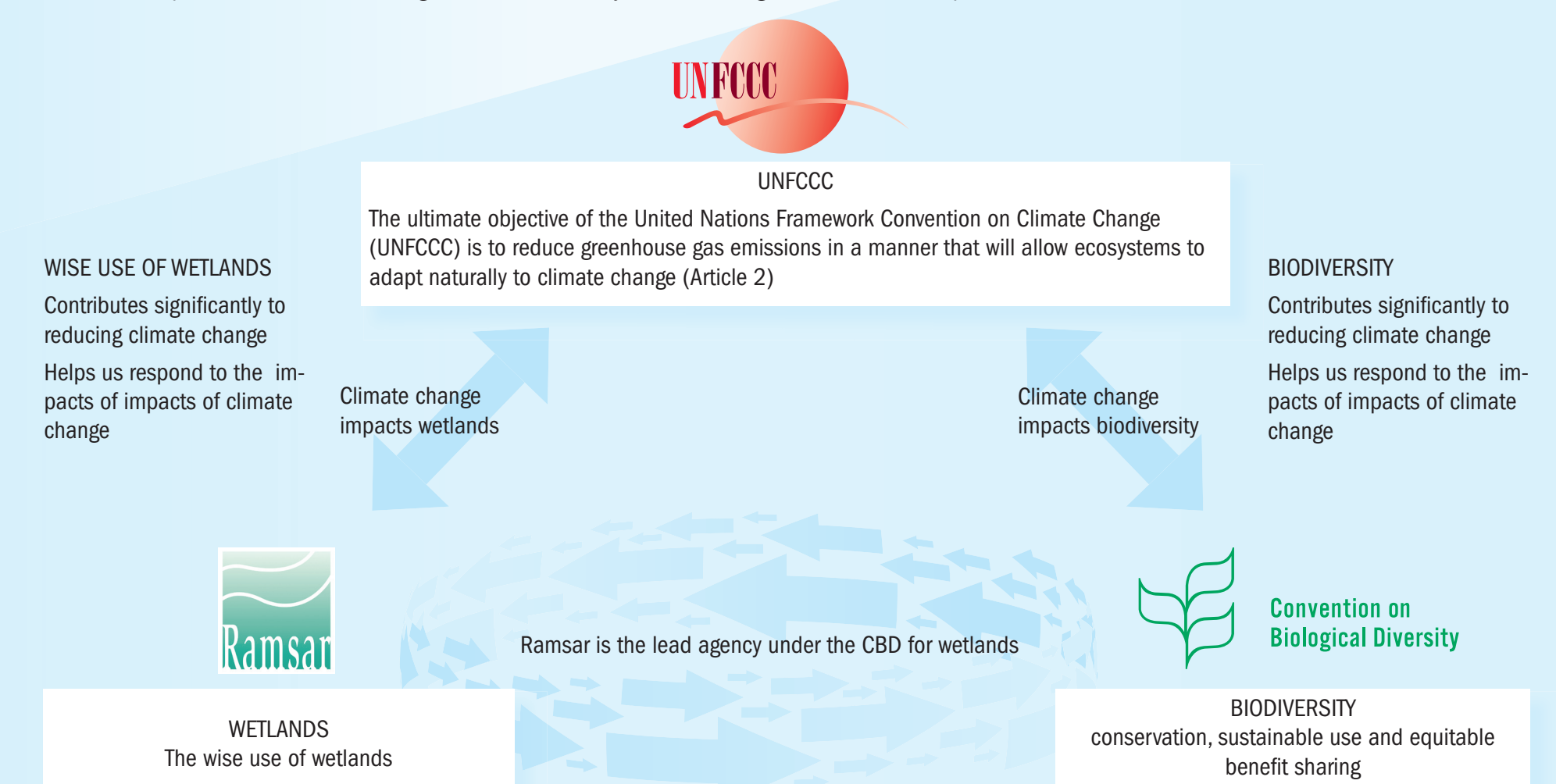
potential in climate change adaptation and mitigation; for example—create a funding mechanism to rehabilitate and preserve wetlands; finance the incremental costs to local communities of improved wetland management as a response to climate change.

ENGINEER RESPONSES TO CLIMATE CHANGE WITH NATURE AS OUR ALLY—biodiversity is not just the victim of our mismanagement, it is our ally in managing better. The wise-use of wetlands is a cost-effective response.

THE INTERNATIONAL FRAMEWORK:

OPPORTUNITIES FOR CONVENTIONS TO WORK WELL TOGETHER

The linkages between wetlands, biodiversity and climate change represent one of the clearest opportunities for effective collaboration between the Conventions. For example, one of the most urgent and important relevant actions that the international community can take is to halt the degradation of peatlands in South-East Asia and promote sustainable management of these ecosystems including sustainable biofuel production.



Other Conventions that have an interest in water-wetlands-biodiversity-climate change linkages include:

The Convention on Migratory Species (CMS): migratory routes between wetlands are affected by climate change, particularly for waterbirds

The United Nations Convention to Combat Desertification (UNCCD): wetlands are critical to combat desertification; the water they sustain critical to

both biodiversity and livelihoods in desert areas; as droughts increase as the climate changes, wetlands become increasingly important.

How do the Conventions co-operate:

Between their scientific bodies, Conferences of the Parties, focal points and the Secretariats; through established liaison groups; and most importantly through action by Parties to achieve common objectives.