

WETLANDS, BIODIVERSITY AND CLIMATE CHANGE

Options and Needs for Enhanced Linkage between the Ramsar Convention on Wetlands, Convention on Biological Diversity and UN Framework Convention on Climate Change

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1.0 Introduction

This paper has been prepared to provide background on the relationship between wetlands, biodiversity and climate change to support discussions at the UNU/IAS Conference on multilateral Environmental Agreements in July 1999. The paper lays out the key issues linking these interconnected topics and reviews some of the steps taken in the frame work of the relevent intergovernmental environmental Conventions to facilitate the linkage. Some examples of activities which could provide assistance in fostering linkage between the conventions is Given. Finally recommendations for action are made.

Annex I includes background information on the importance and function of wetlands and key background information on Conservation of Biodiversity and also global climate change.

2.0 Linkages Between Wetlands, Biodiversity and Climate Change

2.1 Wetlands and Biodiversity

Wetland ecosystems are cradles of biological diversity, providing the water and primary productivity upon which countless species of plants and animals depend for survival. They support high concentrations of birds, mammals, reptiles, amphibians, fish and invertebrate species. Unlike terrestrial ecosystems, the richness of freshwater biodiversity is still poorly known. Identification and classification of wetland species is hampered by the fact that many species may spend part of their life cycle in both freshwater and marine ecosystems.

Wetlands are an important storehouse of plant genetic materials. Rice, a common wetland plant, is the staple diet of more than half of the world's population. West African rice (*Oryza glaberrima*), for example, was domesticated over 2000 years ago and wild rice from other wetlands continues to be an important source of new genetic materials in developing disease-resistant and higher-yield strains. A wide range of important tree species are also found in wetlands: many have special adaptations to changing hydrological conditions (changes in water regimes or increased salt levels) and may be of value in the context of global climate change and rising sea levels. Conserving the genetic variability of such plant resources is therefore essential.

Of the 20,000 species of fish in the world, more than 40% (approximately 8500 species) live in freshwater. Diversity amongst these species is highest in the tropics: South America has the most species (2220 species, of which more than 1000 are in the Amazon River basin). Africa is home to at least another 2000 species, with more than 700 occurring in the Zaire River basin. Asia has an estimated 1600 species, but this number is increasing as additional research

is undertaken. For example 23 previously undescribed species were recorded among over 230 species found in 1995-6 at Danau Sentarum Ramsar site in Indonesia and the adjacent Kapuas river system. The importance of these figures is only fully appreciated when compared with the relatively meagre number of species in Europe (about 200). More than 4000 species of amphibians have been described, virtually all of which are dependent on the availability of water for breeding and larval development. Many reptiles (turtles and alligators) are also dependent on wetlands for feeding and breeding.

Wetlands are renowned for their high levels of endemic species, especially fish and invertebrates. Nowhere is this more obvious than in the East African Rift Valley lakes (Victoria, Tanganyika, Malawi) which support exceptionally high levels of endemic fish: more than 700 endemic species of cichlids have been recorded. Some 80% of the cichlids in Lake Tanganyika are endemic. A survey conducted by the World Conservation Monitoring Centre showed that 18 "hot spots" for biodiversity contained 737 species of amphibians alone, clearly demonstrating the importance of wetlands in maintaining biological diversity. Many wetland species are now threatened as a result of habitat loss and/or hunting. Crocodiles have been especially impacted: of the 21 known species, seven are endangered worldwide and an additional three considered vulnerable. One of the most seriously threatened is the Orinoco crocodile (*Crocodylus intermedius*), which is now reduced to a few hundred animals in Colombia and Venezuela.

2.2 Wetlands and Climate Change

2.2.1 Role of wetlands on stabilising or contributing to Climate Change

Wetlands affect the levels of atmospheric carbon in two ways: Many wetlands, particularly boreal and tropical peatlands, are carbon reservoirs. Carbon is contained in the standing crops of trees and other vegetation and in litter, peats, organic soils and sediments which have been built up, in some instances, over thousands of years. The magnitude of storage depends upon wetland type and size, vegetation, the depth of wetland soils, ground water levels, nutrient levels, pH and other factors. These carbon reservoirs may supply large amounts of carbon to the atmosphere if water levels are lowered or land management practices result in oxidation of soils.

Many wetlands also continue to sequester carbon from the atmosphere through photosynthesis by wetland plants; many also act as sediment traps for carbon-rich sediments from watershed sources (Mitsch, 1995). However, wetlands also simultaneously release carbon as carbon dioxide, dissolved carbon, and methane. The net carbon sequestering versus carbon release roles of wetlands are complex and change over time although net, gradual sequestration occurs over time for peatlands and certain other types of wetlands. Land use practices affect sequestering. Another important fact that is less known is that the losses of wetland areas, due to agricultural land conversion and degradation also contribute significantly to the release of carbon dioxide to the atmosphere, hence affecting the global climate.

Wetlands cover 6% of the world's land surface but contain 35% of the terrestrial biosphere carbon pool. According to Patterson (1999) wetlands constitute the largest global C reservoir at 770 Gt, exceeding agro ecosystems (150 Gt) and temperate forests (159 Gt) and tropical forests at 428Gt . Within wetlands peatlands store about 540Gt; in addition, coastal marshes and mangroves are considered the most important marine ecosystems for carbon sequestration

From the climate change perspective, peatlands (particularly in the northern hemisphere) are the best understood wetlands. Due to prevailing anaerobic conditions, and the generally low availability of nutrients, the decomposition of organic material is greatly constrained, so that despite a low net primary productivity, carbon stocks continue to grow. Globally, it is estimated that peatlands are sinks with carbon flux of -0.1 Gt C/yr.

The enormous volume of peat deposits in the world's wetlands has the potential to contribute significantly to worldwide atmospheric carbon dioxide levels, depending on the balance between draining and oxidation of the peat deposits and their formation in active wetlands. It is estimated that before recent disturbances of wetlands, net global retention of carbon in wetland peats was 0.057-0.083 Gt-C/yr, most in peatlands. If peat-forming wetlands are drained and converted into agricultural areas, the oxidation of carbon stocks generates high carbon flux. On a global scale, it is estimated that the losses through conversion to agricultural lands are 0.0063-0.085 Gt C/yr in the temperate regions and 0.053-0.114 Gt C/yr in the tropics.

Tropical peatlands (swamp forests), which have higher biodiversity and carbon storage function than temperate peatlands are under considerable pressures from agricultural development agencies. As a worst case scenario, a doubling of such tropical source areas to 7.6 million ha would release 300 million tons per year of carbon.

There are still major gaps in our understanding of wetlands and their likely responses to climate change. Wetlands lag behind other ecosystems in being adequately modeled and are often excluded from global models of the effects of climate change.

2.2.2 Potential Impacts of Climate Change on Wetlands

In many parts of the world, hydrological changes could be the dominant effect of climate change, as snowmelt increases, as evaporation rates increase and as droughts, storms and floods intensify. Much of the hydrological changes will be reflected in changes in freshwater ecosystems including most of the wetland areas.

Wetlands ecosystems are especially vulnerable to climatic changes in the atmosphere, as it will alter wetlands primarily by changing the hydrology that sustains them. Evaporation rates will often be important. A study of semi-arid regions of Southern Europe found that a 3-4 C warming would eliminate up to 85% of remaining wetlands.

Impacts would also be severe on coastal wetlands, arguably one of the most biologically diverse ecosystems in the world. A one meter rise in sea level due to warming would threaten half of the world's coastal wetlands of international importance for their biodiversity. Coastal wetlands around the Mediterranean Sea, African Atlantic coast, east Asia, Australia, Indonesia, Papua New Guinea and small island systems in Pacific and Caribbean are at special risk.

2.3 Biodiversity and Climate Change

2.3.1 Potential Impacts of Climate Change on Biodiversity

There is growing evidence that biological diversity will be severely threatened by rapid climate change. Global warming, sea-level rise and increased intensity and frequency of extreme weather events, such as typhoon and droughts, are predicted to have dramatic and

damaging effects on the world's biological system. A warming of 1-3.5 C over the next 100 years would shift current climate zones poleward by approximately 150-550 km –vertically by 150-550 m in mid-latitude regions. The composition and geographic distribution of unmanaged ecosystems will change as individual species respond to new conditions. Species that cannot adapt quickly enough may become extinct.

Observations, experiments and models demonstrate that a sustained increase of just 1 C in the global average temperature would affect the functioning and composition of forests. A typical climate change scenario for the 21st century shows a major impact on the species composition of one third of the world's existing forests. Some of the forests may entirely disappear.

Small islands are particularly vulnerable to sea level rise, as much of the land mass could be lost, potentially displacing large number of people. Seven of the ten areas with the highest percentage of threatened plants are on small islands, and climate change will only exacerbate these threats.

2.3.2 Biodiversity and climate stabilisation

As has been discussed in the section above on wetlands and climate change, a broad range of other ecosystems such as forests and associated biodiversity play a key role in sequestering and storing carbon. The loss or degradation of these ecosystems releases the carbon to the atmosphere. Current estimates indicate that about 25-30 % of greenhouse gas emissions are related to the loss and degradations of natural ecosystems. In addition the loss of ecosystems removes key carbon sinks reducing the likelihood of future carbon stabilisation.

3.0 Status of linkages between associated Environmental Conventions

3.1 Convention On Biological Diversity and the Ramsar Convention on Wetlands

It is clear that the broad objectives of the Convention on Biological Diversity and the Ramsar Convention are mutually compatible and that there is considerable scope for close cooperation between the two agreements at all levels (Contracting Parties, technical bodies and secretariats). Discussions and interactions have been underway since 1994. The first formal step was the signing in January 1996 of a Memorandum of Cooperation (MoC) between the convention secretariats. This was followed by a decision in COP3 in November 1996 designating Ramsar as the lead partner of the CBD in relation to inland water ecosystems. In May 1998 this was followed by the adoption of a joint work plan between the conventions at COP4 of CBD. Progress on implementing the joint work plan was reported to the recent SBSTTA4 meeting of CBD in June 1999. The positive relationship between these two conventions has been identified by the parties to the CBD as a model for linkages with other conventions. A summary of the joint work plan is given in Annex 2.

The two conventions have also decided to enhance linkage between their respective technical subsidiary bodies SBSTA and STRP through cross representation. The conventions are also exploring specific programme areas or initiatives for joint action. One of these the River basin initiative is described in the next section.

3.2 The Convention on Biological Diversity and the Climate Change Convention

As mentioned above natural ecosystems play a critical role in the carbon cycle and hence act as sources and sinks for greenhouse gasses. Natural ecosystems are also extremely vulnerable to the impacts of global climate change. The nature of the activities undertaken at a national level in the framework of the Convention on Biological Diversity may thus have significance for reducing global climatic change and adapting to its effects.

The FCCC on its part recognizes the links between climate change and biodiversity conservation in both its objective and its commitments. The objective states the importance of preventing dangerous changes to the climate system within a time frame that would not allow ecosystems to adapt naturally. The FCCC also commits nations to promoting sustainable management and conservation of forests and other terrestrial ecosystems.

If ratified by the Parties, the Kyoto Protocol could potentially offer incentives for the restoration, protection and conservation of forests and other ecosystems within developed and developing countries, thus presenting clear synergies between climate mitigation and biodiversity conservation.

However to date although these two Conventions have overlapping mandates and constituencies, for the most part they are being implemented in parallel rather than jointly and there is a need for clear mechanisms to be established for enhanced linkage. In May 1998, the CBD in decision IV/15 adopted at COP4 requested the Executive secretary of the CBD to strengthen relationships with the UNFCCC and its Kyoto Protocol with a view to making implementation activities and institutional arrangements mutually supportive. Subsequently the CBD Secretariat made a presentation at the early June 1999 meeting of the SBSTA of CBD which encouraged further links. This sentiment was also echoed by delegate to the SBSTTA of CBD in late June 1999.

It is anticipated that this issue may be discussed further at the COP of UNFCCC in November 1999 and the COP5 of CBD in May 2000.

3.3 Ramsar and the Climate Change Convention

As discussed above wetland ecosystems are the most important carbon stores and play an important role in carbon flux and balance. They are arguably one of the most vulnerable systems to climate change as they are very sensitive to changes in rainfall patterns and sea level rise. However at this stage there is no formal relationship or regular communication between the respective convention secretariats.

This matter was discussed at COP7 of the Ramsar Convention in May 1999 and Resolution VII.4 on Cooperation with other Conventions was adopted. This resolution requests the Ramsar Bureau to give priority in its programme of work for the next triennium to the development of a Memorandum of Cooperation with the UNFCCC. COP7 also adopted a Recommendation calling for the development of a global action plan for peatlands. This recommendation recognised the important role that peatlands play in climate change

4.0 Specific options/examples for integrated implementation of the Conventions

In order to facilitate collaborative implementation of the conventions at national or regional level, it may be useful to consider some development of specific action oriented initiatives which can give focus to the collaboration between the conventions. The following sections give some information on some such initiatives which are underway or are in the process of development.

4.1 Southeast Asian Peatland Management Initiative

Discussions and consultations are underway to develop a Southeast Asia Peatland Management Initiative that looks into the implementation a comprehensive programme for the management of peatland in this region and the associated biodiversity. The proposal seeks to bring together government and related agencies in Southeast Asia to work together to develop and implement a regional action plan and management initiative. This initiative is in line with recent calls for urgent action at several international fora, including the decision at COP7 of the Ramsar Convention on Wetlands to approve the development of a Global Peatland Action Plan. The development of this initiative was spurred by major forest fire episodes of 1997/98 in the Southeast Asia region.

Significant areas of peatlands and associated biodiversity (1.5 million ha – mainly in indonesia but including parts of Malaysia, Thailand and Brunei) were damaged by the fire. From the perspective of climate change, the fires were major contributors to atmospheric CO₂ emission. In a study undertaken by the Asian Development Bank (ADB), it is estimated that in the 1997/98 forest fire, more than 700 million tonnes of CO₂ (in which 250 million tonnes were carbon) was released, thus elevating Indonesia to one of the largest emitters of carbon dioxide in the world (thus contributing to global climate change). Smoke from the fires covered five countries in the region for up to four months and caused major economic health and social problems. It is estimated that 60% of the haze was from peatland fires. The extent of damage and loss in terms of economic, social and environmental (including carbon emission) from the 1997/98 fires is estimated to be around USD 9 billion. I addition there was massive loss of biodiversity.

As peatlands hold soil carbon stocks which accounts for 35% of total terrestrial carbon, their losses can contribute significantly to atmospheric carbon dioxide. It has been estimated that the peatland fires in indonesia released up to 100 million tonnes of carbon. These peatlands are also very important natural environments providing a broad range of natural products as well as being important for biodiversity conservation, water balance and climate regulation.

One of the main objectives of the initiative is link with work to enhance management and prevent forest and peatland fires in the region as well as with implementation by the countries in the region of associated global environment conventions (Wetland, Biodiversity and Climate Change). Other key issues that will be examined within this initiative include the ecological restoration of peatland, biodiversity conservation and protection of key sites, sustainable forest management and protection of carbon stores and ecological restoration to enhance carbon sequestration. It will also attempt to initiate management actions at key sites and share experiences between countries on these efforts or other successful peatland management and ecological restoration activities.

Currently a number of actions are underway at a country or regional level that could be linked together. These include ongoing activities by local governments, research institutions to study

and manage peat swamp forests as well as ongoing development assistance funded projects such as those by ADB and DANCED.

The project is proposed to support the participation and collaboration of governments, research institutions and agencies of the Southeast Asia region, as well as local and international NGOs. It is expected that funding for project implementation will be raised from both local and international sources.

It is proposed that innovative mechanism for financing are examined such as carbon sequestration or carbon offset funds within the framework of the UN Framework Convention on Climate Change (Joint Implementation or Clean Development Mechanism funds), land development or other levies, "Polluter pay" or "user pay" pay schemes and international grants and financing from GEF, Development Assistance Agencies and others.

The concept proposal for this initiative was presented to a recent (5-6 July 1999) ASEAN Ministerial and senior officials meeting on forest fires and transboundary haze and will be developed further over the next 3 months before the next ASEAN regional meeting. If implemented this initiative could provide a model mechanism for the co-implementation of the three conventions as well as helping to address an issue of major regional concern.

4.3 River Basin Initiative

The river basin initiative (see Annex 3) is a new initiative currently under discussion between the secretariats of the CBD and Ramsar Convention. This initiative is linked to the joint programme of work between the two conventions adopted in May 1998 and the CBD Decision IV.4 on the biological diversity of inland water ecosystems and the associated Ramsar Resolution 7.18 on Guidelines for integrating wetland conservation and Wise use into River Basin Management. The initiative would involve the Contracting Parties to the two conventions identifying pilot projects or sites to develop integrated river basin management approaches to conserve inland water biodiversity including wetlands. These pilot projects would be maintained in a register and over the next 3 years parties would work together to implement the projects and share experiences and lessons learned. In this way it is believed that rapid progress in implementing the decision can be made and then reported back to the respective COPs. The initiative would also strengthen operational links at the national level between agencies involved in the implementation of the two conventions.

5.0 Recommendations

Based on the above analysis a number of suggestions for action are made to enhance the linkage between the CBD, UNFCCC and Ramsar Convention.

1. Further analysis and documentation of the linkages between Wetlands, biodiversity and climate change.
2. Production and broad dissemination of synthesised information on the relationships between wetlands, biodiversity and climate change.
3. A targeted information dissemination programme focussed at the focal points for the CBD, UNFCCC and the Ramsar Convention and other related key decision makers.

4. Enhancement of dialogue be enhanced between the respective convention secretariats to identify and implements mechanisms for enhanced cooperation and information exchange.
5. Presentation on options should be incorporated into the agendas of the upcoming COPs of UNFCCC and CBD and meetings of the STRP, SBSTTA and SBSTA.
6. Development of or strengthening of existing information dissemination networks to share information on convention synergies and experiences in co-implementation.
7. Specific discussion in relation to the elaboration of then Kyoto protocol and the inclusion of appropriate incentives to support the protection or restoration of wetlands and other ecosystems.
8. An assessment and appropriate actions to prevent the creation of perverse incentives under UNFCCC which may lead to further degradation and loss of wetland and forest systems.
9. Development of a series of cross cutting projects and initiatives to demonstrate at regional, country and site level the mechanisms and advantages of co-implementation including River basin management; peatland conservation and restoration, adaptation of coastal ecosystems to sea level rise etc.
10. Organisation of country or regional workshops to facilitate linkages between convention focal points and other key decision makers and to develop options for linkage and co-implementation.

ANNEX 1 BACKGROUND INFORMATION ON WETLANDS, BIODIVERSITY AND CLIMATE CHANGE

1.1 Wetlands: Importance and Function

Wetlands - including rivers, lakes, marshes, estuaries, swamp forests, lagoons, mangroves, seagrass beds, and peatlands - are among the most precious natural resources on Earth. These highly varied ecosystems are natural areas where water accumulates for at least part of the year.

Wetlands support high levels of biological diversity: they are amongst the richest ecosystems on this planet, providing essential life support for much of humanity, as well as for other species. Coastal wetlands, which include estuaries, seagrass beds and mangroves, are among the most productive, while coral reefs contain some of the highest known levels of biodiversity (nearly one-third of all known fish species live in and around coral reefs). Other wetlands also offer sanctuary to a wide variety of plants, invertebrates, birds, fishes, amphibians, reptiles and mammals.

Wetlands are an integral part of the hydrological cycle, playing a key role in the provision and maintenance of water quality and quantity as the basis of all life on earth. They are often interconnected, through rivers and floodplains, with other wetlands, and play a key role in regulation of water resources.

Wetland ecosystems also play a critical role in the cycling and storage of many elements. One of the most important of these as regards Global climate change is carbon. Wetlands store about 50% of the terrestrial carbon and are responsible for significant carbon storage and sequestration in coastal ecosystems.

Wetlands are also of enormous social and economic value, in both traditional and contemporary societies. Since ancient times, people have lived along water courses, benefiting from the wide range of goods and services available from wetlands. The development of many of the great civilisations was largely based on their access to, and management of, wetland resources.

Despite their importance, wetlands are among the most impacted and degraded of all ecological systems. Resources have often been unsustainably used and many have been drained or filled in to create additional land for development; others have been used for a dumping site for domestic or industrial waste.

In the past 50 years the rate of wetland loss has increased dramatically, and is still continuing. Agriculture has been one of the main reasons for this: persistent agricultural subsidies have led to the transformation of hundreds of thousands of hectares of wetlands in the developed world. Elsewhere, the construction of dams and other water control structures has radically altered the water regime of many rivers. It seems likely that more than half of the world's wetlands may have been destroyed this century.

A renewed interest in the significance of wetlands has, in recent years, led to a better understanding of the economic and cultural value of many of the world's wetlands. As a result, more and more people are beginning to realise that, in their natural state, wetlands offer numerous benefits to society, for example, by providing clean water to towns, by protecting

shorelines from storms, by sustaining a large proportion of the world's fisheries, and by providing valuable amenities such as recreational activities.

To maintain wetland ecosystems, and the many roles which they fulfill, an integrated approach to managing water resources is needed - one which accounts for the needs of all water users, and which achieves the conservation and wise use of wetland biodiversity. The challenge is to develop practical solutions for meeting this goal.

One significant tool at the disposition of governments is the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar, Iran, 1971). This international treaty, often known simply as the "Ramsar Convention on Wetlands", is designed to assist countries in managing their wetland resources in a manner that will lead to environmental benefits and improved living standards.

1.2 Biodiversity

Biological diversity is one of the world's most precious resources. The term biological diversity or biodiversity is used to refer to the variety and variability among living organisms and the ecological complex in which they occur. Biodiversity is usually considered at three levels, namely genetic diversity, species diversity and ecosystem diversity.

Biodiversity is a global resource, but one with an uneven distribution. Countries with exceptional levels of biodiversity have been termed "megadiversity countries" and have been singled out for priority attention.

The highest levels of biodiversity are found in forests, marine and freshwater ecosystems. Forests for example, contain a vast range of natural resources and have already provided us with a number of important food and commercial products, as well as a wide range of medicine. Apart from these direct benefits, forests also help control and stabilize the earth's climate, while rivers, lakes and oceans play an essential part of the hydrological cycle and fulfill a number of important ecological functions. Many of these processes are closely linked. By destroying part of one, another may suffer irreversible consequences. For instance, the drainage of a wetland or diversion of river course may cause irreversible consequences elsewhere.

Yet, much of the biodiversity that we have is being destroyed at an unprecedented rate, most often for short term gains. Primary forests are being cleared to create grasslands for cattle grazing, fish stocks are declining because of over-harvesting and coral reefs are being destroyed by siltation or temperature rise induced coral bleaching. If the present rate of habitat loss and destruction continues, we could witness the extinction of 15 percent of the world's species within the next 25 years.

Loss of biodiversity is a global concern as it can impoverish human life and the course of human development. The majority of the ecological "hot spots" are in low or middle income countries where natural resources are often crucial to the livelihood of millions of people. Protecting these resources is therefore not only about saving a particular species, but emphasis is given to maintaining the resources for the benefit of local communities and to assist the country's socio-economic development. Preserving biodiversity could be a lifeline for future human civilization.

Recent decades have witnessed growing concern over the continuing degradation and loss of biological diversity worldwide. This, coupled with a heightened awareness of development inequalities between countries or communities which have abundant biological resources and those wanting to conserve or harvest those resources led to the development of a negotiation for a multilateral agreement on biodiversity.

In 1992, at the United Nations Conference on Environment and Development, many nations signed the Convention on Biological Diversity which entered into force on 29 December 1993. The CBD represents a major step towards conserving natural resources in that it places responsibility for conservation with respective nations.

1.3 Climate Change

It is generally accepted that there is increasing evidence that the world is warming, as a result of human activities, primarily from energy generation, transport and changing patterns of land use. The associated release of greenhouse gases has led to significant changes in their concentration in the atmosphere. As a result, the temperature of the atmosphere is increasing at a rate greater than at any other time since the end of the last ice age 10,000 years ago, and on top of that, the delicate balance of the Earth is changing with serious consequences.

Among the key findings of Intergovernmental Panel on Climate Change (IPCC) are:

- The world has warmed by between about 0.3° C and 0.6° C in the last 100 years. This has been the warmest century for at least 600 years and recent years have been among the warmest in this century.
- An average 2° C average warming is predicted by the end of next century. This warming will be greater at high latitudes.
- Global sea level has risen by between 10-25 cm in the last 100 years, largely because of thermal expansion of water due to warming. The surface layer of the sea is becoming warmer to greater depths.
- Even if dramatic reductions in emissions of greenhouse gases are achieved, the global temperature will continue to climb for several decades into the next century.
- Sea levels will continue to rise for many centuries even after concentrations of greenhouse gases are stabilized due to thermal inertia of the oceans. By 2100, sea level is projected to rise by anything between 15 and 95 cm. (best estimate is 50 cm)

The stark findings of the First Assessment Report (SAR), which came out in 1990, spurred government to sign the UN Framework Convention on Climate Change in Rio in 1992.

Annex 2

Summary of the Joint Work Plan between the Convention on Biological Diversity and the Convention on Wetlands (1998-99)

International cooperation

Transboundary cooperation

Both Conventions will continue to encourage their Contracting Parties to work cooperatively to manage transboundary watersheds and the migratory species reliant on wetland ecosystems (inland water ecosystems and marine and coastal ecosystems).

Small Island Developing States

Because both Conventions recognise the special significance and circumstances of the Small Island Developing States, the secretariats will collaborate to encourage an integrated approach to implementation.

General measures for conservation and sustainable use

National strategies, policies and plans

Both Conventions recognise that for the long-term sustainability of inland water ecosystems and marine and coastal ecosystems, there must be cross-sectoral approaches taken for the development of national policy instruments which integrate biodiversity and wetland conservation considerations into broader frameworks.

Integrated watershed and coastal zone management

In view of the inter-relationship and impacts between land use and the status of inland water and marine and coastal ecosystems, collaboration will be developed between the Ramsar and the terrestrial work programs of the CBD with attention to incentive measures for sustainable use.

Appropriate technologies

Ramsar's COP7 will consider "The role of wetlands in the hydrological cycle" and "The role of wetlands, both natural and constructed, in pollution management", which will be generally available to CBD Parties and others for their application as appropriate.

Identification and monitoring

Status and trends

Ramsar is funding a Global Review of Wetland Resources which is directly complementary to the *Global International Waters Assessment (GIWA)* project.

Monitoring and assessment

Ramsar's Scientific and Technical Review Panel (STRP) has prepared a paper which will provide Ramsar Contracting Parties with a basis for monitoring to detect impacts on water-dominated ecosystems and which could be directly transferable to the SBSTTA program for inland water ecosystems.

Assessment techniques

Ramsar 7th COP will include a technical session on a special analysis of indicator species and

guidelines for rapid assessments of wetlands and water resources from the perspectives of biodiversity and ecological/hydrological functions, which will assist CBD Contracting Parties and the SBSTTA with progressing activities in this area.

In-situ conservation

Involvement of local and indigenous communities

Ramsar's 7th COP, which has the overall theme of *People and Wetlands: The Vital Link*, will present guidelines for the involvement of local and indigenous people in wetland management.

Legal instruments

To assist Ramsar Contracting Parties in the area of legislative frameworks, the Convention Bureau has engaged the IUCN's Environmental Law Centre to develop guidelines for reviewing the legal framework for wetlands conservation and wise use, which will be equally relevant to CBD focal points.

Financial and other support

CBD Decision III/21, Operative Paragraph 12, "*Invites* Contracting parties to relevant biological diversity-related Conventions to explore opportunities for accessing funding through the Global Environment Facility for relevant projects, including projects involving a number of countries". Given the areas of close collaboration and synergy between CBD and the Ramsar Convention which the proposed Joint Work Plan describes, the Bureau of the Ramsar Convention has outlined under Section II.12 of the document a range of projects which it considers should be recommended for support to the GEF by CBD's COP4. These are mostly priority actions at the country level to enable developing countries, and those with economies in transition, to better implement their obligations under the CBD and Ramsar Conventions as they pertain to inland water ecosystems and marine and coastal ecosystems.

Sustainable (wise) use of resources

Wise Use Guidelines and Resource Centre

The Ramsar Convention has adopted Guidelines and Additional Guidance on implementation of its Wise Use concept for inland water ecosystems and marine and coastal ecosystems which are available to all, and could be promoted to CBD focal points to assist them with the management of these habitat types.

Economic valuation

Ramsar's 1997 publication *Economic Valuation of Wetlands: a Guide for Policy Makers and Planners* provides the most current information on wetland valuation techniques.

The ecosystem approach under the CBD and the Wise Use Guidelines

The two secretariats will examine whether the Wise Use Guidelines and the principles of the Ecosystem Approach are compatible and how they could be harmonised.

Research and training

Research

Promoting research and the transfer of the knowledge gained will continue to be a priority for both Conventions.

Training and capacity building

It is proposed that in partnership the two Conventions should seek to mobilise donor support, and especially that of the Financial Mechanism, to foster in-country training as well as to escalate the level and intensity of training and capacity building to allow the representatives from developing countries and those with economies in transition to attend training programs.

Public education and awareness

Both Conventions recognise the importance of, and will continue to promote increased public awareness and education about the values, functions and benefits of natural habitats and resources.

Technical and scientific cooperation

Collaboration between technical bodies

The Secretariats will work to ensure regular dialogue and a flow of information between SBSTTA and the Scientific and Technical Review Panel of the Ramsar Convention.

Sharing networks and rosters of expertise

It is proposed that there be collaboration between the two Conventions to complement CBD's establishment of a roster of experts with specialisation in inland water ecosystems and marine and coastal ecosystems and Ramsar's Wetland Experts Database.

Collaboration with the broader water resource community

The Ramsar Bureau is using the opportunity of its participation in high-level global water fora to actively advocate and encourage the adoption of an ecosystem approach to river basin management.

Financial mechanisms

CBD Decision III/21, under Operative Paragraph 12, invited "Contracting Parties to relevant biological diversity-related Conventions to explore opportunities for accessing funding through the Global Environment Facility for relevant projects, including projects involving a number of countries".

Given this previous Decision by the CBD, the Ramsar Convention Bureau has prepared the following advice for the Contracting Parties of the Convention on Biological Diversity. It is designed to assist with providing Additional Guidance to the Financial Mechanism at COP4 (Agenda Item 14.5) in order to operationalize the priority actions under the two Conventions as they pertain to inland water ecosystems and marine and coastal ecosystems.

Mobilising resources at the country level

At the country level, the priorities for funding support through the Financial Mechanism are as follows:

- a. enabling activities to establish the necessary policy and legislative frameworks and instruments, including cross-sectoral consultative processes, leading to harmonised implementation of the Conventions on Biological Diversity and Wetlands at the national scale;
- b. the completion of national inventories of wetland and associated water resources to allow the identification of ecosystems (according to the definition used by the Ramsar Convention) of global importance in accordance with the Criteria for Wetlands of International Importance adopted by the Ramsar Convention, and encouraged under Annex I of the Convention on Biological Diversity;
- b. the preparation of integrated management plans for the Wetlands of International Importance designated under the Ramsar Convention, and those identified under b. above;
- c. the preparation of management reviews and the undertaking of appropriate remedial and other actions for those sites included on the Ramsar Convention's Montreux Record of Wetlands of International Importance where changes in ecological character have occurred, are occurring or are likely to occur;
- d. the preparation, and implementation, of integrated river basin management plans, where these cross international borders, to ensure the long term conservation of these sites of global significance for the conservation of biological diversity, and
- e. the capacity building and training needed to provide the long-term skills base within these countries for (a-e) above to be undertaken.

Targeted research

With regards the Financial Mechanism supporting targeted research which contributes to the conservation of biological diversity and the sustainable use of its components, CBD's COP4 is urged to advise the Financial Mechanism to give high priority to supporting:

- a. a review of the threatening processes contributing to the loss of biological diversity and breakdown of ecological processes in wetland ecosystems,
- b. the identification of the global measures needed to combat these threats, and
- c. specific investigations into the degrading impacts of toxic chemicals on inland water ecosystems and marine and coastal ecosystems, and how these can be addressed.

ANNEX 3 CONCEPT - RIVER BASIN INITIATIVE

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| <p>Concept Establishment of a global initiative to link and promote activities at river basin/wetland sites and projects where the principles and practice of integrated management of wetlands, inland water biodiversity and river basin management will be demonstrated.</p> | |
| <p>Objectives</p> <ul style="list-style-type: none"> • To support implementation of recent decisions under the intergovernmental Convention on Biological Diversity and the Ramsar Convention on Wetlands related to inland water biodiversity and integrating wetland conservation and wise use into River Basin management. • To develop a network of pilot or demonstration projects/sites on which to focus efforts in the period 1999-2002 to implement these decisions. • To link with and promote other related activities at national and regional level. • Supporting capacity building in relation to implementing integrated river basin management | <p>Lead Partners Ramsar Convention on Wetlands and Convention on Biological Diversity</p> <p>Other Proposed Partners: Global Environment Network WWF Wetlands International IUCN Other interested international organizations, governments and NGOs.</p> |
| <p>Expected Outcomes</p> <ul style="list-style-type: none"> • Successful activities in at least 20 countries to integrate biodiversity, wetland and river basin management • Enhanced partnership between institutions/countries/regions working on integrated wetland and river basin management. • Establishment of an information network that will facilitate exchange of information and experience. This exchange will be carried out through a wide dissemination of publications, newsletters and internet web-site. • Broad based as well as targeted awareness programmes with support at international and regional level to promote importance of integrated wetland and river basin management. | |
| <p>Proposed Programmes/Activities</p> <ol style="list-style-type: none"> 1. Publication, translation and dissemination of the CBD Decisions on Inland waters and the approved Ramsar Guidelines on Integrating Wetland conservation & wise use into river basin management & a set of case studies to illustrate the guidelines. 2. Establish a network of at least 30 demonstration sites or pilot projects in 20 countries where the principles and practice of integrated wetland and river basin management will be demonstrated and promote lessons learned to other countries. 3. Undertaking an awareness programme on the importance of integrating wetland into river basin management and disseminate lessons learnt from the network activities. 4. To enhance partnership and information exchange between organizations working on issues related to integrated management of wetlands and river basin and through regional/international workshops, a newsletter and web site. 5. Assist in mobilizing resources to support work on the selected sites/projects. 6. Review and evaluation of the decisions and guidelines adopted by the Conventions on Biological Diversity and Wetlands. | |
| <p>Demonstration Sites or Pilot Projects The proposed network initiative is expected to consist of sites from the different Ramsar regions -Asia, Africa, Neotropics, North America, Europe and Oceania. Proposed demonstration site(s) or pilot projects are generally expected to be part of ongoing project/ programmes. However, limited assistance may be provided to assist parties to mobilize resources for strategic activities which are not yet funded. Countries or projects managers or proponents are encouraged to identify potential projects on the feedback form.</p> | |

