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Draft Global Wetlands Outlook - 2021

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Global Wetlands Outlook – 2021

Contents

PREFACE	3
INTRODUCTION.....	3
Introduction: the central importance of wetlands in 2021	3
GLOBAL ASSESSMENTS	5
Global assessments and wetlands: summary	5
What global assessments say about wetland <i>status</i>	7
What global assessments say about wetland <i>needs</i>	10
Key messages about wetlands from IPBES land degradation assessment	12
Key messages about wetlands from recent IPCC assessments	13
Regional assessment: Key messages from <i>Mediterranean Wetlands Outlook 2</i>	15
Wetland status and trends: what is new?.....	17
WETLANDS AND SUSTAINABLE DEVELOPMENT.....	20
Wetlands and sustainable development issues.....	20
Appreciating wetland ecosystem services	23
Wetlands and health	26
Wetlands and agriculture.....	28
Climate change: blue carbon.....	31
Peatland restoration to combat climate change and biodiversity loss	35
Sustainable cities.....	37
SOURCES	40

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PREFACE

[To include explanation of what the document is/ is not etc.]

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INTRODUCTION

Introduction: the central importance of wetlands in 2021

Fifty years ago, the need for a Convention on wetlands was becoming increasingly apparent to visionaries within the hunting and science communities, and to governments. Half a century later, the fundamental mission of the Convention is more urgent – and apparent – than ever.

Whilst much has been achieved, recent global assessments (global assessments pp. XX-XX) are documenting the huge scope and intensity of changes now occurring to the global environment, as well as to wetlands specifically (status change pp. XX-XX). Responding to these will need urgent and ‘transformative changes’ to how we organise society and interact with our environment, and these are currently being elaborated by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). In reviewing global environment changes it is clear that wetlands, as a key element within the water cycle, perform an ecological linking role of central importance. Wetlands are impacted by, and allow major uses of land such as agriculture (pp. XX-XX) whilst supporting cities with water and other functions (cities pp. XX-XX).

This update to the Convention’s 2018 *Global Wetlands Outlook* provides information on many of the key issues debated at the 13th Conference of Parties and currently subjects of research by wetland conservation science.

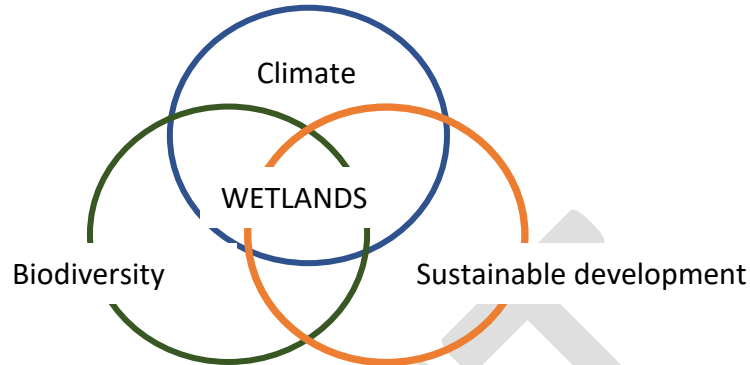
Wetlands have always provided services to humanity, yet recognition of the scale of these benefits and the consequences of their loss is recent, although international processes, notably the work of the Millennium Ecosystem Assessment and IPBES have greatly aided the ability to understand and assess wetland ecosystem services (ecoservices pp. XX-XX) and to integrate their consideration in wise use pathways. Yet the unsustainable use and inappropriate management of wetlands not only results in a loss of ecosystem benefits but can also bring direct risks including as sources of disease (health pp. XX-XX). Ecosystem approaches in wetlands and their catchments are of fundamental importance, bringing health benefits to all. This should ensure that all disease prevention and control actions are undertaken within Ramsar’s wise use, and One Health, principles.

All recent global assessments (global assessments summary pp. XX-XX) agree on a nexus of three issues:

1. a climate emergency;
2. a global ecological crisis;
3. an imperative need for transformative societal change.

It is ultimately not possible to address one of these problems without also addressing the other two since they are interlinked with often mutual solutions; initiatives such as the UN's Sustainable Development Goals ([sustainable development pp. XX-XX](#)) now recognise this.

Wetland conservation sits centrally within this nexus.



Wise-use through the conservation and sustainable management of wetlands, not only supports biodiversity and human communities ([cities pp. XX-XX](#)) but can also provide 'nature-based solutions' to the climate crisis by their storage and sequestration of organic material. There is rapidly developing appreciation of the important roles in this respect played in particular by peatlands ([peatlands pp. XX-XX](#)) and coastal 'blue carbon' ecosystems (mangrove forests, intertidal marshes, and seagrass meadows) ([blue carbon pp. XX-XX](#)). The management and restoration of these areas are an essential approach to mitigate climate change as well as protect the many other ecosystem services that they provide.

The importance of wetland conservation in 2021 has never been greater. Fifty years since visionaries met in Ramsar to finalise a global wetlands treaty, the need to fully implement all aspects of the Convention remains just as urgent, and Parties and stakeholders need to recommit to this mission.

GLOBAL ASSESSMENTS

Global assessments and wetlands: summary

Multiple assessments have recently been published on the state of the environment at both global and regional scales. These synthesise the findings of tens of thousands of scientists and other experts, and give an unprecedented overview of the state of the planet. All are relevant to the Ramsar Convention's mission to sustain and wisely use wetlands, and so their findings are significant.

Recently published international assessments of the state of the environment relevant to wetland conservation.

Publication	Assessment	Scale	Responsible organisation
2017/2019	Global Land Outlook	Global/regional	UNCCD ¹
2018	Land Degradation and Restoration	Global & regional	IPBES
2018	Special Report: Global Warming of 1.5 °C	Global	IPCC
2018	Global Wetland Outlook	Global	Ramsar Convention
2018	Mediterranean Wetlands Outlook 2	Regional	MedWet
2019	Special Report on the ocean and cryosphere in a changing climate	Global	IPCC
2019	Biodiversity and Ecosystem Services	Global & regional	IPBES
2019	Global Environment Outlook 6	Global	UNEP
2020	State of World Fisheries and Aquaculture	Global	FAO
2020	State of Food and Agriculture	Global	FAO
2020	World Water Development Report	Global	UNESCO
2020	Living Planet Report	Global	WWF
2020	State of Nature in the EU	Regional	EEA
2020	State of the World's Forests	Global	FAO
2020	Mapping and Assessment of Ecosystems and their Services	Regional	EU
2020	Global Biodiversity Outlook 5	Global	CBD

Some of the findings of particular importance for wetlands are summarised below.

The linking role of wetlands: Wetlands are a critical part of the water cycle, linking multiple other ecosystems. Land-use change, in particular due to expansion of agriculture and urban areas, as well as direct exploitation, has had a massive impact on wetlands over recent decades. This is projected to continue or worsen in many future scenarios in response to indirect drivers such as rapid human population growth, unsustainable production and

¹ Separate master list of acronyms or in full here?

consumption, and associated technological development. The degradation, fragmentation, and loss of wetland connectivity across landscapes contributes to the further loss of biodiversity as dispersal mechanisms are removed.

Urgency of transformative change: The cost and difficulty of restoration increases with increasing levels of degradation and with delays in implementing restoration actions. While ambitious restoration programmes are under way or proposed in many regions, with the potential to deliver significant gains in ecosystem resilience and the preservation of carbon stocks and biodiversity, global targets for restoration have not been achieved and progress is limited. An urgent increase in effort is thus called for to prevent irreversible land degradation and to accelerate the implementation of restoration.

Climate adaptation critical in coastal wetlands: The economic and human risks associated with the loss of coastal wetlands as a result of projected sea level rise over the next 80 years are very substantial. Coastal populations and small island developing states are disproportionately at risk; a slower rate of sea level rise would enable greater opportunities for adaptation in the human and ecological systems of small islands, low-lying coastal areas and deltas.

Wetland degradation will affect human wellbeing: As wetlands degrade, their ability to provide for people is accordingly reduced. Persistent declining trends are occurring in productivity globally, mainly as a result of unsustainable land/water use and management practices. Combined with climate change, ecosystem health and productivity is further jeopardized: higher carbon emissions and temperatures, changing rainfall patterns, soil erosion, species loss, and increased water scarcity will likely alter the suitability of vast regions for food production.

International co-operation is essential: While some progress has been made towards targets designating portions of the planet's land and oceans as protected areas, further work is needed to ensure that these are ecologically representative and safeguard the most important areas for biodiversity. It is also essential that protected areas are connected to one another as well as to wider land- and sea-scapes and are equitably and effectively managed. Existing multilateral environmental agreements provide a platform of unprecedented scope and ambition for action, but greater national commitment and effective cooperation in using and implementing these established mechanisms are vital to enable such international instruments to effectively safeguard ecosystems.

Recent Ramsar decisions

[Resolution XIII.7: Enhancing the Convention's visibility and synergies with other multilateral environmental agreements and other international institutions](#)

What global assessments say about wetland *status*

Land-use change is the dominant factor affecting freshwater habitats

“For terrestrial and freshwater ecosystems, land-use change has had the largest relative negative impact on nature since 1970, followed by the direct exploitation, in particular overexploitation, of animals, plants and other organisms, mainly via harvesting, logging, hunting and fishing. In marine ecosystems, direct exploitation of organisms (mainly fishing) has had the largest relative impact, followed by land-/sea-use change. Agricultural expansion is the most widespread form of land-use change, with over one third of the terrestrial land surface being used for cropping or animal husbandry. This expansion, alongside a doubling of urban area since 1992 and an unprecedented expansion of infrastructure linked to growing population and consumption, has come mostly at the expense of forests (largely old-growth tropical forests), wetlands and grasslands. In freshwater ecosystems, a series of combined threats that include land-use change, including water extraction, exploitation, pollution, climate change and invasive species, are prevalent.”

“The negative trends in biodiversity and ecosystem functions are projected to continue or worsen in many future scenarios in response to indirect drivers such as rapid human population growth, unsustainable production and consumption and associated technological development.”

IPBES Global Assessment Report on Biodiversity and Ecosystem Servicesⁱ (2019)

Wetlands are important for sustainable development

“Biodiversity is explicitly highlighted in Sustainable Development Goals (SDG) 14 (Life Below Water) and 15 (Life on Land), but also underpins a much wider set of Goals. For example, it is a key factor for the achievement of food security and improved nutrition (SDG 2) and the provision of clean water (SDG 6). ... Healthy ecosystems also underpin delivery of water supplies and water quality, and guard against water-related hazards and disasters.”

The Aichi Targets related to wetlands were not achieved

Assessment of Aichi Target 5: “... Loss, degradation and fragmentation of habitats remains high in forest and other biomes, especially in the most biodiversity-rich ecosystems in tropical regions. Wilderness areas and global wetlands continue to decline. Fragmentation of rivers remains a critical threat to freshwater biodiversity. **The target has not been achieved** (*high confidence*²).”

Assessment of Aichi Target 9: “... There is no evidence of a slowing down in the number of new introductions of alien species. **The target has partially been achieved** (*medium confidence*).”

² See relevant source assessment for definitions of confidence levels

Assessment of Aichi Target 10: “... Multiple threats continue to affect coral reefs and other vulnerable ecosystems impacted by climate change and ocean acidification. Overfishing, nutrient pollution and coastal development compound the effects of coral bleaching. Corals have shown the most rapid increase in extinction risk of all assessed groups. Hard coral cover has declined significantly in some regions, and there has been a shift towards coral species less able to support diverse reef habitats. **The target was missed by the stated date of 2015, and it has not been achieved by 2020** (*high confidence*).”

Assessment of Aichi Target 11: “...The proportion of the planet’s land and oceans designated as protected areas is likely to reach the targets for 2020 and may be exceeded when other effective area-based conservation measures and future national commitments are taken into account. However, progress has been more modest in ensuring that protected areas safeguard the most important areas for biodiversity, are ecologically representative, connected to one another as well as to the wider landscape and seascape and are equitably and effectively managed. **The target has been partially achieved** (*high confidence*).”

Assessment of Aichi Target 15: “... Progress towards the target of restoring 15% of degraded ecosystems by 2020 is limited. Nevertheless, ambitious restoration programmes are under way or proposed in many regions, with the potential to deliver significant gains in ecosystem resilience and preservation of carbon stocks. **The target has not been achieved** (*medium confidence*).”

CBD Global Biodiversity Outlook 4ⁱⁱ (2020)

Managing wetlands wisely is a critical element of wider needs for sustainable land use

“The current pressures on land are huge and expected to continue growing: there is rapidly escalating competition between the demand for land functions that provide food, water, and energy, and those services that support and regulate all life cycles on Earth.

“A significant proportion of managed and natural ecosystems are degrading: over the last two decades, approximately 20 per cent of the Earth’s vegetated surface shows persistent declining trends in productivity, mainly as a result of land/water use and management practices.

“Biodiversity loss and climate change further jeopardize the health and productivity of land: higher carbon emissions and temperatures, changing rainfall patterns, soil erosion, species loss and increased water scarcity will likely alter the suitability of vast regions for food production and human habitation.

“Land degradation decreases resilience to environmental stresses: increased vulnerability, especially of the poor, women and children, can intensify competition for scarce natural resources and result in migration, instability, and conflict.

“Over 1.3 billion people are trapped on degrading agricultural land: farmers on marginal land, especially in the drylands, have limited options for alternative livelihoods and are often excluded from wider infrastructure and economic development.

“The scale of rural transformation in recent decades has been unprecedented: millions of people have abandoned their ancestral lands and migrated to urban areas, often impoverishing cultural identity, abandoning traditional knowledge, and permanently altering landscapes.”

UNCCD Global Land Outlook (2017)

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What global assessments say about wetland *needs*

International co-operation is critical

“The global environment can be safeguarded through enhanced international cooperation and linked, locally relevant measures. The review and renewal of internationally agreed environment related goals and targets, based on the best available scientific knowledge and the widespread adoption and funding of action on conservation, ecological restoration and sustainable use by all actors, including individuals, are key to this safeguarding. Such widespread adoption implies advancing and aligning local, national and international sustainability efforts and mainstreaming biodiversity and sustainability across all extractive and productive sectors, including mining, fisheries, forestry and agriculture, so that together, individual and collective actions result in a reversal of the deterioration of ecosystem services at the global level. Yet these bold changes to the direct drivers of the deterioration of nature cannot be achieved without transformative change that simultaneously addresses the indirect drivers.”

“Nature can be conserved, restored and used sustainably while other global societal goals are simultaneously met through urgent and concerted efforts fostering transformative change.”

IPBES Global Assessment Report on Biodiversity and Ecosystem Services (2019)

Transitions to sustainable freshwaters will need concerted and multiple efforts

Global Biodiversity Outlook 4 identifies a number of ‘Transitions’ to aid the delivery of the 2050 Vision for Biodiversity. The Sustainable Freshwater Transitions comprise the following elements:

“... The exploitation of freshwater resources for agricultural, industrial and domestic consumption has taken place with little regard to freshwater ecosystems and the services they provide. Coastal areas, wetlands and other areas near river courses, have been particularly subject to conversion or development. As a result, the current rate of wetland loss is three times that of forest loss with an estimated 30% of natural freshwater ecosystems disappearing since 1970, and 87% of inland wetlands since 1700 (see Aichi Biodiversity Target 5). Populations of freshwater vertebrate species have declined at more than twice the rate of land or ocean vertebrates (see Aichi Biodiversity Target 12). An estimated 1.8 billion people are likely to live under conditions of regional water stress by 2050. Many inland water and coastal ecosystems are threatened by eutrophication due to excess run-off of soil and nutrients from terrestrial areas, especially from agricultural areas and degraded ecosystems (see Aichi Biodiversity Target 8). Safeguarding freshwater ecosystems and the services they provide for nature and humanity is therefore an urgent challenge.”

“Key components of the transition:

- Integrate environmental flows into water management policy and practice

- Combat pollution and improve water quality
- Prevent overexploitation of freshwater species
- Prevent and control invasive alien species in freshwater ecosystems
- Protect and restore critical habitats”

Global Biodiversity Outlook 4 (2020)

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Key messages about wetlands from IPBES land degradation assessment

“Existing multilateral environmental agreements provide a platform of unprecedented scope and ambition for action to avoid and reduce land degradation and promote restoration. ... However, greater commitment and effective cooperation in using and implementing these established mechanisms at the national and local levels are vital to enable these major international agreements to create a world with no net land degradation, no loss of biodiversity and improved human well-being.

“With around 10 per cent of the world’s population living in coastal zones less than 10 metres above the mean sea level — currently more than 700 million people, expected to increase to more than 1 billion by 2050 — the economic and human risks associated with loss of coastal wetlands are substantial.

“Effective responses to avoid, reduce and reverse wetland degradation include: controlling point and diffuse pollution sources; adopting integrated land and water management strategies ... ; and restoring wetland hydrology, biodiversity and ecosystem functions through restoration and rehabilitation measures, such as constructed wetlands.

“Despite comprising a small fraction of the global land area, wetlands provide a disproportionately large amount of critical ecosystem services, particularly those associated with the filtration and supply of fresh water and coastal protection Wetlands also have high biodiversity importance, including being critical habitat for many migratory species. Treating wetlands as natural infrastructure can help meet a wide range of policy objectives, such as water and food security, as well as climate change mitigation and adaptation Restored wetlands recover most of their ecosystem services and functions within 50 to 100 years, providing a wide range of benefits for both biodiversity and human well-being Considering the role of wetlands in freshwater catchments, river basins and coastal zones, future wetland restoration efforts could be greatly enhanced by the development of indicators and restoration targets aimed at evaluating and recovering the range of interactions between organisms and their abiotic environment.

“The implementation of known, proven actions to combat land degradation and thereby transform the lives of millions of people across the planet will become more difficult and costly over time. An urgent step change in effort is needed to prevent irreversible land degradation and accelerate the implementation of restoration measures... . The benefits of taking action (restoring degraded land) are higher than the costs of inaction (continuing degradation).”

IPBES Assessment Report on Land Degradation and Restoration (2018)

Key messages about wetlands from recent IPCC assessments

Wetlands are at high risk from climate change with severe consequences for already disadvantaged people, especially on coasts

“By 2100, global mean sea level rise is projected to be around 0.1 metre lower with global warming of 1.5°C compared to 2°C (medium confidence). Sea level will continue to rise well beyond 2100 (*high confidence*), and the magnitude and rate of this rise depend on future emission pathways. A slower rate of sea level rise enables greater opportunities for adaptation in the human and ecological systems of small islands, low-lying coastal areas and deltas (*medium confidence*).

“On land, impacts on biodiversity and ecosystems, including species loss and extinction, are projected to be lower at 1.5°C of global warming compared to 2°C. Limiting global warming to 1.5°C compared to 2°C is projected to lower the impacts on terrestrial, freshwater and coastal ecosystems and to retain more of their services to humans.

“Coral reefs ... are projected to decline by a further 70–90% at 1.5°C (*high confidence*) with larger losses (>99%) at 2°C (*very high confidence*). The risk of irreversible loss of many marine and coastal ecosystems increases with global warming, especially at 2°C or more (*high confidence*).

“Populations at disproportionately higher risk of adverse consequences with global warming of 1.5°C and beyond include disadvantaged and vulnerable populations, some indigenous peoples, and local communities dependent on agricultural or coastal livelihoods (*high confidence*). Regions at disproportionately higher risk include Arctic ecosystems, dryland regions, small island developing states, and Least Developed Countries (*high confidence*).”

IPCC Special Report on global warming of 1.5°C (2018)

Arctic and alpine wetlands are at particular risk from climate change and their loss will have much wider consequences for delivery of wetland ecosystem services

“Cryospheric and associated hydrological changes have impacted terrestrial and freshwater species and ecosystems in high mountain and polar regions through the appearance of land previously covered by ice, changes in snow cover, and thawing permafrost. These changes have contributed to changing the seasonal activities, abundance and distribution of ecologically, culturally, and economically important plant and animal species, ecological disturbances, and ecosystem functioning (*high confidence*).

“Since the mid-20th century, the shrinking cryosphere in the Arctic and high mountain areas has led to predominantly negative impacts on food security, water resources, water quality, livelihoods, health and well-being, infrastructure, transportation, tourism and recreation, as well as culture of human societies, particularly for Indigenous peoples (*high confidence*).

“Global-scale glacier mass loss, permafrost thaw, and decline in snow cover and Arctic sea ice extent are projected to continue in the near-term (2031–2050) due to surface air

temperature increases (*high confidence*), with unavoidable consequences for river runoff and local hazards (*high confidence*).

“Future land cryosphere changes will continue to alter terrestrial and freshwater ecosystems in high mountain and polar regions with major shifts in species distributions resulting in changes in ecosystem structure and functioning, and eventual loss of globally unique biodiversity (*medium confidence*). Wildfire is projected to increase significantly for the rest of this century across most tundra and boreal regions, and also in some mountain regions (*medium confidence*).”

IPCC Special Report on the ocean and cryosphere in a changing climate (2019)

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Regional assessment: Key messages from *Mediterranean Wetlands Outlook 2*

Mediterranean wetlands at a crossroad require urgent actions!

Located at the crossroad of three continents, the Mediterranean Basin has a long, common history and culture, but diverse economic, demographic, and political situations. **The region is a global biodiversity hotspot, with wetlands supporting more than a third of all species.** Beside their unique biodiversity, these wetlands offer water, food, health and economic opportunities, but all are declining at a higher speed than the global average. The region has seen a reduction of 52 % and 28% respectively of its marine and freshwater biodiversity since the 1992 Earth Summit, and 36% of its wetland-dependent species are globally threatened.

The region is already impacted 20% more by climate warming than the rest of the world, with increasing frequency of heat waves, storms, droughts. By 2040, projections indicate that 250 million people might live under fresh water-stressed conditions and with an increase in the sea level of over 1 m by 2100, threatening the life of a third of Mediterraneans. For many rivers, water flow has decreased by 25% to 70% between 1960 and 2000 affecting seasonal wetlands. Climate change will likely also further exacerbate other major threats to Mediterranean wetlands:

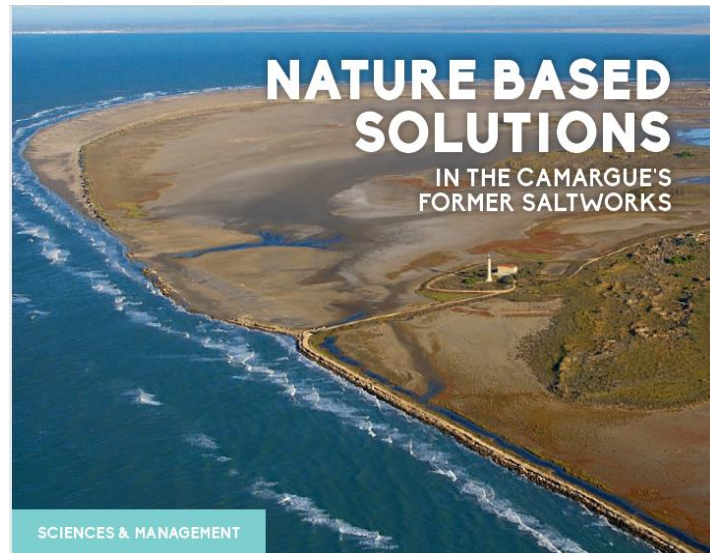
- **Intensive agriculture** consumes two thirds of freshwater resources in the Mediterranean. The demand of water for irrigation and land for production continues to increase at the expense of natural wetlands and traditional agricultural landscapes.
- With over 42% of Mediterranean people living along the coastline, settlements, industry, and tourism consume wetlands and increase water demand.

The resulting reality is that the **loss of Mediterranean wetlands** since 1970 (48%) is higher than in all three surrounding continents.

However, solutions do exist to revert the trends. Recommended priority policy and technical measures for Mediterranean countries are to:

1. **Ensure the effective application of international agreements, including Ramsar and the EU Nature Directives, for the protection of wetlands.** These frameworks enable biodiversity adaptation to climate change, *e.g.* waterbird population recoveries in several countries. Governments and international funding agencies should commit to their implementation.
2. **Implement nature-based solutions such as ecosystems restoration and integrated management mechanisms:** Integrated River Basin Management , Integrated Water Resources Management and Integrated Coastal Zone Management.
3. **Involve the private sector – tourism, industry, agriculture, urban - in the conservation of wetlands** by adopting sustainable practices.
4. **Promote the development of agroecological practices** to ensure conservation of wetlands, cultural landscapes and to guarantee good quality food and health.

5. **Support science-policy interface organisations.** The Medwet regional initiative of Ramsar (27 states), the Mediterranean Alliance for wetlands (civil society organisations and research institutions), the Mediterranean Wetlands Observatory (scientific monitoring tool), all foster better dialogue between scientists, policy-makers and civil society, to find common solutions for Mediterranean wetlands.



In the Camargue, 6,500 ha of former salinas are being restored, acting as climate buffers.

Further information: Lefebvre *et al.* 2019; MedECC 2020; Mediterranean Wetlands Observatory 2018; [Living Mediterranean Report 2021 – title tbc](#)].

Wetland status and trends: what is new?

Key messages

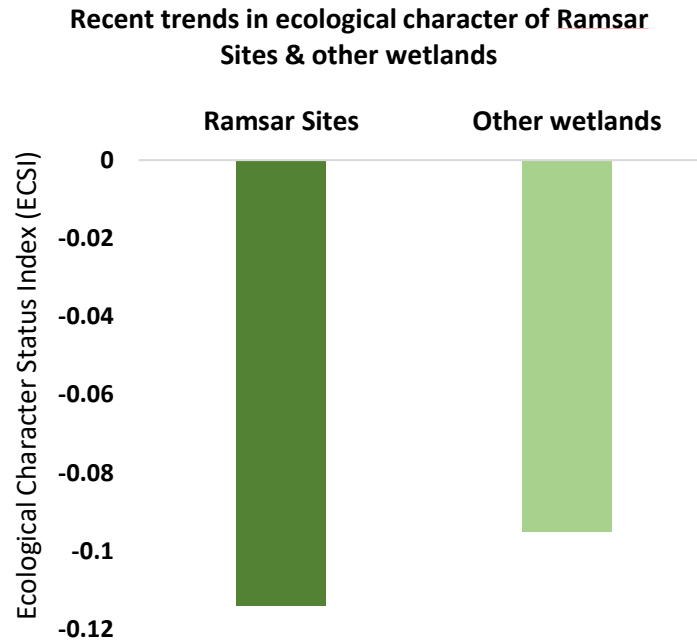
- 1. More wetlands are in good than bad ecological state, but deterioration is increasingly widespread and Ramsar Sites are faring little better than other wetlands.**
- 2. Implementing more Ramsar commitments is linked to improving wetland, and Ramsar Site, state – but more implementation is urgently needed.**

The 2018 *Global Wetland Outlook (GWO)* (Ramsar Convention 2018) reported that the area of wetlands continues to decline, with wetland conversion and loss continuing in all parts of the world; and that since 1970 inland wetland-dependent [freshwater] species have declined far more than species dependent on other biomes, and increasingly facing the threat of extinction.

But what is the ecological character state of the world's remaining wetlands? Two studies published since the *GWO* provide some insights. These report on a 2017 "citizen-science" state of wetlands survey (McInnes *et al.* 2020) and on Ramsar Contracting Parties answers in their National Reports (Davidson *et al.* 2020).

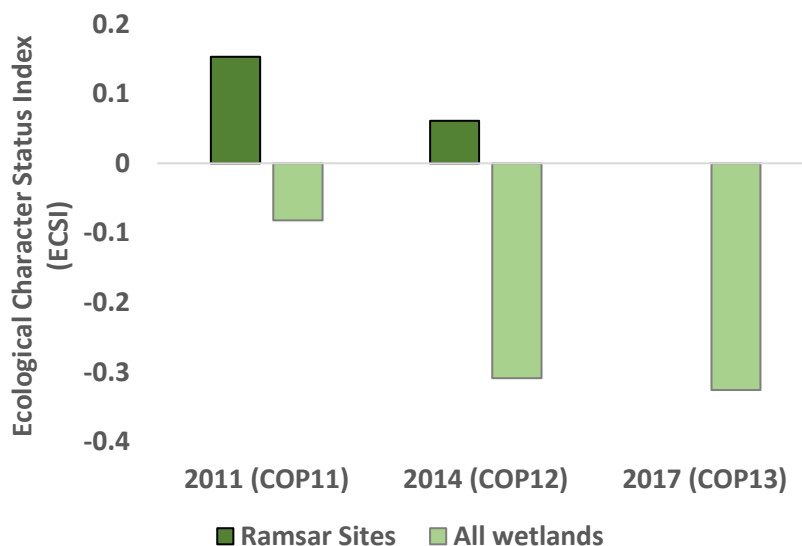
Positively, more wetlands are reported as being in currently "good" ecological character state (30% of responses) than in "poor" state (24%) (McInnes *et al.* 2020); with most widespread reports of "poor" state being from Africa, Latin America & the Caribbean, and Europe. However, more wetlands were reported deteriorating in state (36% of responses) than improving (21%), a trend across most Ramsar Regions, and again most widespread deterioration being in Latin America & the Caribbean and Africa (McInnes *et al.* 2019).

Of concern is that 'citizen-scientists' reported more widespread deterioration in the state of Ramsar Sites than of other, non-Ramsar designated, wetlands (McInnes *et al.* 2020).



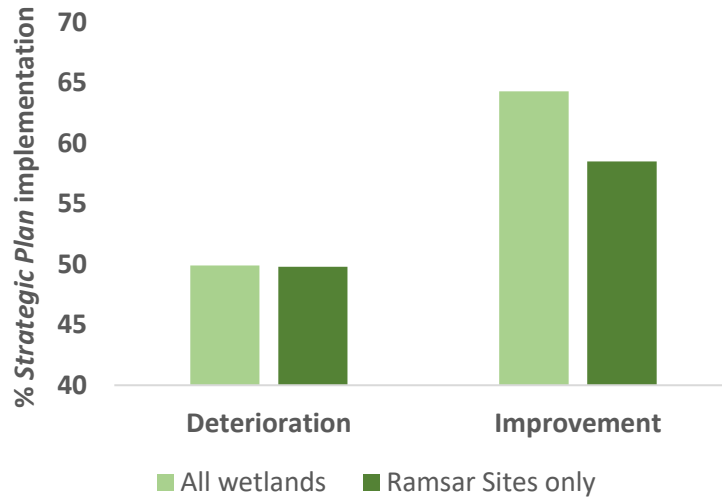
In contrast, Ramsar Parties reported more widespread improvement than deterioration in the state of their Ramsar Sites (Davidson *et al.* 2020). Conversely, there was more widespread deterioration than improvement in the state of all wetlands, globally and in all Regions (Davidson *et al.* 2020). As for ‘citizen-scientists’ reports, most widespread deterioration was recorded in both the state of all wetlands and Ramsar Sites in Africa, Latin America and the Caribbean.

Between 2011 (COP11 National Reports) and 2017 (COP13 National Reports), Ramsar Parties reported increasingly widespread deterioration in the ecological state of both all wetlands and of their Ramsar Sites (Davidson *et al.* 2020). [ECSI for Ramsar Sites 2017 = 0. need to add to graphic]



Does implementation of the Ramsar Convention Strategic Plan contribute to an improving ecological character state of wetlands? Contracting Parties reporting an improving state of all wetlands and of their Ramsar Sites also report implementing a considerably larger

number of *Strategic Plan* actions. So, more implementation appears to lead to an improving state of wetlands. But, on average, Parties are implementing only half (50.5%) of the *Strategic Plan* actions to which they have committed – much more implementation is urgently needed.



Recent Ramsar decisions

[Resolution XII.2: The Ramsar Strategic Plan 2016-2024](#)

[Resolution XIII.5: Review of the fourth Strategic Plan of the Ramsar Convention](#)

WETLANDS AND SUSTAINABLE DEVELOPMENT

Wetlands and sustainable development issues

Key messages

- 1. Wetlands play a crucial role in maintaining the quality, and regulating the quantity, of water therefore fundamentally underpinning economic development.**
- 2. Nature-based solutions for water, incorporating the role that healthy and sustainably managed wetlands play in buffering water-related risks, will help society move beyond a 'business as usual' focus on human-built infrastructure and implement transformative change.**

The 2030 Agenda for Sustainable Development, adopted by the UN in 2015, shared a blueprint for peace and prosperity for people and the planet, now and into the future. Conservation and wise use of wetlands, within Ramsar's international framework and linked national and sub-national actions, is an important pathway for meeting several of the seventeen goals and 169 targets of the Sustainable Development Goals (SDGs), with benefits also for global targets related to climate change and disaster risk reduction. Loss and degradation of wetlands imposes high costs on development. Costanza *et al.* (2014) estimate the annual economic impacts of wetlands loss during 1997-2011 at US\$ 9.9 trillion.

Water, the bloodstream of biosphere which sustains ecosystems, is made available by wetlands, to which human societies are linked through an essential and fundamental relationship (Pascual *et al.* 2017). Wetlands play a crucial role in maintaining the quality and regulating the quantity of water therefore underpinning economic development.

Such linkages are expressed in several ways. In 2017, fish consumption accounted for 17% of global population's intake of animal proteins (FAO 2020a). Thousands of pilgrims' brave harsh weather to annual visit the high altitude, Himalayan wetland Mansarovar for spiritual atonement (Verschuuren 2016).

Water and wetlands form the 'climate connectors' enabling collaboration and coordination across actions needed for sustainable development, climate change and disaster risk reduction. Water related disasters constitute a significant proportion of natural disasters (74% of all events during 2001-2018, floods and droughts alone affecting over a billion people), with Asia a hot spot (UNESCO & UN-Water 2020).

Nature-based solutions for water, which incorporates the role healthy and sustainably managed wetlands play in buffering water-related risks, are an important pathway for moving beyond business as usual focus on human-built infrastructure. This is particularly true for coastal areas (which bear a disproportionately higher concentration of population and economic assets and higher rates of population growth), and sediment deprived deltas which along with human-induced land subsidence are leading to phenomenon of sinking,

often not matching the climate-induced sea-level rise (Syvitski 2009). Though the uptake of nature-based solutions has increased recently, critical upscaling challenges in terms of investment and knowledge remain (Chausson *et al.* 2020).

The sustainable development goals include a commitment to reduce water pollution, by significantly reducing untreated wastewater, reducing marine pollution, and cleaning up coastlines. With nearly half of the world using sanitation that leaves wastewater untreated (UNICEF & WHO 2020) and high levels of nutrient loading especially phosphorus and nitrogen from agriculture (Xie & Ringler 2017), wetlands in several parts of the world continue to face water quality challenges, with significant human health consequences in terms of water-associated diseases (UNESCO & UN-Water 2020).

Over 700 coastal areas being impacted by eutrophication and dead zones (an estimated ~24% of anthropogenic N released in coastal watersheds is estimated to reach coastal ecosystems (Malone & Newton 2020), trends that will be exacerbated by climate change.

The increasing concentrations of pharmaceutical residues and microplastics is a major concern in many parts of the globe, which undermines wetlands, as well as their natural capability to treat and transform nutrients and chemicals.

Sustainable development also depends on just, peaceful, and inclusive societies. The *Global Risks Report* (World Economic Forum 2021) has listed water crises among the top-five risks in terms of impacts, and water-related insecurity potentiating in exacerbated tensions and frictions between and within countries.

Healthy wetlands and equitable sharing of benefits can contribute to peace making (Griffin & Ali 2014), though wetland conservation still does not figure prominently in peace-building efforts. An important dimension of justice, for humans and the planet, is the recognition of 'rights of nature' within legal frameworks thus putting human species in a more respectful relationship with nonhuman nature for effective, sustainable, and ethical 'stewardship of the Earth and the life on it' (Davis *et al.* 2020).

Current development trajectories are insufficient to conserve and sustainably use nature and ensure sustainable development goals (IPBES 2019). Key leverage points for transformation towards sustainability include directing efforts towards: (1) visions of a good life; (2) total consumption and waste; (3) values and action; (4) inequalities; (5) justice and inclusion in conservation; (6) externalities and linkages at a distance (so called 'telecouplings'); (7) technology, innovation and investment; and (8) education and knowledge generation and sharing.

Wetland wise use supports the delivery of these leverage points and when placed at the centre of decision making ensures sustainable development.

Recent Ramsar decisions

[Resolution XIII.7: Enhancing the Convention's visibility and synergies with other multilateral environmental agreements and other international institutions](#)

DRAFT

Appreciating wetland ecosystem services

Key messages

- 1. Wetlands have always provided services to humanity, yet recognition of the scale of these benefits, and the consequences of their loss or degradation, is recent.**
- 2. International processes, notably the work of the Millennium Ecosystem Assessment and IPBES have greatly aided the ability to understand and assess wetland ecosystem services.**

The earliest human city-based civilisations were located in the great floodplains of northern Africa and Eurasia, testament to the importance of these wetlands for humankind. Investigations into these cultures indicate a significant dependency on wetland resources such as water, fish, waterbirds, reeds, and many other wetland benefits.



Photo: David Stroud

The importance of wetland ecosystem services has long been recognised by the communities dependent on them – indeed wetland sustainable use has often been deeply embedded within local cultures and norms that recognise such needs.

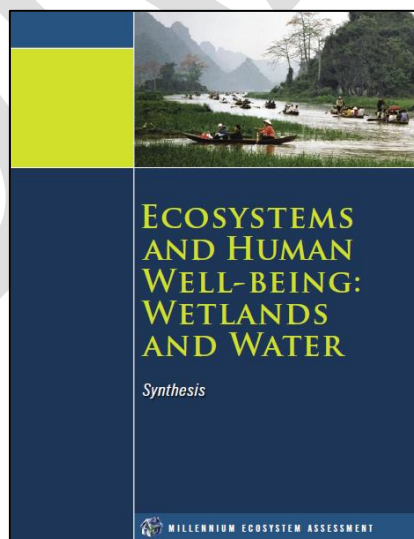
The recognition of needs for statutory wetland protection occurred first in North America, but IUCN's 1962 Project Mar (so-called because 'mar' is the root of many European words for wetland – marsh, marais, marécages etc.) and 1964's *Liquid Assets* a high profile

publication from the International Waterbird and Wetland Bureau, did much to raise the profile of wetlands internationally. *“...their value for recreation, science and education were explained; the economics and dangers of drainage discussed; the constructive use, conservation and management of wetlands outlined. The whole thrust of the message was summarized in the words of Count Leon Lippens of Belgium in the preface: “it is as stupid to drain the last of our great marshes, with their wealth of wildlife, as it would be to demolish the Cathedral of Chartres to plant potatoes””* (Matthews 1993).

Yet whilst the immediate driver for the genesis of the Ramsar Convention was concern over waterbird declines, which gave international motivation to protect and wisely use wetland habitats, the addresses made to the 1971 final negotiating conference at Ramsar give, from the Convention’s outset, a much wider vision of the importance of wetlands, not just for all of biodiversity but also for people:

“...the conservation of wetlands and waterfowl is by no means a discreet project. It is an integral part of the conservation of our natural environment, its fauna and flora. ... in this age of spiralling deterioration of our biosphere I suggest we no longer have the time to defer and delay the application of broader concepts [of wetland conservation].” (Firouz 1972).

Despite this, the recognition of wetland ecosystem services – in particular as a driver for national and international policy has been slower to become widely recognised by public and policy makers. Despite the ever growing awareness of the functions and values of wetlands over the century, an important milestone was the Millennium Ecosystem Assessment (2005) (MA), the first comprehensive assessment of planetary systems, and the first to fully embed ecosystem services both as an integral element of biodiversity status assessment and in to our wider lexicon so helping significantly to elevate public awareness of wetland values.



More recently, the creation and work of IPBES has built on the conceptual foundations established by the MA, whilst specifically for wetlands the 2018 *Global Wetland Outlook* updated the MA’s assessments. IPBES broadens the framework for human-nature

relationships in intrinsic, instrumental and relational terms, recognizing also diverse worldviews as through the term 'nature's contribution to people'.

Recent Ramsar decisions and sources

[Resolution XIII.17: Rapidly assessing wetland ecosystem services](#)

[Ramsar Policy Brief No. 2. *Integrating multiple wetland values into decision-making*](#)

DRAFT

Wetlands and health

Key messages

- 1. Wetlands can provide health-supporting resources but when inappropriately managed, can also be a source of disease.**
- 2. Ecosystem approaches in wetlands and their catchments can bring health benefits to all and ensure that all disease prevention and control actions are undertaken within wise use, and One Health, principles.**

Wetlands are settings that can determine health and well-being through a number of factors such as provision of clean water and nutrition, places within which people derive their livelihood, sites from which medicinal products can be derived, or places for mental health and psychosocial well-being (Horwitz *et al.* 2012; Romanelli *et al.* 2015).

Historically, the recognition of some wetlands as a source of water-borne parasitic diseases in particular, was a driver of their drainage and destruction – for example, the case of mosquito control in North America undertaken at industrial scales. Ironically, such measures and disruption of natural flow regimes following activities such as damming and abstraction, as well as pollution, have been clear drivers of disease emergence (Cromie *et al.* 2012).

In 2020, IPBES addressed issues of biodiversity and pandemics (which are a subset of emerging infectious diseases). Whilst not specifically focussing on wetlands, their conclusions are highly relevant to wetland managers and policy-makers. Their key findings were that:

- Pandemics emerge from the microbial diversity found in nature;
- Human ecological disruption and unsustainable consumption increase pandemic risk;
- Reducing anthropogenic global environmental change may reduce pandemic risk;
- Land-use change such as agricultural expansion and urbanization cause more than 30% of emerging disease events;
- The trade and consumption of wildlife is a globally important risk for future pandemics;
- Current pandemic preparedness strategies aim to control diseases after they emerge. These strategies often rely on, and can negatively affect, biodiversity; and
- Escape from the pandemic era requires policy options that foster transformative change towards preventing pandemics.

They concluded that the evidence *“demonstrates that pandemics are becoming more frequent, driven by a continued rise in the underlying emerging disease events that spark them. Without preventative strategies, pandemics will emerge more often, spread more*

rapidly, kill more people, and affect the global economy with more devastating impact than ever before.”

Those preventative strategies can include good management of wetlands resources, including formal protection which, for example, has been associated with reduced risk of highly pathogenic avian influenza outbreaks (Wu *et al.* 2020).

Ramsar Resolution XI.12 addressed wetland and health issues, strongly urging Parties to adopt an ecosystem approach to health in wetlands and their catchments with integrated methodologies and actions across relevant sectors (*e.g.* human health, wildlife management, and agriculture) in order to bring health benefits to all; and ensuring that all disease prevention and control actions are undertaken within wise use, and One Health, principles. The means by which this can be achieved are provide by Ramsar’s *Healthy Wetlands, Healthy People* report (Horwitz *et al.* 2012) and *Wetland Disease Manual* (Cromie *et al.* 2012) which provides practical guidance to wetland managers on how to reduce and respond to wetland disease risk.

Recent Ramsar decisions and sources

[Resolution XI.12: Wetlands and health: taking an ecosystem approach](#)

[Ramsar Technical Report No. 6: *Healthy Wetlands, Healthy People*](#)

[Ramsar Technical Report No. 7: *Ramsar Wetland Disease Manual: guidelines for assessment, monitoring and management of animal disease in wetlands*](#)

Wetlands and agriculture

Key messages

- 1. The prospects of both wetlands and agriculture are closely linked: the future of sustainable food production is closely linked to wetland wise use.**
- 2. Over half of all Ramsar Sites are negatively impacted by agriculture**
- 3. Transformation of agriculture is needed to reverse wetland loss and degradation trends: dialogue to strengthen policies and undertake coordinated action is essential.**

Expansion and intensification of agriculture is occurring in many regions of the world to meet growing food demand. Global food demand is expected to increase, as the human population of 7.7 billion people in 2019 is projected to grow to 9.7 billion by 2050 (United Nations 2019). The growth pattern of developing economies, and changing diets, has broad implications for food demand and in turn agriculture production (Food Security Information Network 2019; FAO 2020b), and wetlands.

The application of fertiliser (nutrients) and pesticides is growing, particularly in Asia and Latin America (FAOSTAT), resulting in a nine-fold increase in the use of Nitrogen-based fertilizers since the 1960s. Around 70% of all freshwater water extraction and diversion in the world is for agriculture (AQUASTAT), and agriculture intensification disproportionality drives high water stress in large areas of Asia, northern Africa, Australia, and the Americas, affecting people and wetlands (FAO 2020b).

Wetlands are under pressure from agriculture, including many Ramsar Sites. The current global extent of wetlands is estimated between 1.5-1.6 billion hectares (Davidson & Finlayson 2018). Due to land conversion the extent of natural wetlands declined by -35% between 1970-2015, while human-made wetlands, including rice paddy fields and reservoirs, increased by +233% (WET index). The rate of decline of natural wetlands during the same period (-0.78% per year) was higher than natural forests (-0.24% per year), and by 2015, global rates of wetland loss increased to -1.6% (Darrah *et al.* 2019). The proportion of wetland loss attributable to agriculture has not been calculated globally, however, various studies indicate that agricultural development is often the primary cause.

In addition to land conversion, agricultural practices (or pressures) are having a negative effect on c.50% of the world's Ramsar Sites, with for example more than 20% of Ramsar Sites affected by livestock farming, agricultural/forestry effluents or land clearing (Figure X).

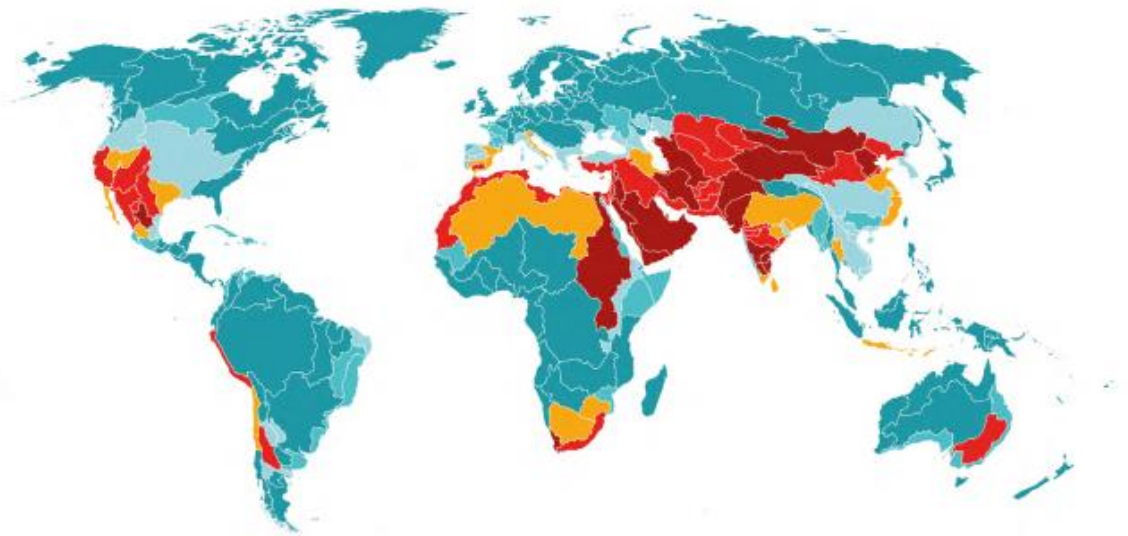


Figure X. Contribution of the agricultural sector to the level of water stress, by basin, 2015. From FAO 2020b. Note: The contribution of agriculture to water stress is defined as the ratio between freshwater consumed by agriculture and total renewable freshwater resources, after considering environmental flow requirements. [Needs key adding: p. 31 <http://www.fao.org/3/cb1447en/CB1447EN.pdf>]

Knowledge of the interactions between different types of agriculture (intensive, extensive, integrated) and inland, coastal and human-made wetlands is needed to improve environmental policies and guide on-ground initiatives to promote sustainable agriculture.

Transformation of agriculture is needed to reverse the trend of wetland loss and degradation, while simultaneously, providing food for the increasing human population. The need for global change has been recognised for some time (FAO 2011, 2018), but few regions are taking sufficient action, to ensure the wise use of wetlands. While modern agriculture addresses the growing food demand it has been a major cause of environmental degradation, including on wetlands. It is not sustainable and needs to transform at achieve SDGs (FAO REF). Most critically, enhanced dialogue between agriculture and wetland/environmental sectors is needed to strengthen policies and undertake coordinated action.

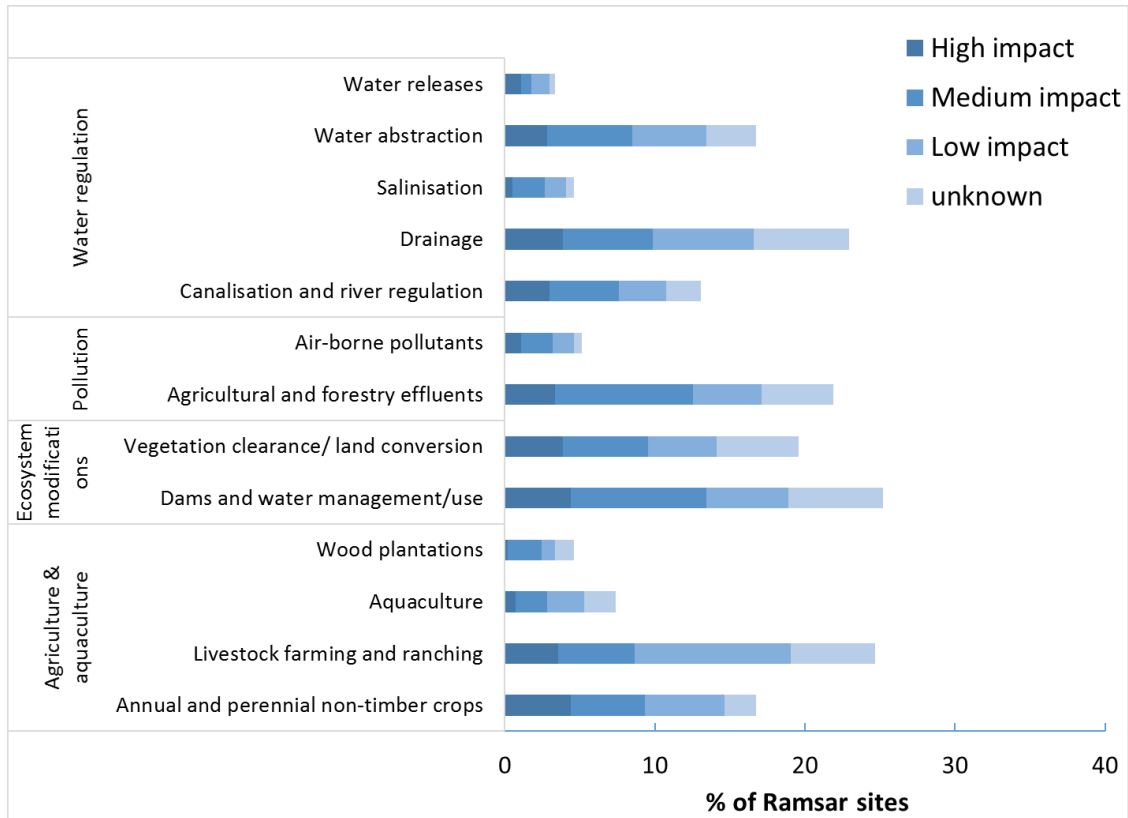


Figure X. Agricultural threats on Ramsar sites*. The percentage (%) of Ramsar sites negatively affected from agriculture-based practices (threats).

Notes: * Data extracted from the Ramsar Sites Information Service database in October 2019. Analysis utilises Ramsar Information Sheet data from 2015 onwards (n=567 Ramsar sites) and omits earlier data that was incomplete for submitted in a different RIS format.

Recent Ramsar decisions and sources

[Resolution XIII.19: Sustainable agriculture in wetlands](#)

Ramsar Policy Brief No. XX. xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Ramsar Briefing Note No. XX. xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Climate change: blue carbon

Key messages

- 1. Blue carbon ecosystems (mangrove forests, intertidal marshes, and seagrass meadows) sequester and store significant amounts of carbon making their management and restoration an essential approach to mitigate climate change as well as protect the many other ecosystem services that they provide.**
- 2. Blue carbon ecosystems can be included in Nationally Determined Contributions (NDCs) under the Paris Agreement to offset carbon emissions, but doing so first requires accurate mapping of their extent and location in order to fully account for the carbon they take up and store.**

Coastal wetlands take up and store large amounts of carbon from the atmosphere. Known as ‘blue carbon’ it is defined under the Ramsar Convention as the “carbon captured by living organisms in coastal (e.g. mangrove forests, salt marshes and seagrass meadows) and marine ecosystems and stored in biomass and sediments.” If undisturbed, coastal wetlands are a powerful carbon sink, with sediment carbon burial rates that are up to 55-times faster than tropical rainforests (McLeod *et al.* 2011). This blue carbon is stable and can remain for hundreds or thousands of years, helping to counterbalance human greenhouse gas emissions. Conversely, once they are disturbed and drained, substantial soil carbon stores can be rapidly released, and their potential for on-going carbon sequestration is also lost (Pendelton *et al.* 2012). Thus, the conservation and restoration of coastal blue carbon ecosystems (BCEs) is an excellent example of nature-based solutions for climate change mitigation.

Globally, there are at least 780 Ramsar Sites that include a minimum of one BCE, with many of the sites containing multiple BCEs (Table 1, Figure 1; see Beers *et al.* 2020 for additional data at www.ramsar.org [more exact url needed]).

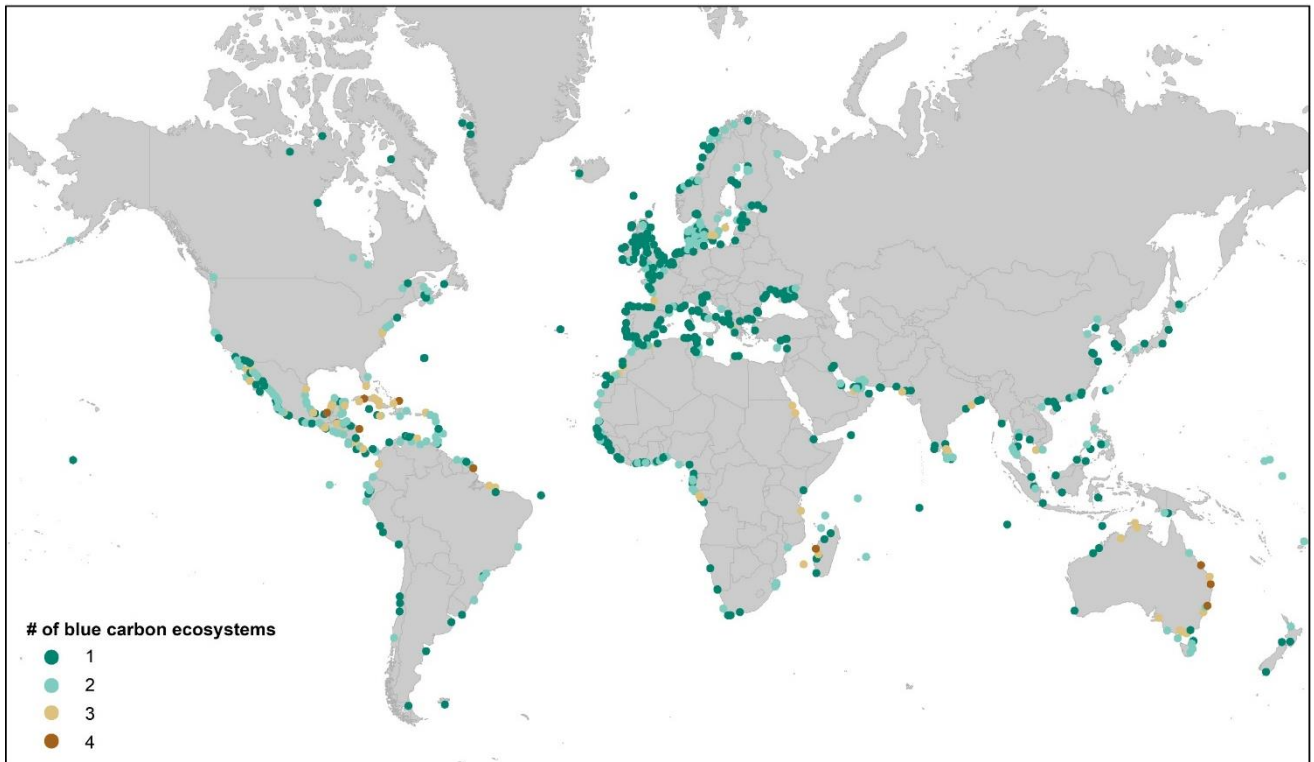


Figure 1. Distribution of Ramsar Sites containing blue carbon ecosystems (BCEs) indicating the number of BCEs within each site. Ecosystems include intertidal wetlands, intertidal forested wetlands, seagrass meadows and shrub-dominated wetlands (see Beer *et al.* 2020 for data).

Tidal marshes are the most common BCE in the Ramsar network occurring in nearly 75% of sites. Nearly half BCE Ramsar Sites contain tidal forested wetlands, most of which are mangrove forests, whilst seagrass meadows are least common. While Ramsar Sites make up only a small percentage of the total BCE extent in each Ramsar Region, they hold substantial carbon stocks. Thus, mangrove forests in Ramsar Sites store an average 432.5 tonnes of carbon per hectare. If the available data are summed, the Ramsar mangrove BCEs for which data are available hold an estimated total 1,610 teragrams (i.e. $\times 10^{12}\text{g}$) of carbon (Figure 2).

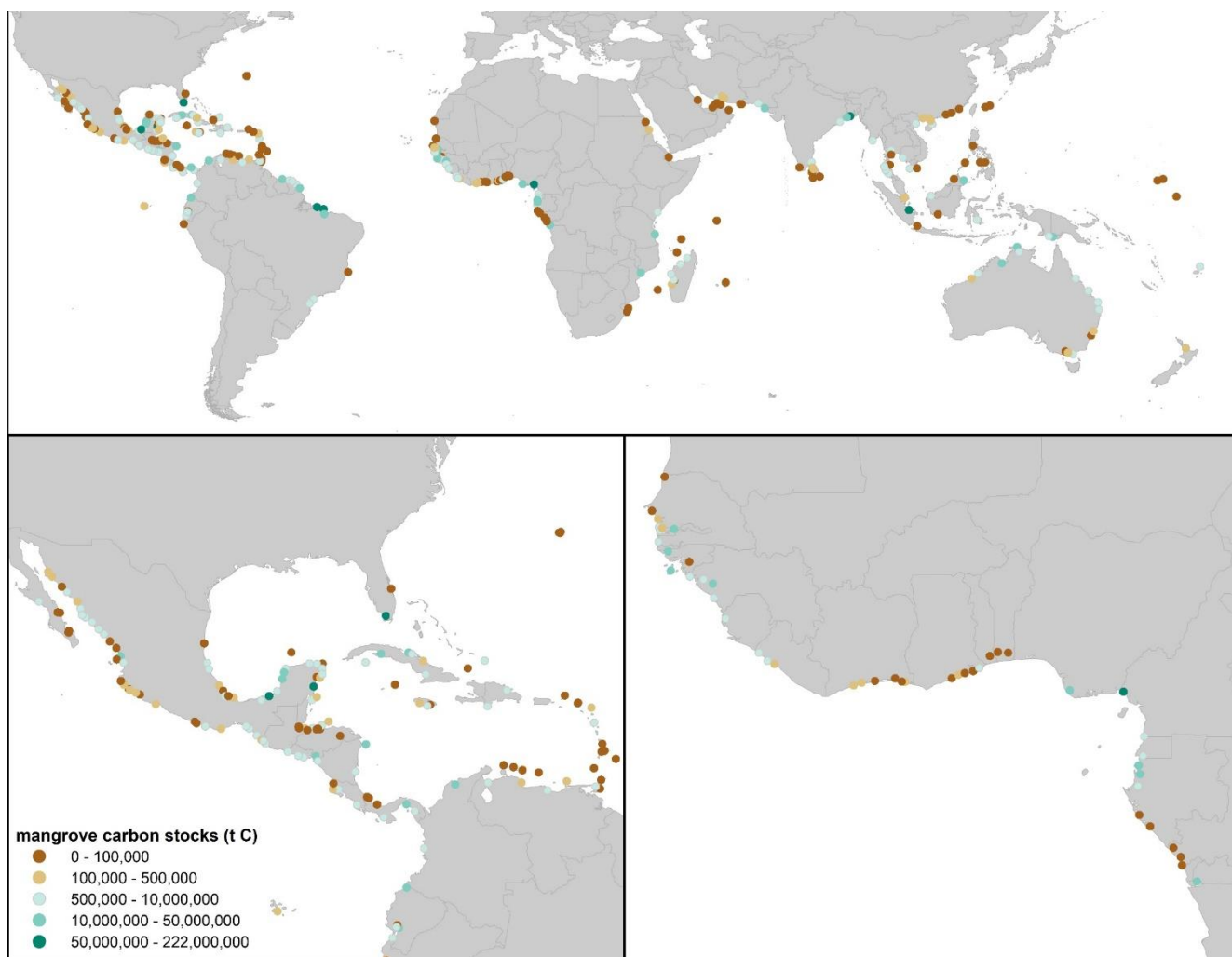


Figure 2. Total carbon stocks in mangrove ecosystems (trees plus soils) in Ramsar Sites (units in t C). Boxes in top map [to be added] denote insets below.

The extent of mangroves in Ramsar Sites declined between 1997 and 2016, (Global Mangrove Watch cited by Beer *et al.* 2020) following global trends of mangrove losses and so have lost substantial carbon storage capacity (cite blue carbon briefing note). However, another nearly 20% of Ramsar Sites showed an increase in mangrove area and thus are sequestering more carbon, largely in above-ground biomass.

Data are more limited on the extent of carbon taken up and stored in intertidal wetlands and seagrass meadows. The lack of accurate mapping for these BCEs is a significant gap in our understanding of their extent and geographic scope. This data gap was identified by Contracting Parties as the most common barrier in their work to protect, restore and sustainably manage BCEs.

Under the Paris Climate Agreement, rules were created for establishing Nationally Determined Contributions as a means for countries to address climate change by reducing and mitigating carbon emissions. Different land use types, including coastal blue-carbon ecosystems, may be included in NDCs. IPCC (2014) recognizes that blue carbon had a dual role in providing both climate mitigation and adaptation benefits. Using IPCC guidance

depends on having information on wetland area - the minimum step required to include blue carbon in NDCs and allow accurate carbon accounting. Mangroves may be included in its REDD+ program if they are included in a country’s national definition of “forest.” All BCE carbon can be included in the national accounting section of their NDC (Windham-Meyers *et al.* 2019).

While BCEs are ‘hot-spots’ of carbon storage, they deliver other important benefits that contribute to human well-being, such as protection from storms and floods; protection of coastal water quality; biodiversity support; food to support sustainable livelihoods; and as nursery grounds for many species of marine life. Including coastal wetlands as part of NDCs is critical to mitigate, and adapt to, the impacts of climate change, to meet the goals of the Paris Agreement, and to further protect, restore, and sustainably manage BCEs for their multiple benefits. [THIS PARA COULD BE CUT IF SECTION TOO LONG]

Table 1. Number and type of blue carbon ecosystems within each Ramsar Region. Note many Ramsar sites contain multiple blue carbon ecosystem types.

Ramsar region	Total # sites	Intertidal forested wetlands including mangroves	Tidal Marshes	Shrub-dominated tidal wetlands	Seagrass meadows
Africa	116	65	61	13	41
Asia	93	64	38	6	29
Europe	337	26	286	27	103
Latin America & the Caribbean	87	74	52	9	36
North America	110	72	83	7	42
Oceania	37	23	27	8	20
Total	780	324	547	70	271

Recent Ramsar decisions and sources

[Resolution XIII.14: Promoting conservation, restoration and sustainable management of coastal blue-carbon ecosystems](#)

Ramsar Policy Brief No. XX. xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Ramsar Briefing Note No. XX. xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Peatland restoration to combat climate change and biodiversity loss

Key messages

- 1. Peatlands are critical stores of carbon, which can become very significant sources of greenhouse gases if managed unsustainably: their conservation is thus especially important in the international communities' aspiration to limit climate change to 1.5°C.**
- 2. Fundamental approaches to peatland restoration are simple: restoration of natural hydrology and high water tables will limit future greenhouse gas emissions and in the long-term also provide carbon sinks thus offsetting earlier emissions.**

Peatlands comprise water, peat and vegetation and are important for climate change mitigation and biodiversity conservation. Peatlands occur worldwide from the tropics, throughout temperate regions to the arctic, and from mountains to the sea. Together they cover about 400 million ha (3%) of the earth's land surface. However, peatland inventories are incomplete, with new, sometimes large, peatlands are still being discovered (*e.g.* Lähteenoja *et al.* 2011; Dargie *et al.* 2017).

Peatlands have an important function in climate regulation through their storage of large amounts of compressed organic carbon. They are by far the most effective terrestrial carbon stock holding a minimum of about ~600 Gt (Dinesen *et al.* 2021).

Although most of the world's peatlands are still intact (*e.g.* large peatland areas in boreal and tropical zones) most are threatened by conversion to other land uses including drainage or climate change. So far 65 million ha or 15% of estimated total extent have been drained (Joosten *et al.* 2016) not only causing biodiversity losses but being a large source of emissions amounting to about 4 percent of all anthropogenic greenhouse gas emissions (Joosten *et al.* 2016; Leifeld *et al.* 2019, Günther *et al.* 2020) thus significantly contributing to climate change. This is of concern and emphasises the high importance of conserving existing living peatlands for their biodiversity values and ecosystem services, as well as stressing the need to scale up the restoration of drained peatlands (Joosten 2021).

Such restoration will contribute to the Target 13 of the Sustainable Development Goals on Climate Action, Target 15 on Life on Land, as well as indirectly to several other SDGs and to the UN Decade on Restoration 2021-2030.

Continuing emissions from drained peatlands until 2100 are projected comprise 12–41% of the remaining GHG emission budget in order to keep global warming below +1.5 ° to +2°C (Leifeld *et al.* 2019). Thus the global land sector (*i.e.* forest biomass, organic and mineral soils) is projected to continue to be a net carbon source by 2100, unless all current intact peatlands remain intact and at least 60% of the currently degraded peatlands are rewetted (Humpenöder *et al.* 2020; Joosten 2021).

Efforts to stop these emissions have started but will need an enormous upscaling. Compliance with the Paris Agreement in order to attain carbon neutrality (IPCC 2018) implies that over the coming decades some 30 million ha of drained peatland (half of which are in agricultural use) are rewetted and restored (Humpenöder et al. 2020), *i.e.* more than two million hectares per year.

Although needing innovative approaches and guidance, the fundamental approach of peatland restoration is simple: restore natural hydrology and a high water table at the drained sites which will limit future peatland greenhouse gas emissions, and in the long-term also provide carbon sinks thus offsetting earlier emissions.

Recent Ramsar decisions

[Resolution XIII.12: Guidance on identifying peatlands as Wetlands of International Importance \(Ramsar Sites\) for global climate change regulation as an additional argument to existing Ramsar criteria](#)

[Resolution XIII.13: Restoration of degraded peatlands to mitigate and adapt to climate change and enhance biodiversity and disaster risk reduction](#)

Sustainable cities

Key messages

- 1. Humanity is rapidly urbanising with a growing proportion of the world's population living in cities for which wetlands provide important services, especially clean water.**
- 2. There is much potential to use existing good examples to more widely promote to other cities the importance of wetland sustainable use both within city boundaries but also further away.**

The challenge

The world is becoming urbanised with over half of humanity now living in cities (3.5 billion people) (United Nations 2020). It is projected that over five billion people will live in cities by 2030 and over 70% of the population will live in urban areas by 2050 (United Nations 2018). Of future urban growth, 90% is expected in Asia and Africa.

Cities occupy around 3% of the Earth's land but account for 60-80% of energy consumption and produce 75% of carbon emissions (United Nations 2018). This rapid urbanization has resulted in inadequate and overwhelmed infrastructure and services particularly in terms of transport, housing, waste collection, water provision and sanitation. This puts pressure on freshwater supplies, sewage, the living environment, and public health. For example, 4.2 million people died prematurely in 2016 because of air pollution whilst 828 million people now live in urban slums where environmental and health issues are widespread (United Nations 2020).

Human settlements have, in many cases, historically developed alongside wetlands due to the supply of freshwater and other resources such as food and shelter (Ramsar Convention 2013). However, increased urbanisation has led, and continues to lead, to their destruction as wetlands have been drained, infilled and converted to urban development or degraded through solid waste and wastewater pollution, and encroachment by invasive and pest species. This is despite wetlands providing important benefits for urban dwellers (WWT Consulting 2018) – as indeed they do elsewhere. Of particular significance in urban contexts are wetland's role in flood regulation; water treatment; water supply; recreation and leisure; education; and human well-being.

Although urban wetlands provide significant value, *e.g.* the Metro Colombo wetlands, Sri Lanka save approximately US\$ 76 million in average annual flood damage costs and the Nakivubo Swamp in Kampala, Uganda provides US\$ 2 million worth of water treatment per year (Ramsar Convention 2018b), wetlands are lost and degraded due to:

- Urban wetland benefits being repeatedly unvalued
- Wetlands not included within urban planning
- Uncoordinated and poor governance over wetland management

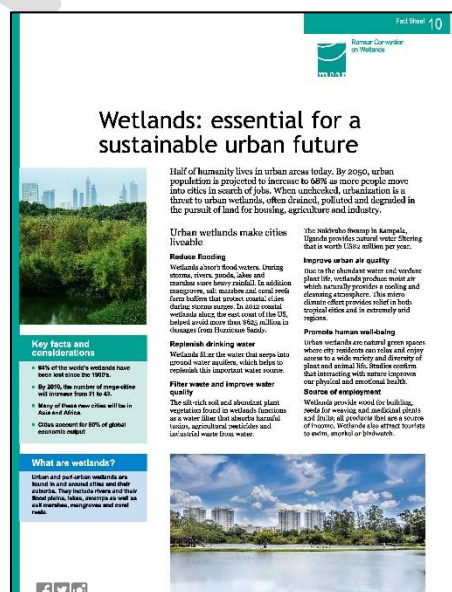
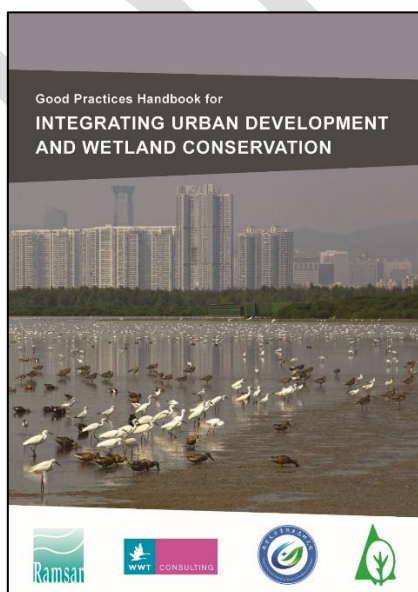
Key drivers of change

Sustainable Development Goal 11, related to sustainable cities and communities, calls for cities to be made inclusive, safe, resilient and sustainable (United Nations 2015) but how can this be achieved? A key aspect to delivering sustainable cities is the recognition of the benefits, and the conservation and restoration of, urban wetlands. Ramsar Convention Resolution XI.11, on the principles for the planning and management of urban and peri-urban wetlands (Ramsar Convention 2012), encouraged urban planners and decision makers to adopt practical principles:

- Avoid destroying existing wetlands;
- Restore and create wetlands as part of nature-based solutions to urban infrastructure;
- Understand the value and benefits of urban wetlands;
- Engage with all stakeholders in urban wetland decision making including Indigenous peoples and local communities; and
- Integrate wetlands fully into urban planning recognising wider elements to spatial planning such as water resource management, transport, and agriculture.

Whilst Ramsar Convention Resolution XIII.16 on sustainable urbanization, climate change and wetlands encouraged the prevention of activities that may have an adverse impact on urban and peri-urban wetlands (Ramsar Convention 2018b).

City initiatives such as Garden City, City and Biodiversity and Sponge Cities have practically adopted these principles by recognising the importance of wetlands in delivering integrated urban water management, well-being benefits and biodiversity conservation. Resolution XII.10 (Ramsar Convention 2015) encourages cities to apply for Wetland City accreditation celebrating the important role wetlands have in making urban areas liveable and sustainable.



Recent Ramsar decisions

[Resolution XI.11: Principles for the planning and management of urban and peri-urban wetlands](#)

[Resolution XII.10: Wetland City Accreditation of the Ramsar Convention](#)

[Resolution XIII.16: Sustainable urbanization, climate change and wetlands](#)

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ⁱⁱ <https://www.cbd.int/gbo/gbo5/publication/gbo-5-en.pdf>