



A CALL TO ACTION TO PROTECT, CONSERVE, SUSTAINABLY MANAGE AND RESTORE THE WORLD'S COASTAL ECOSYSTEMS

The World Coastal Forum (WCF) aims to catalyse, facilitate and promote local, national and international efforts that support the timely delivery of international commitments to protect, conserve, sustainably manage and restore coastal ecosystems. It builds on science and promotes evidence-based actions to achieve these outcomes. This requires urgent and strong international collaboration and cooperation among all stakeholders, from local to national governments, local communities, the business sector, scientists, conservation communities and others to conserve and restore coastal ecosystems, their biodiversity and livelihoods worldwide. These efforts aim to strengthen existing initiatives and fill gaps to implement urgently needed actions. This Call to Action was produced under the WCF, to raise awareness of the need to act NOW!

This 2023 Call to Action by the WCF to protect, manage and restore the world's coastal ecosystems aims to raise the profile of coastal ecosystems¹, increase awareness of both the challenges and opportunities for effective action and bring together diverse communities of interest to focus on implementing evidence-based solutions. Its success should be measured by the extent to which original, natural coastal ecosystems are conserved and restored, together with their essential functions.

¹ Coastal ecosystems comprise intertidal wetlands (e.g., open mudflats, sandflats) and ecologically-associated habitats: seagrasses, salt marshes, mangroves, rocky beaches, estuaries, deltas, islands, coral reefs, coastal plains and non-wetland ecosystems of coastal areas, representing biological and economic resources of immense value, and where an ecosystem approach is needed for the effective conservation of migratory and resident species, and management and regulation of activities having consequent direct or indirect negative impacts on coastal ecosystems.

A Call to Action

To protect, conserve, sustainably manage and restore coastal ecosystems for the future, there needs to be concerted, cooperative action that also contributes towards achieving global commitments to address climate change, biodiversity loss and ocean management. A multipronged, multistakeholder approach is needed for actions to be undertaken at global, regional, national and local scales. These will need to build on the best available knowledge from science and practice and strengthen existing activities while initiating new actions to fill the present coastal protection, management and restoration gaps. To achieve this, we propose a series of global and country-based actions, as well as several immediate priorities for the WCF.

Global

1. Raise interest and awareness through a focussed publication on the status of the world's coastal ecosystems that highlights the urgency for coordinated and coherent action for their management and restoration by multi-stakeholders and through international cooperation.
2. Share and promote evidence of what works in terms of coastal ecosystem conservation interventions including showcasing examples of successful coastal ecosystem management and restoration from around the globe and promoting exchange of expertise and information to implement solutions based on lessons learned and best practice (including through an open access Tool Kit). Showcase coastal ecosystem restoration within the [UN Decade on Ecosystem Restoration](#).
3. Promote international cooperation, building on existing structures and mechanisms, to address issues of shared concern. This includes working with MEAs and regional organizations, such as those developed to protect migratory waterbirds along coastal flyways, and coalitions focused on mangroves, saltmarshes and coral reefs.
4. Refine and expand monitoring of coastal ecosystem changes and dynamics to identify opportunities for more effective protection, sustainable management, and restoration. Such monitoring should better link large-scale data from satellites to ground-based surveys and coastal observatories, to address the multiple coexisting scales in, for example, coastal biodiversity status and trends.

Regional/Sub-regional

1. Facilitate cooperation among countries that frequently share successes, challenges and opportunities in meeting biodiversity, specifically coastal ecosystem conservation-related targets, cognizant of the resources and capacities of countries, and more responsive to their particular needs and development goals.
2. Work with countries in the region to scale-up efforts at the regional and global level. Prepare Regional Biodiversity and Action plans and help identify priority areas that require concerted efforts among the countries in the region, such as protection of coastal areas important to migratory species that move within the region, and as much as practicable, support its implementation.
3. Manage coastal information and data at the regional level and prepare the State of the Region's Coastal Ecosystems that will feed into global coastal information systems.
4. Work with International organizations to exchange information across countries, regions and subregions to develop and contribute to global strategies and action plans to protect coastal ecosystems worldwide.

Country-focused

1. Undertake national baseline assessments of coastal ecosystems, their status, trends, protection and management as part of reporting on SDGs 14 and 15, and the Kunming-Montreal [Global Biodiversity Framework](#) through incorporation into National Biodiversity Strategies and Action Plans (NBSAPs) intended to implement it and maintain up to date a national wetland inventory and share through the national reports of the Convention on Wetlands.
2. Undertake national assessments that identify and where appropriate, quantify, the ecosystem service values of coastal ecosystems, including biodiversity and cultural “existence” values, the contribution of coastal ecosystems to buffering climate change impacts such as storm surges and sea-level rise, sequestering “blue” carbon (including its incorporation into Nationally Determined Contributions), tourism income potential, etc.
3. Develop national maps of priority areas for coastal ecosystem restoration, in consultation with all relevant stakeholder groups, linking them to efforts to expand and upgrade marine protected areas, Other Effective Area-based Conservation Measures (OECMs)² and ecological disaster risk reduction programs.
4. Develop “coastal blueprints” that optimize the provision of ecosystem services within sustainable management scenarios and enhance local livelihoods. These would incorporate projections under different climate change scenarios. Seek to integrate coastal blueprints into national development planning and policy processes to highlight potential impacts and opportunities to enhance coastal ecosystem integrity.
5. Strengthen networks of protected areas and OECMs and build capacity and increase resources for their effective management and equitable governance including, where appropriate, linkages to land-based and marine ecosystems.
6. Explore options for sustainable management zones that involve and benefit local communities, building on successful experiences throughout the world, such as local fisheries, tourism and shellfish harvesting.
7. Increase awareness of the importance and value of coastal ecosystems among critical stakeholders, from schoolchildren to high-level decision-makers, including local-level decision-makers and mayors, through education initiatives, support for next generation researchers, civil society engagement and information campaigns.

² Other effective area-based conservation measures (OECM) is officially defined by the Convention on Biological Diversity as “a geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long term outcomes for the in situ conservation of biodiversity with associated ecosystem functions and services and where applicable, cultural, spiritual, socio economic, and other locally relevant values”.

International Cooperation is a Long-Term Endeavor. The Wadden Sea is the largest unbroken system of intertidal sand and mud flats in the world and one of the last remaining large-scale, intertidal ecosystems where natural processes continue to function largely undisturbed. The area spans parts of three countries, Denmark, Germany and the Netherlands and following designation as a transboundary World Heritage Site has been managed cooperatively by these countries “as a single ecological entity for its natural, landscape and cultural heritage values, for the benefit of present and future generations”. The Wadden Sea is a complex and dynamic landscape and understanding pressures from climate change, pollution and the need to protect local livelihoods requires not just research and monitoring, but strong cooperation at all levels from Government to local stakeholders. Furthermore, the Wadden Sea Flyway Initiative supports conservation of ecological connectivity all along the flyway as part of its World Heritage commitment to conserve the migratory birds that depend on the Wadden Sea.

The experience of this cooperative management over four decades has informed and continues to inform many other similar initiatives, including the emerging Yellow Sea World Heritage process involving China and Korea. It underscores the need for many dedicated stakeholders to work together and through challenging issues over the long term.

Background

The seventeen [Sustainable Development Goals](#) (SDGs), adopted in 2015 by all countries to safeguard peace, prosperity and the planet, include SDG 14 Life below Water and SDG 15 Life on Land. These seek to address the challenges in marine and terrestrial ecosystems, respectively. But between these two ecosystems, running like a shimmering ribbon this way and that across the globe lie areas that alternate between being below water and an extension of the land. These are coastal ecosystems, connecting the land and the sea and connecting countries across multiple geographies.

Coastal ecosystems have always been shaped by natural processes such as the climate, winds, tides, waves and rivers. Depositing and eroding sediments, transferring nutrients from land to sea and supporting primary production and the base of marine food chains. A range of conservation significant fauna depends upon coasts for critical life history stages. Migratory waterbirds feast on the extensive mudflats on their epic journeys along global flyways, dugongs and manatees graze the shallow sea grass meadows, sea turtles nested on undisturbed beaches, and the salt marshes and mangroves provided safe nurseries for sharks and other fish. Human communities too settled along these coasts, attracted by abundant fish and other natural resources in the shallows and beyond into the oceans.

Today coastal zones are often highly modified, in some areas dominated by mega-cities and other infrastructure, such as ports, industries and oilfields, in others the rich intertidal zone converted to much less productive agriculture. Currently at least one billion people, about 11% of the global population, live in low-lying coastal environments.

Natural coastal ecosystems are now much less extensive and more fragmented. Almost 12,000 km² of mangroves have been lost in the past 25 years, and salt marshes and tidal flats have been lost through land reclamation or significantly altered through degradation, due to erosion, subsidence, pollution and invasive alien species, among other causes. With these changes, the value of ecosystem services provided by coastal ecosystems has diminished, at a time when their capacity to protect coasts, store carbon and buffer climate

change-induced impacts, such as increased intensity of storm surges and sea-level rise and optimize the resilience of coastal communities worldwide has become critically important. Meanwhile their popularity for tourism, recreation, cultural values, health and wellbeing has never been higher.

Coastal ecosystems are integral to human socio-cultural aspirations and socio-economic systems. Their fate is intimately linked to the fate of local communities that depend upon them. Development of solutions requires working with local communities and associated stakeholders in identifying issues affecting them and developing solutions that work at a local level and in cooperation with all levels of government. These initiatives need to be guided by best practice approaches informed by experts and scaled by leveraging increased understanding and cooperative efforts across the globe.

Early, evidence-based planning and action in this time of ecological crisis is helping build sustainable solutions for communities directly or indirectly dependent on coastal resources. Increasingly successful coastal management conservation and restoration programs are encouraging policy shifts in governments around the world. But significant challenges remain to secure the future of these critical ecosystems and the biodiversity and communities they support.

The nature, variety and dynamism of coastal ecosystems

Coastal ecosystems have both land-based and ocean-based influences making them exceptionally dynamic. They include characteristic intertidal areas, that are inundated by seawater during high tides and exposed during low tides, such as mudflats and sandflats, saltmarshes and mangroves and rocky shores. But their influence extends inland to unique grassland, beach and dune communities, brackish pools, lagoons and estuarine waters, and out to the sea, including seagrass beds and inshore coral reefs. They are characterized by their complex biophysical structure, high biodiversity and intricate structural and ecological inter-relationships.

The variety and interdependence of coastal ecosystems have resulted in extremely high biodiversity, both locally and at scale. Coral reefs are celebrated for hosting exceptional biodiversity, but intertidal flats, mangroves, saltmarshes and seagrass beds all support unique species and food chains. Furthermore, coastal ecosystems are connected throughout the world; they are among the world's most connected ecosystems being influenced by tidal dynamics, hydrology, coastal processes and land discharges, among other processes that operate at very large spatial scales.

Coastal ecosystems provide breeding areas for many marine animals, such as fish, seabirds, turtles, seals, sharks, rays and dolphins that may spend the majority of their lives in the open ocean but depend on coastal ecosystems as nursery and feeding areas. Other species may spend their entire lives in coastal areas and rivers. Waterbirds that breed inland, some of which migrate thousands of kilometers between breeding and non-breeding areas are critically dependent upon the ecological integrity and location of a few key bottleneck coastal sites to rest and refuel during these awe-inspiring journeys.

These ecological, and often cultural, connections, through shared migratory species and ecosystem services, provide an imperative for close international cooperation in saving the world's coastal ecosystems that span the globe.

Coastal ecosystems have adapted to changes in natural factors over millennia, so they are adaptable and resilient. Yet, they are also at risk of collapse in the face of the current rapid and largely anthropogenic changes, especially the acceleration of sea level rise and sediment retention in dams and pollution.

Changes in the nature and extent of coastal ecosystems

Coastal ecosystems are adaptable and resilient, yet they are also at risk in the face of the current rapidly expanding and intensifying anthropogenic impacts. The loss and degradation of coastal ecosystems have increased dramatically in recent decades. Over 16% of tidal flats were lost between 1984 and 2016. 35% of global mangrove area has been lost since the 1970s and are currently disappearing at the rate of 1-2% annually, although this has slowed recently. Approximately 50% of global saltmarsh ecosystems have been degraded or lost worldwide. In the two decades from 1999 to 2019 alone, tidal wetlands – mangroves, tidal marshes and tidal flats – decreased by 4,000 km².

These losses would be even higher but new coastal wetlands have also been formed during this time, due in part to shifting coastal dynamics, such as sediment deposition from estuaries and changing hydrology resulting in major alterations in coastal structure due to anthropogenic alteration. The extent and type of coastal ecosystems vary widely in different parts of the world and loss and degradation reflect this distribution. For example, about three-quarters of the 4,000 km² net global tidal wetland decrease occurred in Asia (74%), with almost 70% concentrated in just three countries: Indonesia (36%), China (21%) and Myanmar (12%).

Despite these losses, protection, sustainable management and restoration efforts have shown an encouraging increase in recent years, with 15,000 km² of mangroves restored in the Mekong delta of Vietnam and locally in other countries around the world in the last two decades. Seagrass beds have been restored as pollution has been controlled in parts of Europe and USA, which have also witnessed increased saltmarsh and oyster reef restoration, albeit at relatively small scale. Removal of invasive alien cordgrass has occurred or is underway in China, New Zealand and western North America. The rapid increase in the number and area of marine protected areas protects some coastal ecosystems, even though many are primarily offshore.

Reasons for loss and degradation

Coastal ecosystems have been affected primarily through human-induced impacts, both direct and indirect. For example, conversion of coastal habitats by infrastructure development, including to urban and other residential areas, ports, marinas and industrial operations, has rapidly increased in recent decades worldwide. Many major cities are located on the coast and have expanded hugely in recent years, accelerating coastal ecosystem loss and degradation as a result of habitat loss due to land and sea use changes. Intertidal lands have also been claimed for agriculture, such as rice paddies, and in the case of mangroves, for aquaculture, principally shrimp farming.

Associated with these direct impacts on coastal ecosystems is increased pollution from industrial and agricultural products, such as pesticides, fertilizers and plastics. Commercial mariculture operations not only transform coastal ecosystems, but also are significant sources of pollution through nutrient production from, for example fishmeal and other chemicals such as antibiotics.

Sediment loads from large rivers that have been altered by activities well upstream from the coasts are having significant impacts increasing sedimentation and reduction in water quality and are leading to the formation of increasingly large toxic algal blooms and hypoxic “dead” zones. In addition, reduced sedimentation flows from dams and agricultural embankments limit nature’s capacity to replenish sediment along beaches and coastal sand flats leading to significant alteration of sediment dynamics and erosion along coasts.

Human induced climate change is threatening the resilience of coastal ecosystems globally. Accelerating climate change-induced threats such as increased intensity of storms, ocean warming, changing sea currents and acidification pose significant global challenges such as the projected loss of coral reefs and kelp forests by 2050. Meanwhile local impacts are undermining the ability for coastal ecosystems to recover and adapt to climate change.

Invasive species may also significantly alter coastal ecosystems, both within and beyond protected area boundaries. Over-harvesting of coastal resources, from valuable mangrove wood to reef fisheries is a significant threat to coastal biodiversity and ecosystem integrity.

These global changes combined with local impacts provide the context within which planning scenarios and management objectives should be set for improving future outcomes for coastal ecosystems.

Implications of loss and degradation

The loss and degradation of coastal ecosystems affects their ability to deliver ecosystem services, such as biodiversity conservation, pollution filtration, sustainable fisheries (dependent on inshore nurseries), cultural values and buffering the impacts of climate change, such as sea-level rise and storm surges as well as their powerful capacity for sequestering "blue" carbon (see Box 1).

With current coastal trajectories there is a risk of tipping points being breached, with potentially disastrous (and irreversible) consequences. One very current example is the rapid bleaching of shallow-water coral reefs in parts of world associated with the exceptional increase in ocean temperatures in 2023. Another example is the increased risks to delta areas as a result of relative sea level rise and sand starvation.

Increasingly detailed models show how fringing coral reefs, mangroves, and coastal wetlands prevent billions of USD of direct and indirect damage to private and public property and shield millions of people from flooding each year. The Intergovernmental Panel on Climate Change has reported that without mangroves, global flood damage costs would increase by more than \$65 billion a year. It is estimated that coastal wetlands alone reduced direct flood damages by US\$625 million during Hurricane Sandy in the United States of America in 2012.

Coastal ecosystems have an ability to adapt to sea-level rise and have done so historically. The difference now is that coastal ecosystems are more fragmented, anthropogenic impacts more pervasive and climate impacts accelerated. Furthermore, the presence of hard infrastructure such as sea walls prevents coastal ecosystems from naturally migrating inland in response to rising sea levels (coastal squeeze). Land subsidence is also occurring, notably around mega-cities and intensive agricultural areas, due to extraction of ground water and fossil fuels. Increasingly costly and potentially ineffective sea defences could be dismantled to restore natural coastal processes further inland. Building with nature is a cost-effective adaptation measure that provides longer lasting resilience.

Opportunities for protection, conservation, restoration & sustainable management of coastal ecosystems

Coastal ecosystems are included in many protected areas, largely because of the importance of biodiversity and ecosystems, but also as a response to their sensitivity to threats and to the ecosystem services they provide. Some areas are designated primarily for coastal ecosystems, but these are often part of larger areas that include inland, terrestrial habitats or are marine protected areas that extend offshore. For example, 42% of all remaining mangrove forests are found within protected areas. Nonetheless, there are numerous examples where coastal ecosystems and/or the habitat requirements of coastal species are only

partially included within protected areas. This underscores the need for a comprehensive, evidence-based understanding of coastal systems and species that is reflected effectively in protected area planning.

Networks of well-managed protected areas can be engines for coastal restoration and recovery, as well as providing critical benefits for shared natural heritage, such as fish nurseries for both inshore and offshore species and migratory waterbirds along global flyways. Because of the dynamic and mobile nature of some coastal ecosystems, habitat included in a protected area at the time of designation may decline, while new or currently unprotected areas may become more important over time. This recalls the importance of expanding and updating the number and size of protected areas and other effective, area-based conservation measures (OECMs).

Coastal ecosystems are surprisingly resilient and some simple restoration techniques can have rapid positive impacts (reducing pressures, providing opportunities for coastal wetlands to migrate inland, removal of invasives, mangrove regeneration and coral restoration) and generating new local livelihoods options. Recovery times vary though, with coral reef ecosystems, for example, generally taking longer to recover.

The Way Forward

To successfully address the challenges of coastal ecosystem conservation will require a major shift in how we treat these areas and a common vision of what we want coastal ecosystems to be in the future. Given the competing demands on coastal ecosystems, this will also require strong leadership at all levels to protect and manage them. Restoring the essential structure and functions of coastal ecosystems, strengthening their resilience and retaining of a full array of ecosystem services in support of local livelihoods and sustainable development is an ambitious agenda. Nor can it be taken in isolation. It needs to be integrated into marine and land-based initiatives. This stresses the need to integrate the concept and practice of Integrated River Basin Management with Integrated Coastal Zone Management.

There are many opportunities to change the trajectory to more sustainable coastal ecosystem conservation and management. Indeed, this is already happening in many places. It is a question of building on successes and scaling up the responses. Restoration, though effective, can be costly, itself a strong argument not to damage the ecosystems in the first place.

International cooperation on marine protection has accelerated rapidly in recent years, including recognition of coastal ecosystems as vital to marine protection. Specific coalitions have built up around mangroves and, more recently, saltmarshes and seagrasses that recognize both the ecological and socio-economic complexity of conserving these coastal ecosystems. The 2018 outcome of a high-level panel on oceans by the leaders of 17 countries refers to coastal communities, but does not explicitly address coastal conservation, with the exception of recent work on Blue Carbon. The Blue Carbon Action Partnership of the World Economic Forum also looks at scaling up blue carbon initiatives.

The Potential and Risks of Blue Carbon. Coastal ecosystems, notably saltmarshes, seagrass meadows and mangroves have a remarkable capacity for CO² sequestration and storage. Organic carbon in these habitats is exceptionally high, 30-50 times that stored by forests. Globally, these coastal ecosystems sequester a similar amount of organic carbon to terrestrial forests annually, despite their coverage being less than 3% of that of forests. Their carbon sequestration potential is enhanced by their unique ability to trap particles from the water flow and store them in the soil.

In addition, their capacity for sediment accretion (counteracting sea-level rise) and coastal protection makes these ecosystems essential elements of a coastal defence strategy that combines both climate change adaptation and mitigation.

Furthermore, the highest potential for generating “blue” carbon credits is in developing countries and small island states where financial resources for climate mitigation are most limited.

While coastal ecosystem conservation and restoration are among key solutions to reduce greenhouse gas emissions and adapt to climate change, and unlike tropical forests, the sequestration capacity is not predicted to decline as climate change advances, it should be integrated into plans that deliver multiple benefits for coastal ecosystems, which includes removal of exotic, invasive species and conservation of the unvegetated tidal flats so vital for coastal biodiversity including billions of migratory waterbirds, fish and other species. We need to ensure that blue carbon initiatives are undertaken thoughtfully and supported by evidence, so that they do not occur at the expense of coastal ecosystems or sensitive species.

Call For A World Coastal Forum

Concern about the existing and emerging challenges to coastal ecosystems globally, led multilateral environmental agreements (MEAs) and the International Union for Conservation of Nature (IUCN) to call for support to establish a multi-stakeholder global coastal forum to promote and facilitate the protection, conservation, management, wise use and restoration of coastal ecosystems, and replicate and scale up coastal economic development models that maintain their natural capital to the benefit of local communities and biodiversity.

Work since 2019 has focused on designing and convening a WCF as a direct response to the resolutions and decisions of MEAs ([Convention on Migratory Species Resolution 12.25](#), [Convention on Wetlands Resolution XIII.20](#) and [Convention on Biological Diversity Decision 14/30](#)) and the [IUCN](#) that called for its establishment. This builds on the advice and consensus of expert organizations, on recognised progress in WCF development and on a wider series of international consultations.

Priorities for the WCF

A key role of the World Coastal Forum will be to facilitate access to information on priorities for action and on what interventions work and do not work. Effective management depends on having access to reliable, transparent and evidence-based information on coastal ecosystem status and conservation. Currently, this information is scattered and difficult to access.

To address this information gap and promote shared understanding, the WCF aims to produce two major, ground-breaking knowledge products, as follows, for which we seek to mobilise resources.

1. State of the World's Coastal Ecosystems report.

This widely disseminated, comprehensive, concise, independent report will be the first time that information on the state of the world's coastal ecosystems has ever been brought together at a global scale. A first, baseline report will be produced in 2025, to launch at the Conference of the Parties of the Ramsar Convention on Wetlands. It will then be regularly updated approximately every ten years to inform decisions and actions related to coastal ecosystem conservation.

This report aims to provide an overview of the conservation status of coastal ecosystems, habitats, species, and ecosystem services, as well as the challenges and opportunities facing them. It will also identify key threats and knowledge gaps, while highlighting the positive impact of conservation and restoration efforts. The review will follow scientific best-practice methods, including a comprehensive literature review, data analysis, and consultation with stakeholders. It will synthesise the latest information about coastal ecosystems and provide an authoritative resource for future action in a way that the IPCC scientific reports do for global climate analysis.

A primary output will be a concise and easily accessible report that presents information in a tabular/graphic format and that provides links to online resources. It will also assist researchers in expediting their findings to aid decision-making regarding coastal ecosystem conservation and pinpoint priority information gaps for future research.

2. World Coastal Ecosystems Conservation Toolkit

This product will deliver robust and transparent evidence-based guidance critical for underpinning effective coastal ecosystem conservation. Research has revealed a serious shortage of such guidance for ecosystem conservation; much that does exist is out of date and rarely transparently linked to the literature or the evidence-base. To enhance the toolkit applicability and increase its reliability, we aim to establish and maintain an online toolkit that is delivered and updated by a global network of partners, the World Coastal Ecosystems Conservation Guidance Network, to underpin a transformative improvement in knowledge and tools to protect, manage and restore coastal ecosystems.

Once established, the network will undertake prioritization and gap analysis, and then lead on creating four guidance documents a year and collaborate with others to generate an additional five a year. Thus, over four years this will result in at least 36 guidance documents, based on what works and what does not work. This guidance will be collated in "The Coastal Manager's Conservation Handbook" bringing together all the guidance ready for launching at the 2027 World Coastal Forum meeting.



For more information, check out the WCF website at www.worldcoastalforum.org.