Input to the Talanoa Dialogue

30 March 2018

Enhancing action on wetlands as a key strategy to reach Paris Agreement objectives, contributing to climate change adaptation, mitigation, resilience and peacebuilding.

Key messages

Where are we?

- While we see increased recognition and action on safeguarding wetlands (such as mangroves, lakes, rivers, peatlands and floodplains) as key natural climate buffers in landscapes, few climate initiatives yet identify the need to protect, restore and sustainably manage these ecosystems. While most NDC's include adaptation measures in the water sector, these are largely focused on grey infrastructure. Despite the potential gains from nature-based solutions, they currently attract less than 1% of total investments into water resource management.

- CO_2 emissions from drained or burned peatlands (carbon-rich wetlands) amount up to five percent of the global carbon budget. The issue is increasingly recognised and there are positive signals and initiatives. Ongoing loss of peat ecosystems could seriously hamper the achievement of the Paris Agreement. Safeguarding and rewetting peatland should be considered a low-hanging fruit for keeping carbon in the ground, reducing CO_2 emissions and for preventing the loss of water storage capacity and productive land.

- Wetlands are the most rapidly declining ecosystems in the world. As the demand for water, land and food increases and climate change intensifies, they are coming under even more pressure, including from climate change adaptation and mitigation measures. This raises the need to ensure that climate policies promote positive and minimize negative impacts on wetlands.

- It is still poorly recognized that the squeeze of wetlands (due to conversion, drainage and reduced freshwater flows) also exacerbates human conflicts over access to water resources and productive land, driving conditions that stimulate instability and insecurity.

- Species that depend on freshwater, such as waterbirds and freshwater fish – crucial for food security - are also in major decline.

Where do we want to go?

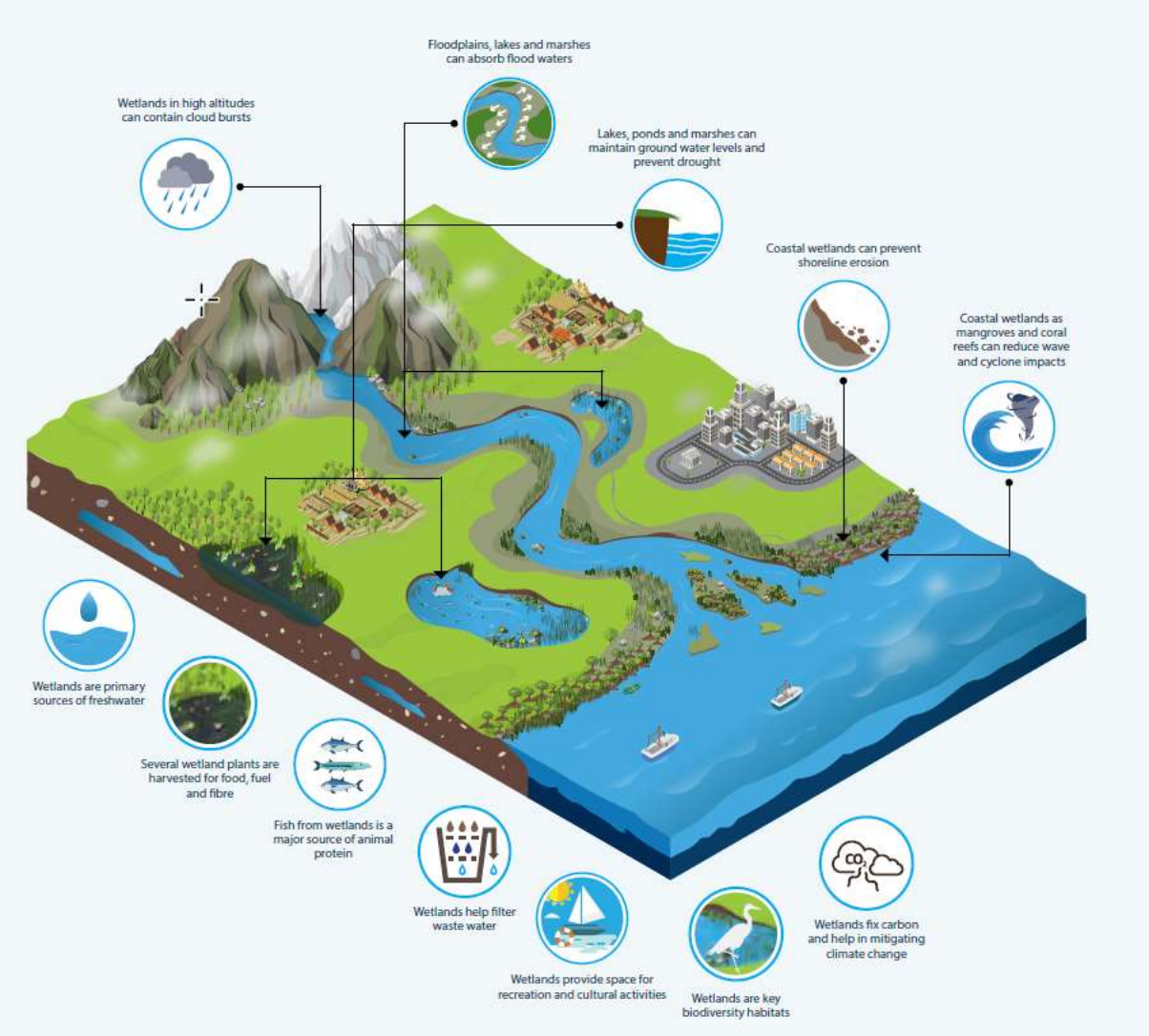
- The Talanoa Dialogue can be an important platform to promote the conservation and restoration of coastal and inland wetlands for a sustainable and safer world. NDCs and other long-term strategies provide key entry-points to discuss targets and set policies to safeguard wetlands to enhance disaster risk reduction, climate change adaptation and mitigation strategies. We recommend Priorities for Action.

How do we get there?

- As water regimes from mountains to the sea are interconnected, so are the water risks. In-depth understanding of the consequences of water-related risks for developmental objectives being pursued with a landscape, and ways ecosystem solutions can help reduce these risks is crucial. A systems approach, with specific emphasis on governance arrangements that connect biophysical and social components is critical. Wetlands International provides recommendations and stories following a *landscape* and *systems approach* that result in joined up social and ecological resilience.

- The success of achieving several SDGs is linked with healthy wetlands. Agenda 2030 is a call for concerted and affirmative action by governments, companies, civil society and communities to work together on this. Civil society can play a vital role by bringing actors together to develop and share knowledge, facilitate dialogue, broker solutions, advise on policy adjustments and investment efforts, and enable action by different sectors at all scales.

How wetlands contribute to achieving the Paris Agreement objectives:



Services provided by wetlands to people and nature © Wetlands International South Asia

Where are we?

Water-related disasters account for 90% of all disasters, and their frequency and intensity is increasing. Many of the impacts of natural hazards on socio-economic development are water-mediated[1], one of the reasons why water is also a cross-cutting theme for implementing the 2030 Agenda. The continuing uncertainty about the extent of climate change and the severity of impacts, suggests to place emphasis on **enhancing the resilience of our natural ecosystems**, which function as natural buffers in the landscape, and can make a major contribution to climate change adaptation.

For enhancing resilience to water-related hazards, in particular **coastal and inland wetlands**, are critically important as they **regulate the quantity, quality and availability of water** through the hydrological cycle by absorbing and holding water during floods, releasing water in dry periods and protecting against coastal storm surges.

In spite of the important contributions provided by wetlands, **more than 64% of wetlands have been lost** since 1900[2] through drainage and conversion, and much of the rest have been degraded. Nature that depends on freshwater is in a major decline. As the demand for water, land and food increases and climate change intensifies, **wetlands are coming under even more pressure.**

As wetlands are lost or lose their ability to effectively store and regulate water and to support food production, people are deprived of their well-being too, leading to **social tensions, conflict and eventually human displacement[3]**. It is increasingly recognized that the water crisis, i.e. the significant decline in the available quality and quantity of fresh water, should be considered as a societal risk, rather than simply an environmental one, pointing at the intersection of drought, political instability, war and migration[4].

Billions of people depend directly on the vitality of wetlands for freshwater, fish, rice and grass for grazing. The relationships between the health and management of wetland ecosystems, human security and conflict, in particular **wetland-dryland inter-dependencies**, is poorly recognized and deserves much greater attention in the context of development and humanitarian strategies.

Wetlands have a significant role in reducing CO2 emissions. Peatlands are **the world's largest terrestrial organic carbon stock** and efforts to prevent it being emitted into the atmosphere are urgently needed. The current greenhouse gas emissions from drained or burned peatlands are estimated to amount up to **five percent of the global carbon budget** - in the range of two billion tons CO2 per year[5]. These emissions can be reduced by preventing drainage for alternate land usages, threats which emerge from ill-informed water and land management decisions, and by rewetting drained peatlands and implementing alternative forms of use, such as **paludiculture (wet peatland use)**.

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[1] WWAP (World Water Assessment Programme) 2012, page 27. The United Nations World Water Development Report 4: Managing Water under Uncertainty and Risk. Paris, UNESCO.
[2] Davidson, N. 2014. How much wetland has the world lost? Long-term and recent trends in global wetland area. Marine and Freshwater Research 65.
3 Wetlands International, 2017. Water Shocks: Wetlands and Human Migration in the Sahel. Wetlands International, The Netherlands.
[4] World Economic Forum's Global Risks Report 2018.
[5] Global Peatlands Initiative, https://www.globalpeatlands.org/

Drained peatlands are also extremely **fire prone**, and fires have repeatedly destroyed millions of hectares and impacted the health of people and the economy. Loss of peat soil due to oxidation and fire further results in **subsidence of peatlands**, which in coastal lowlands brings the land surface down to sea or river level and eventually leads to frequent or **permanent flooding in settlements and loss of productive land**.

Nature that depends on freshwater is also in a major decline[6]. Wetlands are home to 40% of the world's species, including **freshwater fish** which is **the main source of protein for nearly one billion people** and accounts for at least 15% of animal protein in the diets of a further two billion people[7]. The conservation of millions of **migratory waterbirds** depends on a network of key wetlands across their annual migration route or flyway which they use for food and as breeding sites. These same wetlands are also critical to the survival of local communities. Unsustainable practices and a changing climate are threatening the health of some of these wetlands.

In recent years, scientists, practitioners and others have developed knowledge on the potential of nature based solutions, including on wetlands, as well as practical implementation guidance[8]. There are also initiatives which attempt to scale up small scale pilots that have the potential to transform whole landscapes into safer and more prosperous places. These approaches usually also require transformation at an institutional and policy level and partnerships between civil society, government and private sector actors. These are all very positive developments.

Still, investment in **green infrastructure comprises only a fraction of total investment in water resources management**[9]. Climate change adaptation and mitigation measures such as increasing energy supplies from hydropower and biofuels, and more water storages, are set to put more pressure on water flows and wetlands. This raises the need to ensure that climate policies promote positive and minimize negative impacts on wetlands.

While 65% of the NDCs stress the vulnerability of the water sector to climate change and almost 80% include adaptation measures in the water sector, **a limited number of NDC's actually identify the need to protect and restore water ecosystems**[10]. While most NDC's include adaptation measures in the water sector, these are largely focused on 'grey' infrastructure. Despite the potential gains from nature-based solutions (such as restoration and sustainable management of wetlands), they currently attract less than 1% of total investments in water resource management[11]. **Taking a fragmented approach to water management may further accentuate wetlands loss.** This can exacerbate vulnerability, including by fueling existing competition over scarce water resources and productive land, resulting in diminished livelihoods, increased risk of societal tension and conflicts. NDCs also do not yet recognize or do not quantify the contribution of peatland restoration and wise use to mitigate the impacts of climate change.

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[6] Secretariat of the Convention on Biological Diversity (2014) Global Biodiversity Outlook 4. Montréal.
[7] Ramsar – Wetland Ecosystem Services, factsheet 7 Wetland Products, available at: http://www.ramsar.org/pdf/info/services_07_e.pdf
[8] Examples include: World Bank. 2017. Implementing nature-based flood protection: Principles and implementation guidance. Washington, DC: World Bank; Integrating ecosystems in resilience practice: criteria for Ecosystem-Smart Disaster Risk Reduction and Climate Change Adaptation, Wetlands International. 2015
[9] United Nations World Water Development Report, 'Nature-based Solutions for Water', 2018
[10] Water – the common liquid thread running through Agenda 2030 and the Paris Climate Agreement. German Development Institute, 2017.
[11] WWAP (United Nations World Water Assessment Programme)/UN-Water. 2018. The United Nations World Water Development Report 2018: Nature-Based Solutions for Water. Paris, UNESCO.

Where do we want to go?

When wetlands are better safeguarded, managed and restored, their ecosystem services can greatly contribute to attenuate the water-related impacts of climate change. This can deliver a cost-effective strategy for climate adaptation with direct benefits for poverty reduction and biodiversity conservation.

Healthy wetlands and freshwater resources are also a contributing factor to holding or restoring peace, through supporting livelihoods and sustainable development, which is also emphasized by UN Environment in its Freshwater Strategy 2017 – 2021 and The Global Land Outlook, UNCCD, 2017. Conversely, continuing to ignore or overlook wetland degradation and loss in the application of development, humanitarian and climate actions, will aggravate vulnerability, poverty and social instability in many situations.

Countries therefore have the responsibility to mainstream the conservation, restoration and sustainable management of wetlands (including freshwater and coastal ecosystems) and their services as a vital strategy for a sustainable and safer world. Restoring and sustainably managing wetlands should complement other risk management measures and can be combined with hard engineered infrastructure. What is needed is the adoption of **integrated risk reduction, climate change adaptation and sustainable development programmes, with ecosystems like wetlands at the heart,** from the local level all the way up to the wider landscape or watershed. Wetlands wise use approach, endorsed by 170 Contracting Parties of Ramsar Convention, is an important and significant pathway support mainstreaming efforts.

Priorities on wetlands for enhancing climate action:

- **Safeguarding and restoring production systems linked with wetlands**:
  needed to sustain and improve food production, while increasing adaptive capacity of the landscape to climate risks. Priorities include:
  - Sustain and restore flow dynamics to Sahelian floodplains;
  - Integrate mangroves into aquaculture ponds in South-east Asia;
  - Regulate for responsible soy and palm oil production that avoids wetland and peatland drainage and pollution.

- **An improvement in the condition and extent of high mountain lakes, peatlands and floodplains:** to reduce the incidence and impacts of human induced water scarcity downstream. Such wetlands are the integrating ecosystems in the landscape that store and regulate water flows. Besides conservation and restoration of wetlands, this also requires an increase of water-use efficiency across all sectors, and ensure sustainable withdrawals and supply of freshwater. Conservation of High Altitude Wetlands of Himalayas, which buffer the water tower of the world, is a crucial step.

- **Invest in multifunctional green infrastructure solutions:**
  Reduce over-reliance on engineered infrastructure solutions and invest more in green infrastructure which can substitute, augment or work in parallel with grey infrastructure in a cost-effective and sustainable way to rebalance the water cycle. For urban planning, minimize encroachment on wetlands and rehabilitate wetland in cities and their surrounding landscapes reduces water risks.

- **Accelerate global action to safeguard and re-wet peatlands:** Besides restoration of drained peatlands, avoiding new drainage is the priority. Production systems requiring peatland drainage exist all over the world. Peatlands can be cultivated on a small scale with crops adapted to wet soil conditions.

- **Safeguard and restore floodplains, mudflats, saltmarshes and mangroves for resilient coasts and delta's** for safeguarding the prosperity and resilience of vulnerable communities. Examples include:
  - Restore mangrove and coastal ecosystems to protect vulnerable settlements and delta cities from impacts of high waves and storm surges;
  - Safeguard and restore floodplains to slow the flood pulse and reduce flooding downstream.

- **Conserve and restore coastal wetlands as an integral part of fisheries and flood risk management:** a cost-effective and adaptive solution to strengthen resilience, while achieving healthy and productive oceans through wetland serving as nurseries for both inshore and offshore fisheries. Building with Nature is an effective approach to counteract coastal erosion, rejuvenate fisheries and increase resilience along heavily modified coasts.

- **Meet obligations for wetlands under international agreements:**
  Ensure the conservation, restoration and sustainable use of inland freshwater ecosystems, including peatlands, arctic wetlands, and arid and semi-arid wetlands is linked with implementation of commitments under MEAs such as Ramsar, CBD, CMS, UNCCD and UNFCCC and Agenda 2030.

- **Identify the wetland hotspots, where wetlands are contributing to holding the peace,**
  through supporting livelihoods and sustainable development – and where loss of wetlands is contributing to insecurity. As a means to highlight dryland-wetland inter-dependencies and de-risk policies and investments at a range of scales.

How do we get there?

Include wetland targets in NDCs as a key component of climate change adaptation and mitigation

The next round of NDCs (to be communicated by 2020) provides an opportunity for countries to include wetland targets as 1) a key component of climate change adaptation and 2) for reducing greenhouse gas emissions in the land use sector.

Addressing freshwater ambitions explicitly through NDCs, National Adaptation Plans (NAPs) and other long-term strategies emphasizes the importance of freshwater strategies for adapting to climate change, and raises awareness of this in dialogues and political processes at all levels, which will help countries to:

- Step up investments in maintaining and restoring wetland ecosystem resilience.
- Prevent further losses of existing natural wetland buffers through ensuring risk-informed development instead of 'business as usual' approaches in terms of water infrastructure and coastal defense which can further undermine these buffers.
- Improve peatland management in peat-rich countries including through restoration and the development and adoption of sustainable peatland action plans.
- Act as champions and inspire and encourage others to follow their example.
- Include wetland indicators within monitoring systems for global processes, for instance in the context of the Sendai Framework, Sustainable Development Goals and the Paris Agreement.
- Highlight where (climate) finance, capacity building and other forms of support may be needed to support implementation of wetland actions.
- Act as wetland champions providing best practice and bilateral support to other countries with wetland hotspots.
- Build evidence and inform business cases that investing in wetlands as green infrastructure and hybrid (grey-green) approaches are robust and cost-effective solutions under uncertain climate scenarios to avoid damages and casualties from disasters and build resilience of most vulnerable communities, while offering multiple benefits to society and our economy.
- Encourage pre-investment, regulations and incentives that promote the design and testing of innovative green and hybrid engineering approaches to counter water risks, so to increase confidence and unblock obstacles for investment by the public and private sector.

In their NDC's Parties can indicate how they will create an enabling environment to safeguard and restore wetlands, and specify the policies and actions that will support this.

Examples could be:

- Moratoria on new conversion or drainage of wetlands, and adoption of no-net loss of wetlands.
- Investments in conservation and restoration of wetland hotspots (critical wetland systems).
- Implementation of wetland management plans.
- Wetland law enforcements.
- Sectoral policies to ensure risk-informed development that provides net-benefits to wetlands, such as in the agriculture and energy sectors.
- Strengthen sectoral institutions, giving responsibilities to enhance wetland management.
- Inventories of greenhouse gas emissions from degraded wetlands.

Understanding and assessing Wetlands Hotspots

We recommend that governments give priority to having a better understanding of "wetland hotspots" and their current situation, in which they consider both the regulating (hazard mitigation) and provisioning services (e.g. food, water, shelter) provided by ecosystems in risk assessments. Wetland hotspots include both wetlands that are contributing to climate resilience and holding the peace, as well as wetlands that are contributing to increased risk and insecurity, through degradation or disappearance. Hotspots can for example be identified through the creation of national information database through re-inventory and assessment of all wetlands, and assessed by including wetlands in national and regional vulnerability indexes. We recommend that countries are supported through guidance on "wetland hotspot" mapping and vulnerability assessment.

Coherence and mutual reinforcement across international commitments and frameworks

Countries should ensure coherence and mutual reinforcement between wetland solutions, disaster risk reduction and climate change adaptation across obligations under other international agreements. They should therefore aim to identify synergies with national commitments on wetlands and to drive commitments and action together such as working through existing Memoranda; for achieving their targets under, amongst others:

The Paris agreement, The Sendai Framework for Disaster Risk Reduction, The 2030 Agenda, The United Nations Convention to Combat Desertification (UNCCD), The Ramsar Convention on Wetlands, AICHI targets (Convention on Biological Diversity), National security plans, regional security plans and strategies of Regional Economic Integration Organisations in relation to inter alia migration, security, climate action, land degradation and development assistance, and Regional agreements such as the African-Eurasian Waterbird Agreement (AEWA) which ensuring that a comprehensive and coherent flyway network is established and maintained.

Support the role of civil society to help drive synergies and creating an enabling environment

In addition to actions by national governments, non-Party stakeholders can play an important part in addressing the safeguarding, restoration and better management of wetlands. Civil society organisations can help to create the necessary enabling policy environment, by bringing actors together to share knowledge, facilitate dialogue, broker solutions, advice on policy adjustments and investment efforts, and enabling community engagement.

Landscape level planning

Coordination is key, both within the wetland community, with peace and humanitarian actors and between development sectors, at all levels. The aim is to look for synergies and to raise awareness in dialogues and political processes, resulting in needed actions to conserve and sustainably use wetlands. There is therefore a huge need to break through the silos of different sectors and match their interests, planning and instruments. This means *we must move towards inter-sectoral collaboration with regards to wetlands, water and land management*, if we want to prevent that efforts to reduce disaster risks, adapt to climate change and promote sustainable development will fail in the longer term, impacting communities[12].

[12] United Nations Convention to Combat Desertification. 2017. The Global Land Outlook, first edition. Bonn, Germany, Chapter 8 - Water Resources, page 160.

Such collaboration requires the creation of joint understanding of exposure, vulnerability and root causes of risk, and it requires trust between stakeholders and collaboration, based on a joint vision. With regards to water-related hazards, underlying problems of vulnerability often play out at a landscape scale, sometimes far away in the landscape and over long timescales. For example, infrastructure investments for hydropower or irrigation upstream can create enhanced risks for downstream communities.

It is Wetlands International's experience that by connecting water and land users and other stakeholders on a landscape scale, such as in an entire watershed, a participatory learning process can be facilitated which enables more innovative and integrated solutions such as green infrastructure and optimised initiatives on water governance. A landscape approach brings actors together to map vulnerability, jointly learn and share knowledge on potential (and innovative) solutions, facilitate dialogue over trade-offs, identify the need for adjustment of policies and regulations, and identify finance options.

When natural resources cross borders, such as within river basins and along coastlines, there needs to be collaboration at the transboundary level to assess risk at landscape scale and define coordinated, transboundary risk reduction strategies and actions.

The landscape approach also allows the adoption of a system-wide analysis of the local socio-economic, environmental, and institutional conditions, which is required to assess options and design for nature-based solutions for climate change adaptation and disaster risk reduction. In addition to considering appropriate spatial scales, a long time frame should be adopted to exploit the full potential of nature-based solutions.[13]

Typically the poorest and most disadvantaged have the least say in managing the natural resources on which they depend. However, they should be closely engaged in landscape scale planning, as

- There is a need for real understanding of how people interact with natural resources, including seasonal variations etc, to gain support for the measures and ensure they will benefit.
- Local communities can actively support by building their resilience against floods, droughts, heat waves and hurricanes, by planting more climate-tolerant seed varieties, by enhancing wetlands, floodplains and lakes, by terracing hillsides, and by opting for farming systems such as agroforestry.

Case: Landscape scale Disaster Risk Reduction: Wetland restoration to reduce water risks, India
The Mahanadi delta and Kosi-Gandak floodplains in India are home to millions of farmers and fishers who used to benefit from the dynamic and nutrient rich floods within the landscape. Dams and dykes have led to the fragmentation of water regimes, and in the coastal region the mangrove ecosystems are highly degraded or even lost. This leaves communities vulnerable to droughts, floods and cyclones. Wetlands International and its local partners in the Partners for Resilience alliance bring stakeholders in the landscape together to increase community resilience through integrating ecosystem restoration with engineering solutions, early-warning and preparedness measures. We leveraged large scale financial and technical support for our approach through developmental schemes of the state governments.
www.partnersforresilience.nl

It would be a big step forward to replicate such landscape scale initiatives. We believe that this, alongside sharing actual, promising examples with measurable outcomes, will help build confidence to reach scale through larger public and private investments.

[13] World Bank. 2017. Implementing nature-based flood protection: Principles and implementation guidance. Washington, DC: World Bank.

A Landscape Approach for Disaster Risk Reduction in 7 steps

By CARE Nederland and Wetlands International

Step 1 CARRY OUT AN INITIAL ASSESSMENT OF THE RISK LANDSCAPE

- Find common concerns
- Understand drivers of risk, capacities and assets of communities and their enabling environment
- Conduct organisational self assessment
- Go/no go decision

Step 2 CONDUCT AN IN-DEPTH STAKEHOLDER ANALYSIS AND POWER MAPPING

- Stakeholder analysis
- Explore gender dimension
- Develop business case per key stakeholder

Step 3 STIMULATE MULTI-STAKEHOLDER PROCESSES AND CREATE COALITIONS OF THE WILLING

- Build on existing initiatives
- Create a coalition of the willing
- Agree on the core problem
- Strengthen stakeholder capacity

Step 4 CONDUCT A COLLABORATIVE, IN-DEPTH PROBLEM AND SOLUTION ANALYSIS

- Identify root causes
- Explore stakeholders' roles in relation to the core problems
- Include traditional, local and scientific knowledge
- Identify possible solutions

Step 5 CARRY OUT COLLABORATIVE (ACTION) PLANNING

- Develop landscape scenarios
- Agree on tasks, responsibilities and communication strategies
- Keep funding in mind
- Divide the landscape into manageable units

Step 6 ORGANISE COLLABORATIVE IMPLEMENTATION

- Implement interventions that address drivers of risk, capacities and assets of communities, and the enabling environment
- Secure quick wins
- Link long-term risk reduction goals to socio-economic benefits
- Make use of synergies
- Promote ownership

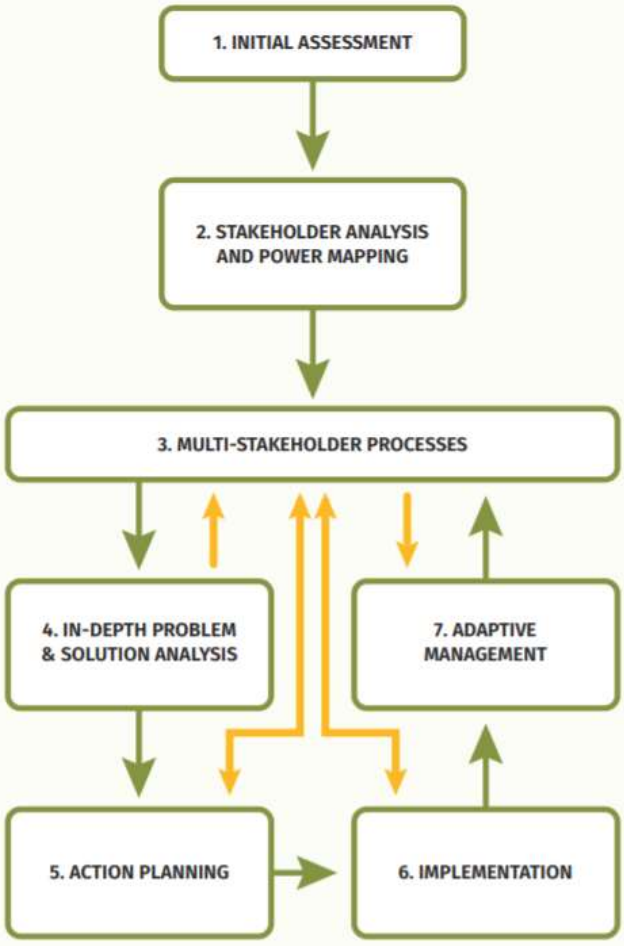
Step 7 PROMOTE ADAPTIVE MANAGEMENT

- Track changes in drivers of risk, capacities and assets of communities and enabling environment
- Involve research institutes in M&E
- Use M&E outcomes to improve landscape management
- Ensure flexible project management

A landscape approach is an interdisciplinary, cross-sectoral and holistic approach to help overcome barriers by sector and contribute to effective risk management by connecting all stakeholders involved, starting with the communities at risk in the landscape.

Main characteristics of the landscape approach:

- It places **communities at the centre**
- It takes into account **all actors**
- It examines the **entire landscape in which risks originate and manifest themselves**
- It includes an **analysis of the hydrology**
- It integrates **ecosystem management and restoration**
- It manages **trade-offs**
- It is **flexible to future changes**
- It demands for a **long-term perspective**



www.wetlands.org/publications/landscape-approach-disaster-risk-reduction-7-steps/

Existing initiatives and collaborations that support implementation or provide new avenues for cooperation and enhanced action on wetlands and resilience building

Global Peatlands Initiative

This initiative brings together UN agencies, governments, and NGOs to support countries in the conservation, better management and restoration of peatlands, and to facilitate South-South cooperation. In this way, the Initiative contributes to reducing greenhouse gas emissions, maintaining ecosystem services and securing lives and livelihoods through improved adaptive capacity. Wetlands International is a member of the Global Peatlands Initiative. www.globalpeatlands.org

Restoring peatlands in Russia wins UN Momentum for Change Award

This award recognised the benefits of techniques to rewet abandoned cutover peatlands in Russia as one of the 'Lighthouse Activities' for tackling climate change. The initiative, supported by the German government (IKI) and developed by Wetlands International restored over 35,000 ha of drained peatlands using ecological methods, reducing 175,000 to 220,000 ton CO2 per year, and also saved lives and benefitted wildlife. With such support, the momentum for change can continue and grow to benefit people and nature alike. www.wetlands.org/news/peatrus-wins-un-momentum-change-award/

Strategic planning and peatland restoration pilot in Mongolia

In collaboration with the government of Mongolia and funded by the Asian Development Bank, Wetlands International developed a Strategic Plan that shows the way for sustainable peatlands management in Mongolia. Mongolia's peatlands regulate water in riverine highland landscapes, which prevents desertification and supports livelihoods and biodiversity. They are also important carbon stores. The loss of the peatlands and permafrost due to both climate change, overgrazing, mining and unsustainable water use has led to disasters for people and their cattle during long periods of droughts. The strategic planning approach could be expanded to countries with similar problems, such as Central Asia and China. www.wetlands.org/news/wetlands-international-leads-strategic-planning-for-peatlands-of-mongolia/

Paludiculture: cultivating peatlands with crops adapted to the wet soil condition

Conserving and rehabilitating drained peatlands does not mean that these areas become off-limits to economic activity. A practice known as paludiculture shows that rewetted peatlands can be cultivated with crops adapted to the wet soil conditions. This can reduce or even stop greenhouse gas emissions from peatlands and provide sustainable livelihoods from peatlands as a basis for local business. There are hundreds of commercially interesting species that can be used for this. Support to the development of a regional paludiculture platform in Southeast Asia would stimulate cross-sectoral (pulp wood and palm oil) knowledge exchange and learning, advocacy and facilitate pilot projects. www.paludiculture.com

Ecoshape: putting in place climate-resilient infrastructure through Building with Nature

Within Ecoshape engineering companies, research institutes, governments and NGOs join forces in the pre-competitive space to invest in developing and sharing knowledge about Building with Nature solutions to substitute or complement grey infrastructure for vulnerable coasts and deltas. By testing theories in practice, knowledge can be made applicable for other locations with comparable systems. For example in the heavily eroded coast of Java Consortium partners including Wetlands International restore mangroves and introduce sustainable aquaculture. www.ecoshape.nl

PEDRR partnership

The Partnership for Ecosystems for Adaptation and Disaster Risk Reduction (PEDRR) seeks to promote and scale-up implementation of ecosystem-based disaster risk reduction and Ecosystem-based Adaptation, and ensure it is mainstreamed in development planning at global, national and local levels. www.pedrr.org

Global Mangrove Alliance

An initiative by Conservation International, The Nature Conservancy, World Wildlife Fund, IUCN and Wetlands International to increase the global area of mangrove habitat 20% over current extent by the year 2030, to deliver climate adaptation, climate mitigation, sustaining biodiversity and improving human well-being. The alliance aims to build a global community committed to securing mangroves, bringing together technical experts, civil society organizations, governments, local communities, businesses, funding agencies and foundations. www.mangrovealliance.org/.

Mangrove Capital Africa

Mangrove Capital Africa (MCA) Programme is a 10-year programme whose vision is: Mangroves and their biodiversity are healthy, improving the livelihoods of millions of people and protecting them against the dangers of climate change. It targets the coasts of East and West Africa, initially focusing on the Saloum Delta in Senegal and the Rufiji Delta in Tanzania, with the aim to expand to cover sites in Kenya, Guinea-Bissau, Nigeria, Mozambique, Sierra-Leone, the Congo (Brazzaville), Guinea and Madagascar. https://africa.wetlands.org/en/publications/mangrove-capital-africa-rufiji-delta-brochure/

Urban Water Dialogues, Panama City

Sub-districts of Panama City have become flood-prone due to urban developments and landfills in floodplains, riverbeds and mangroves. Dutch water experts, supported by Wetlands International, advised to start 'Water Dialogues', to facilitate a participatory learning process for identifying root causes to risk, innovative solutions such as 'Building with Nature' and ways to optimise water governance, and for restoring trust among stakeholders. This resulted in a watershed analysis, an innovative design for flood risk reduction, and an Action Plan for regulatory adjustments and community action. Water Dialogues can be replicated in other landscapes: www.wetlands.org/publications/landscape-scale-disaster-risk-reduction-urban-water-dialogues-panama-city/

Corredor Azul: mobilising alternative development pathways in La Plata basin

The Corredor Azul programme encompasses the fourth largest wetland system in the world, the heart of which is the Paraná River and the Paraguay River in South America. The programme aims to prove that inclusive management practices, sustainable production of crops, and traditional livelihoods are among the solutions to safeguard and use one of the biggest freshwater wetland systems on earth. It will mobilise efforts by bringing together civil society organisations, the private sector, academia and governments. https://www.wetlands.org/news/new-ten-year-corredor-azul-programme-south-america/

Partners for Resilience: reverse land degradation, enhance livelihoods and climate adaptation

Partners for Resilience (PfR) works in ten countries to help vulnerable communities to cope with droughts, floods and other hazards which partly result from degraded ecosystems and a changing climate. PfR is an alliance of Red Cross, Climate Centre, CARE, Cordaid and Wetlands International, combining the skills of humanitarian, development and environmental sectors in the formulation of risk reduction strategies and bottom-up influence of policies and investments on water-related disasters at different geographic scales. www.partnersforresilience.nl

Climate resilient flyways (CRF)

Migratory waterbirds depend on a network of key wetlands across annual migration routes or flyways. The CRF programme assesses the vulnerability of Critical Sites in Mali and Ethiopia to climate change, and carries out wetland restoration projects to increase the resilience of both waterbird populations and local communities. These pilots will serve as examples for other communities to follow – and inform governments on how they can adapt to climate change by sustainably managing their wetlands. www.wetlands.org/casestudy/creating-climate-resilient-wetlands-for-waterbirds-and-communities-across-the-african-eurasian-flyway/

Selection of frameworks and reports that support enhanced action on wetlands

Paris agreement: recognises protecting the integrity of ecosystems and biodiversity for both climate change mitigation and adaptation actions. It specifically lays out principles of adaptation that takes ecosystems into consideration. It also calls for integrating adaptation into relevant environmental policies and actions, where appropriate, as well as for building resilience of ecosystems through sustainable management of natural resources.

Sustainable Development Goals: a major pillar of the SDGs is protecting the planet from degradation, including through sustainably managing its natural resources, which is explicitly addressed under targets of Goals 2, 6, 8, 11, 14 and 15.

Ramsar Convention on Wetlands: Resolution X.24 Climate change and wetlands highlights how wetlands deliver a wide range of ecosystem services that contribute to human well-being, climate change mitigation and/or adaptation; and calls upon Parties to include in national climate change strategies the protection of all types of critical wetlands. Resolution XII.13, Wetlands and disaster risk reduction points at the devastating impacts of disasters on the maintenance of healthy wetlands, and the role of fully functioning wetland ecosystems in enhancing local resilience, and calls for the integration of wetland-based disaster risk reduction into national strategic plans and relevant policies and planning

Sendai Framework for Disaster Risk Reduction treats ecosystems as a crosscutting theme. Ecosystems need to be taken into account in undertaking risk assessments (Priority Action 1), in risk governance (Priority Action 2) and investing in resilience (Priority Action 3), and it explicitly mentions wetlands. The Global Platform on DRR in 2017 recognised the priority needed to manage water risks and nature-based solutions and green infrastructure for successful disaster preparedness, disaster risk reduction and climate change adaptation.

Decision XII/20 on Biodiversity and Climate Change and DRR from the Convention on Biological Diversity calls on governments and other relevant organisations to promote Eco-DRR/CCA approaches and integrate these into their respective policies and programmes. CBD Aichi Targets 15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

Nature-based Solutions for Water,' 2018 edition of the annual World Water Development Report discusses the "opportunities to harness the natural processes that regulate various elements of the water cycle" and draws attention to the ways that adopting nature-based solutions, or approaches that mimic or preserve ecosystem processes and functions can contribute to the achievement of the Sustainable Development Goals.

The UNE Freshwater Strategy 2017 – 2021 guides work around freshwater and aims to unlock the potential of integrated collaboration on freshwater issues globally. Strategic priorities include protecting and restoring freshwater ecosystems (SDG target 6.6), advancing Integrated Water Resources Management (SDG target 6.5) and promoting resilience and addressing the environmental aspects of water-related disasters and conflict (SDG targets 11.5 and 16.1).

UNCCD: The Global Land Outlook, UNCCD, 2017 underlines the key role of wetlands to water security and points at the contribution that water insecurity can make to social instability and political insecurity, causing tensions between and especially within countries. UNCCD's 10-year Strategic Plan and Framework (2008-2018), specifically recognizes the important services provided by ecosystems, especially in dryland ecosystems, for drought mitigation and the prevention of desertification.

According to the World Economic Forum's Global Risks Report 2018, water crises are in the top 5 global risks in terms of impact. Water crisis are described as "a significant decline in the available quality and quantity of fresh water, resulting in harmful effects on human health and/or economic activity". The WEF's Global Risks Reports have now included water crisis for seven years in a row in their impact top 5.

The EU Global Strategy for the European Union's Foreign and Security Policy: Shared Vision, Common Action: A stronger Europe, 2016 aims for an integrated approach to conflicts and crises. It commits to monitoring root causes such as resource stress and climate change – which is considered a threat multiplier that catalyses water and food scarcity, pandemics and displacement - and seeks to enhance energy and environmental resilience.

The OECD multidimensional framework on fragility recognizes environmental fragility as one of the five dimensions of fragility, next to economic, political, security and societal fragility. The environmental dimension of fragility includes natural disasters such as floods and droughts and is also measured by other factors such as the quality of air, water and sanitation.

Climate change is seen as a stressor that may lead to heightened risk of violence and conflict in an already fragile setting (OECD, 2017: States of Fragility 2016).

The World Bank report Turbulent Waters, Pursuing Water Security in Fragile Contexts (2017) describes the dynamic between water insecurity and fragility. The report focuses on three main issues: provision of basic water services, protection from water-related disasters and preservation of surface, ground and transboundary water resources. It concludes that failures in these mechanisms can give rise to a vicious circle of water insecurity and fragility.

The High-Level Panel on Water and Peace concludes that the global water challenge is not only about development and human rights but it is also about peace and security. It briefed the UN Security Council about the Panel's work. The subsequent discussion, in which 69 UN Member States participated, showed a growing sense of urgency on the issues of water and peace, and readiness to continue the discussion with a view to developing adequate responses (A Matter of Survival, 2017).

The Hague Declaration on Planetary Security of the Planetary Security Conference (2017), points at climate-related risk as a key factor of human security and conflict, focusing on joint risk assessment in Lake Chad, climate and conflict sensitive development in Mali and sustainable water strategies in Iraq.

African governments launched the Security, Stability and Sustainability initiative at the Climate Change Conference in Morocco on 16 November 2016. The 3S Initiative aims to address the root causes of instability in Africa, particularly migration and conflict related to natural resource degradation. The 3S Initiative wants 1) to prevent climate change risks becoming disasters, 2) to create wealth by restoring land and livelihoods and 3) to go from fragility to resilience. The latter includes creating guidance, tools and initiatives that are both climate sensitive and conflict sensitive.

The UN Security Council recognises the adverse effects of climate change and ecological changes among other factors on the stability of West Africa and the Sahel region, including through drought, desertification, land degradation and food insecurity (Statement by the President of the Security Council, 30 January 2018).

African-Eurasian Waterbird Agreement (AEWA): Ensuring that a comprehensive and coherent flyway network is established and maintained is a key target of the AEWA. The AEWA agreement has also adopted resolutions detailing actions for climate change adaptation and wetland conservation.

Wetlands International is a global not-for-profit organisation dedicated to the conservation and restoration of wetlands for their environmental values as well as for the services they provide to people.

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