State of global wetlands and implications for the Sustainable Development Goals

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…. the continuing losses and degradation of wetlands have resulted in diminished ecosystem services, despite the importance of wetlands….

While information gaps remain … the trend is unmistakable: wetlands continue to be lost and degraded.
Background – claimed 50% global wetland loss

Widely reported that 50% of world’s wetlands have been lost (or lost since 1900), but the provenance of this figure was obscure.

Came from reports in the USA in mid-1950s based on limited data but became widely received wisdom and was then restated as a global figure.

It was an alarming figure and despite being widely (and inaccurately) used it did not generate sufficient effort to really turn it around globally,
Review of 189 reports - the long-term loss of wetlands averaged 54–57% but may have been as high as 87% since 1700.

3.7 times faster rate of wetland loss during the 20th and early 21st centuries, with a loss of 64–71% since 1900.

Losses have been larger and faster for inland than coastal wetlands. Unexpected result.

Rate of loss in Europe has slowed, and in North America remained low since 1980s, but remained high in Asia.
Approx 40% decline in wetland sites across the world in the extent of both marine/coastal and inland wetlands over 40 years.

Based on data from more than 1000 wetland sites globally between 1970 and 2008. Regions and individual sites vary sharply.

Also found that “human-made wetlands have increased, especially in southern Asia due to conversion of natural wetlands into rice paddies.” This gain does not offset the losses in natural wetland area.

Global Biodiversity Outlook-4 technical report 2014
The global average marine/coastal and inland wetland extent trends relative to extent in 1970 and up to 2008 as estimated by the Wetland Extent Index.
Assessment of population abundance also demonstrates a negative trend. The abundance of monitored populations of freshwater species declined an average of 76% over the past 40 years.

The Freshwater LPI is based on data on population changes in species of vertebrates and is geographically biased towards temperate regions. Hence, it may under-represent the loss of freshwater biodiversity given the rates of biodiversity loss determined for other regions.
Figure 2

Freshwater Living Planet Index
adapted from WWF (2014)

The Freshwater Living Planet Index shows a decline of 76% between 1970 and 2010 based on trends in 3,066 populations of 757 mammal, bird, reptile, amphibian and fish species.
CBD SBSTTA (2014) reports that trends for the Red List Index for wetland birds, mammals and amphibians are negative. Wetland species in these groups are increasingly moving towards extinction, and that conservation successes are outweighed by worsening pressures.

Garcia-Moreno et al. (2014) point out that “information gaps in the tropics” mean that the overall threat “may be even greater than currently estimated.”
Figure 3

Red List Index of species survival for wetland birds, mammals, amphibians, corals and in aggregate
adapted from CBD SBSTTA (2014)
Change in Ramsar sites

Living Planet Index used to examine change in vertebrate populations in subset of Ramsar sites – 172 in 74 countries. Average trends in abundance showed an increase by 40% - some data limitations
Ramsar site analysis disaggregated into temperate and tropical.
Mediterranean wetlands

Mediterranean Wetland Observatory – decrease of 10% from 1975-2005 in 214 sites. An underestimate of total regional loss as only wetlands present in 2005 were analysed.
Its not all bad news

In USA freshwater breeding birds (data on 87 spp) have increased by more than 40% since 1968.

Birds wintering long USA coasts have a 28% gain since 1968, including 8% in most recent 5 years.

In contrast long-distant migrant shorebirds in USA have declined by 50% since 1974.

Populations of some waterbird species in northern Mediterranean have increased in recent decades.
Wetland loss in conterminous USA from 2004-09

– annual loss of ca 32,400 ha, or 1% of the wetland area

- reduced rate of loss compared to previous decades (Dahl and Stedman 2013)

- restoration not replacing the loss
2. Causes of wetland loss and degradation

Millennium Ecosystem Assessment 2005 –
-population growth and economic development
-infrastructure development, land conversion,
-water withdrawal, eutrophication and pollution,
-overharvesting and over-exploitation, and
-introduction of invasive alien species

Global climate change to exacerbate the loss and degradation of wetlands and decline of populations, and increase the prevalence of vector-borne disease.
Figure 2. Population of the world: estimates, 1950-2015, medium-variant projection and 80 and 95 per cent confidence intervals, 2015-2100

## Population growth

### Table 1. Population of the World and Major Areas, 2015, 2030, 2050 and 2100, According to the Medium-Variant Projection

<table>
<thead>
<tr>
<th>Major area</th>
<th>Population (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2015</td>
</tr>
<tr>
<td>World</td>
<td>7,349</td>
</tr>
<tr>
<td>Africa</td>
<td>1,186</td>
</tr>
<tr>
<td>Asia</td>
<td>4,393</td>
</tr>
<tr>
<td>Europe</td>
<td>738</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>634</td>
</tr>
<tr>
<td>Northern America</td>
<td>358</td>
</tr>
<tr>
<td>Oceania</td>
<td>39</td>
</tr>
</tbody>
</table>

More than population size – consumption and water demands of changing diets

*Photos from Diet for a Small Planet*
Food demand doubles over the next 50 years because of diet and population growth.

Water Needs (ET) will double – without water productivity gains.

Changes in runoff and reservoir capacity

- Intercepted runoff
- Withdrawals from rivers and lakes doubled since 1960
- Amount of water in reservoirs quadrupled since 1960
Global water demand

Global water demand in 2050 is projected to increase by 55%.

Growing demand from manufacturing, thermal electricity generation, and domestic use, much due to urbanization in developing countries.

World Water Development Report 2015
Trends and scenarios for wetlands

<table>
<thead>
<tr>
<th></th>
<th>Habitat change</th>
<th>Climate change</th>
<th>Invasive species</th>
<th>Over-exploitation</th>
<th>Pollution (nitrogen, phosphorus)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inland water</td>
<td>🍃</td>
<td>🌈</td>
<td>🍃</td>
<td>🌻</td>
<td>🌱</td>
</tr>
<tr>
<td>Coastal</td>
<td>🍃</td>
<td>🌈</td>
<td>🍃</td>
<td>🌻</td>
<td>🌱</td>
</tr>
</tbody>
</table>

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Driver’s impact on biodiversity over the last century:
- Low: Decreasing impact
- Moderate: Continuing impact
- High: Increasing impact
- Very high: Very rapid increase of the impact

Driver’s current trends:
- Low: Decreasing impact
- Moderate: Continuing impact
- High: Increasing impact
- Very high: Very rapid increase of the impact

Source: Millennium Ecosystem Assessment
3. Sustainable Development Goals

Concerns about global change and the adverse consequences for people have resulted in the adoption by the UN of Sustainable Development Goals (SDGs).

Global commitment for eradicating poverty in all its forms and dimensions, and an indispensable requirement for sustainable development - economic, social and environmental sustainability in a balanced and integrated manner.

17 individual SDGs and 169 aspirational and global targets; the responsibility of governments to establish own national targets.
Sustainable Development Goals

1. End poverty in all its forms everywhere
2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture
3. Ensure healthy lives and promote well-being for all at all ages
4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
5. Achieve gender equality and empower all women and girls
6. Ensure availability and sustainable management of water and sanitation for all
7. Ensure access to affordable, reliable, sustainable and modern energy for all
8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
10. Reduce inequality within and among countries
11. Make cities and human settlements inclusive, safe, resilient and sustainable
12. Ensure sustainable consumption and production patterns
13. Take urgent action to combat climate change and its impacts
14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development
15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.
16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
17. Strengthen the means of implementation and revitalize the global partnership for sustainable development
The Ramsar Convention on Wetlands and the SDGs

Goal 6: Ensure availability and sustainable management of water and sanitation for all

All of Ramsar’s Strategic Plan targets contribute towards the achievement of the SDG on water.

It supports the monitoring of SDG Target which calls for the protection and restoration of water related ecosystems. Proposed to use the \% change in extent of wetlands over time using national wetland inventories, and national reports submitted every 3 years.
The Ramsar Convention on Wetlands and the SDGs

Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Target 15.1…ensure conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services….. In line with obligations under international agreements.
Wetland loss continue in the 21st century. GBO-4 provided a mid-term assessment of progress.

- Target 5- reduce habitat degradation and fragmentation
- Target 14 calls for ecosystems that provide essential services, including those related to water, to be restored and safeguarded

The GBO-4 found that wetlands, including river systems, continue to be fragmented and degraded and that ecosystems particularly important for services are still in decline.
**The water-food-energy nexus in Africa**

**Water security:** The availability of an acceptable quantity and quality of water for health, livelihoods, ecosystems and production, coupled with an acceptable level of water-related risks to people, environment and economies (Grey and Sadoff, 2007).

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*Institute for Land, Water and Society*
4. Concerns – adequacy of international processes

Ramsar Convention – 40 years of wetland loss / decline
Have these processes helped stem the rate of loss?

Responses to SDGs – will lifting people out of poverty lead to more wetland loss/decline by further focus on the activities that caused the wetland loss/decline?

Have we adequately shown that the cost of preventing further degradation of wetlands (as we know them) is worth it – valuation of water supply, fisheries, regulatory services etc suggest it could, but has not yet done it…..or are we missing something?
The data resource itself - wetland area – global and sub-global

<table>
<thead>
<tr>
<th>Region</th>
<th>1999 Global Review of Wetland Resources (million hectares)</th>
<th>2004 Global Lakes and Wetlands Database (million hectares)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>121–25</td>
<td>131</td>
</tr>
<tr>
<td>Asia</td>
<td>204</td>
<td>286</td>
</tr>
<tr>
<td>Europe</td>
<td>258</td>
<td>26</td>
</tr>
<tr>
<td>Neotropics</td>
<td>415</td>
<td>159</td>
</tr>
<tr>
<td>North America</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Oceania</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total area</strong></td>
<td>[S America under-estimate in 1999. Hess et al (2015) added 84 x 10^6 ha]</td>
<td></td>
</tr>
</tbody>
</table>

Millennium Ecosystem Assessment 2005
I think we have a common vision [for the SDGs]?

….. it’s the pathway that I am not convinced about.

Thank you