

Wetlands and agriculture: Impacts of farming practices and pathways to sustainability

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Transforming agriculture to sustain people and wetlands

Wetlands are one of the world's most important ecosystems. Covering over 1.5 billion hectares they sustain people, biodiversity, cultural traditions and help to regulate the environment. Conserving and enhancing the natural capital of wetlands, in line with the strategic objectives of the Convention on Wetlands¹, is critical to achieve the Sustainable Development Goals (SDGs).

Wetlands continue to be lost and degraded due to unsustainable agricultural development. Estimates based on available data show that approximately 35% of the world's wetlands have been converted to other land uses since 1970, with agriculture being one of the main drivers of change. More than half of the Wetlands of International Importance (Ramsar Sites) are negatively affected by agricultural practices.

Wetlands support agriculture as a source of water for crops and livestock, as habitat for aquaculture and rice production and by providing fertile land. Transformative action is needed to reverse the trend of wetland loss and degradation while simultaneously providing food security and responding to anticipated impacts of climate change on wetlands and agriculture. In well managed agricultural systems, wetlands are considered assets that support food production, good water management and ecosystem resilience.

This Policy Brief identifies priority actions across sectors to increase the sustainability of agriculture and promote the wise use of wetlands. These actions deliver on the Sustainable Development Goals (e.g., SDG 6, SDG 12 and SDG 15) as well as the goals and objectives of the Strategic Plan of the Convention on Wetlands (e.g., Goal 1 Addressing the Drivers of Wetland Loss and Degradation) while supporting critical efforts to respond to global climate change.



An Oriental White Stork flying over a human-made wetland (rice paddy), Japan. ©Tokyo City

- 1 Ramsar Strategic Plan 2016-2024, available at <https://www.ramsar.org/sites/default/files/2016-07/strategic-plan-2016-2024.pdf>
- 2 "Agriculture" is the deliberate effort to cultivate crops and/or raise livestock for sustenance or economic gain, and includes: fisheries, marine products, forestry and primary forestry products. For the purposes of this Policy Brief, the focus is on livestock, cropping and aquaculture agricultural systems.



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Wetlands and agriculture: impacts of farming practices and pathways to sustainability

Purpose

This Briefing Note aims to support policy makers and practitioners to implement more sustainable agricultural practices to ensure the wise use of wetlands. It calls for an integrated approach across the agriculture, water and wetland management sectors to avoid further wetland degradation while providing food security.

Background

Resolution XIR.19 on Sustainable agriculture in wetlands requested that the Scientific and Technical Review Panel (STRP) of the Convention on Wetlands compile and review information on positive and negative impacts of agricultural practices on wetlands. The STRP 2019-2021 work plan adopted at the 57th meeting of the Standing Committee identified Task 3.2 on sustainable agriculture and wetlands as a high priority. This Briefing Note presents scientific and technical information of agricultural impacts on wetlands; the corresponding Policy Brief 6 provides analysis and recommendations for policy makers.

Transformation of agricultural practices and systems is needed to reverse the trend of wetland loss and degradation, while simultaneously providing food for the increasing human population and maintaining adequate food production in a time of rapid environmental change. Wetlands are part of the agricultural system – they provide water for crops, livestock and aquaculture, habitat for rice production and pond fisheries and help to regulate the environment. Wetlands, however, are also subject to significant pressure from agriculture as a result of land conversion, excessive use of nutrients and pesticides, non-sustainable extraction or diversion of water, and over-exploitation of biodiversity.

This briefing note summarises current global knowledge on wetland-agriculture interactions and draws attention to case studies that provide positive examples of efforts to transition to wise use of wetlands as a contribution to more sustainable agriculture. It calls for immediate action to address the most pressing issues facing wetlands – particularly through dialogue between the wetland and agriculture sectors.



Flooded savanna and forest of the Rio-Hacha Wetland of International Importance, Colombia



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The issue

- ❖ Wetlands support agriculture, as a source of water for crops and livestock, as habitat for aquaculture and rice production
- ❖ Yet, across Europe, the Americas, Oceania, Asia and Africa, wetlands continue to be lost and degraded due to agricultural development



For example, recent studies in New Zealand and China found that >60% of wetland loss was associated with agricultural development

STRP task on wetlands and agriculture: Our goals

- ❖ Synthesise knowledge from **global assessment reports**
- ❖ Compile information on the **impacts** of agricultural systems and practices on wetlands
- ❖ Summarise data on the effects of agricultural development on **Ramsar Sites**
- ❖ Collate **case studies** that highlight transformational pathways
- ❖ Provide **policy recommendations** for agricultural and wetland sectors



Global situation – summary of assessment reports

1.7 billion people live in river basins under water stress (UNCCD 2017)

2.9 billion people have an unsafe or risky water supply (UNCCD 2017)

20% of earth's land surface is degraded (UNCCD 2017)

35% of the world's wetlands have been lost since 1970 (Darrah et al. 2019)

Increased agricultural production is needed to feed people (FAO/IWMI 2018)

70% of all water extraction is for agriculture (FAO 2011)

9x more N-fertiliser is applied compared to the 1960s (FAOSTAT)

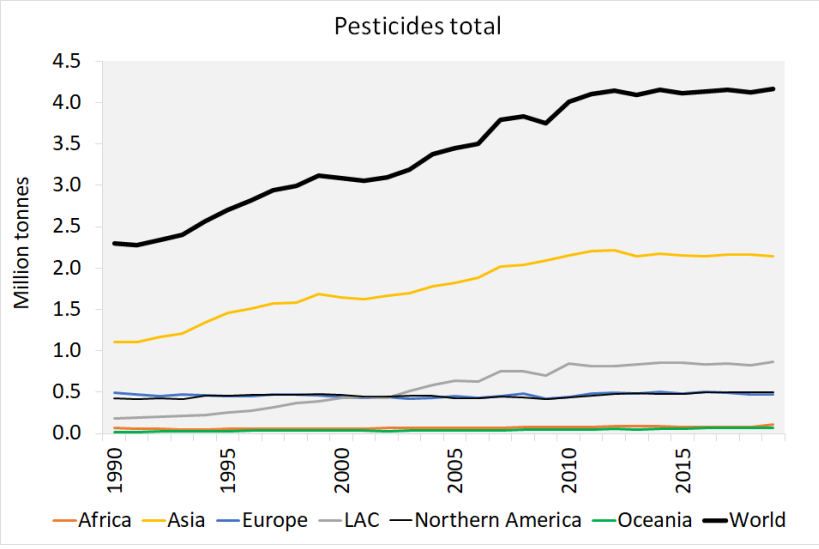
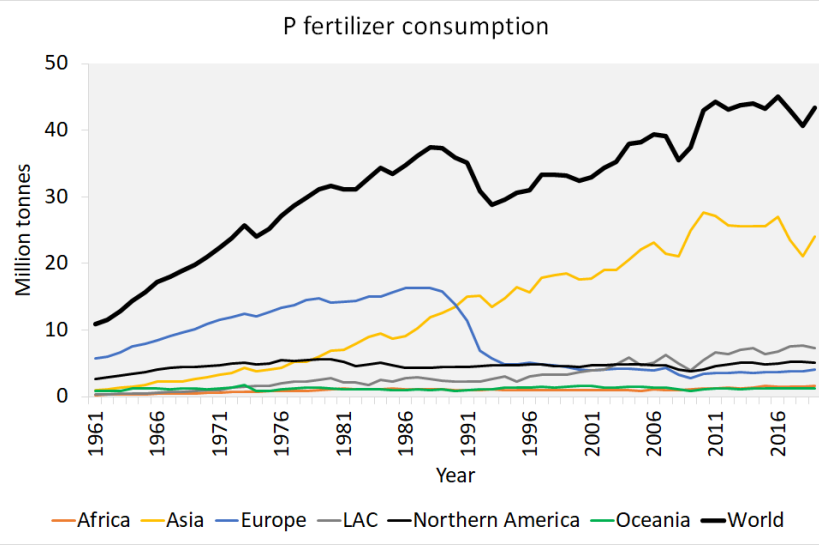
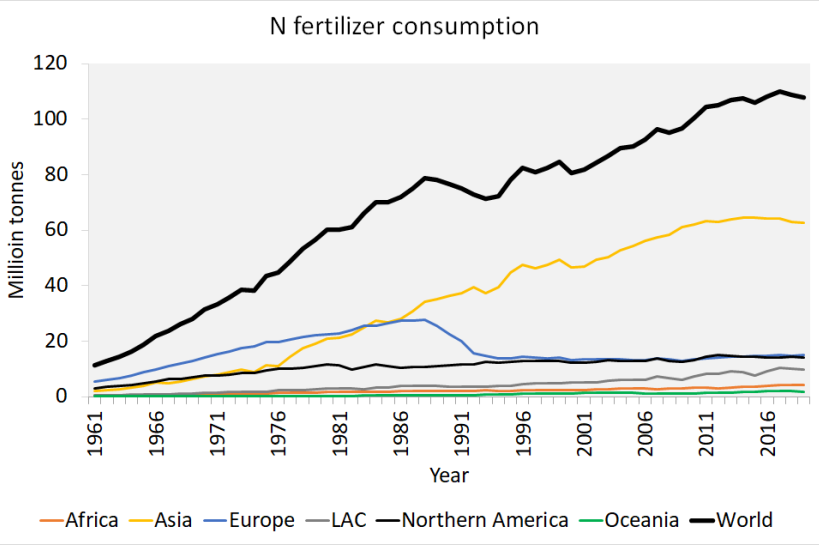
20-25% of global GHG emissions are caused by agriculture and forestry (IPCC 2014, 2019)

>50% of Ramsar sites are at risk of degradation due to agricultural practices (RSIS database)

Conservation and sustainable development goals cannot be achieved on current trajectories (IPBES 2019)

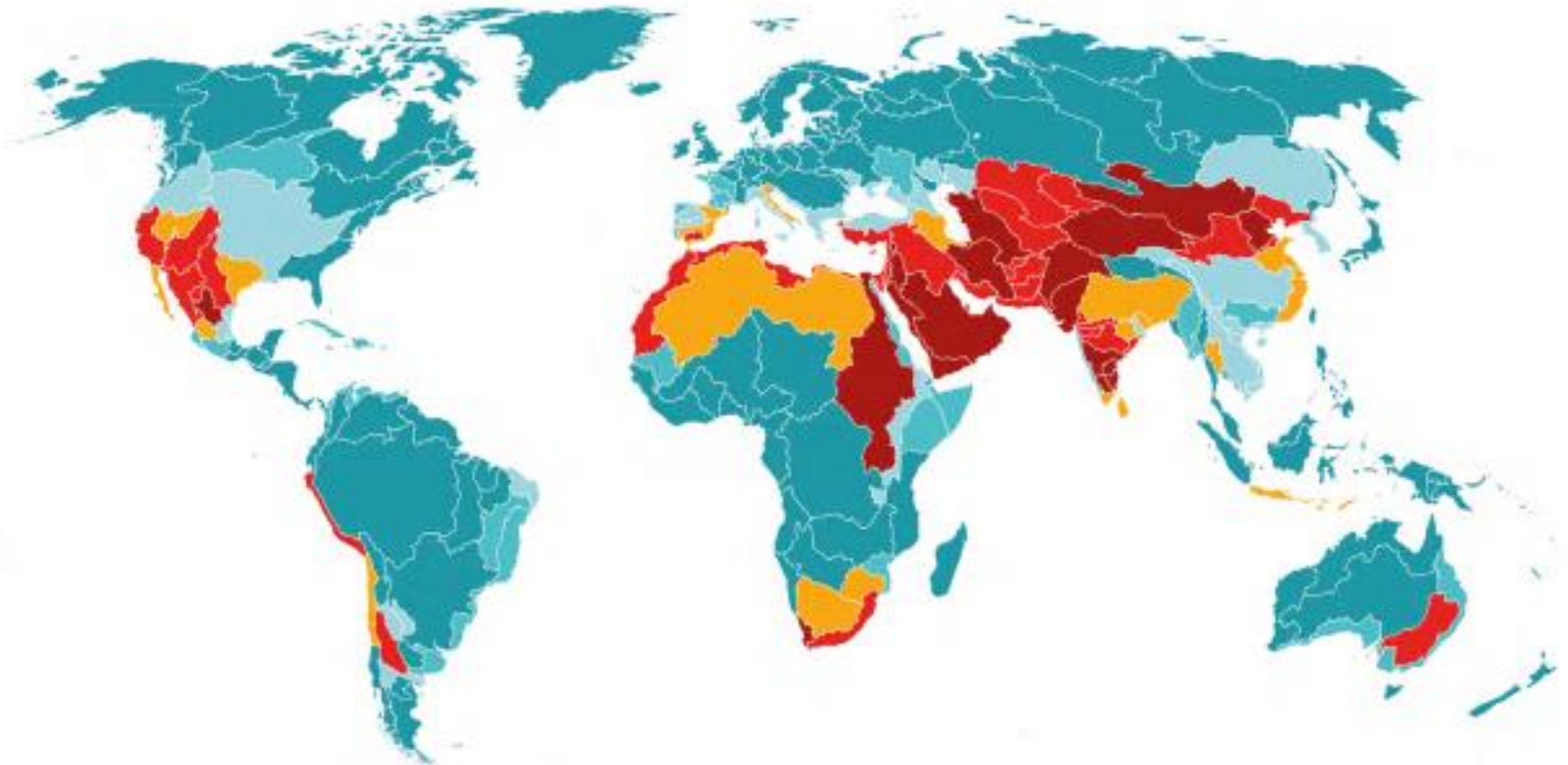


Fertiliser and pesticide use continues to increase in some regions



Source: FAOSTAT

Water stress due to agriculture



AT

Shared understanding of *sustainable agriculture and wetland wise use*

Sustainable agriculture:

‘conserves land, water, and plant and animal genetic resources, and is environmentally non-degrading, technically appropriate, economically viable and socially acceptable’

Source: FAO (1988)



‘Sustainable agriculture’ is **consistent with maintaining the ecological character of wetlands and ensuring their wise use** under the Ramsar Convention

Reducing impacts on wetlands – transforming agricultural systems



Rainfed cropping/livestock

- A. Rainfed cropping and livestock – extensive
- B. Rainfed cropping and livestock – intensive



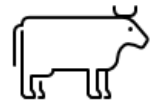
Irrigated cropping

C. Irrigated cropping



Horticulture

D. Horticulture



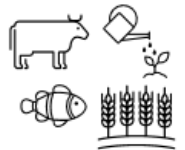
Livestock

- E. Livestock – extensive
- F. Livestock – intensive



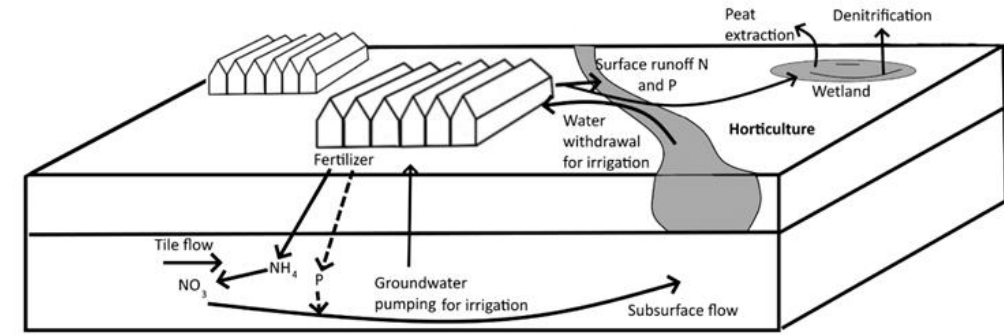
Aquaculture

- G. Aquaculture – extensive
- H. Aquaculture – intensive



Integrated

I. Integrated agriculture



Horticulture - wetland interactions Source: van Dam et al. (2021)



Policy recommendations

- ❖ **Enhance dialogue** between sectors to implement effective strategies for wetland wise use
- ❖ **Develop policies to address the environmental problems** created by non-sustainable agriculture
- ❖ **Ensure policies are consistent between water, climate, conservation and agricultural sectors** and deliver on Sustainable Development Goals
- ❖ **Apply transformative actions** for sustainable agriculture and wetland wise use



Policy recommendations

- ❖ Enhance **dialogue** between sectors to implement effective strategies for wetland wise use
- ❖ Develop **policies to address the environmental problems** created by non-sustainable agriculture
- ❖ Ensure **policies are consistent between water, climate, conservation and agricultural sectors** and deliver on Sustainable Development Goals
- ❖ Apply **transformative actions** for sustainable agriculture and wetland wise use

Example actions

Limit fertiliser, pesticide and water use

Stop conversion of wetlands

Promote integrated farming (diversification)

Adapt practices based on future climate scenarios

Build cross-sector collaboration



Wetlands and agriculture: impacts of farming practices and pathways to sustainability

Purpose

This Briefing Note aims to support policy makers and practitioners to implement more sustainable agricultural practices to reverse the loss of wetlands. It calls for an integrated approach across the agriculture, water and wetland management sectors to avoid further wetland degradation while providing food security.

Background

Resolution XII.18 on Sustainable agriculture in wetlands requested that the Scientific and Technical Advisory Panel (STAP) of the Convention on Wetlands compile and review information on positive and negative impacts of agricultural practices on wetlands. The STAP 2019-2021 work plan adopted at the 57th meeting of the Standing Committee identified Topic 1.2 on sustainable agriculture and wetlands as a high priority. This Briefing Note provides scientific and technical information of agricultural impacts on wetlands; the corresponding Policy Brief 6 provides analysis and recommendations for policy makers.

Transformation of agricultural practices and systems is needed to reverse the trend of wetland loss and degradation, while simultaneously providing food for the increasing human population and maintaining adequate food production in a time of rapid environmental change.

Wetlands are part of the agricultural system: crops, livestock and aquaculture, habitat for fisheries and help to regulate the environment; also subject to significant pressure from agricultural conversion, excessive use of nutrients and pesticides, extraction or diversion of water, and over-

This briefing note summarises current global agriculture interactions and draws attention to positive examples of efforts to transition to a contribution to more sustainable agriculture action to address the most pressing issues through dialogue between the wetland and agricultural sectors.



Flooded savanna and forests of the Biosphere Wetland of International Importance.



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