S2S PLATFORM

SIWI

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Intergovernmental Hydrological Programme

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Ramsar

Where are you joining us from?

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www.pollev.com/gwp

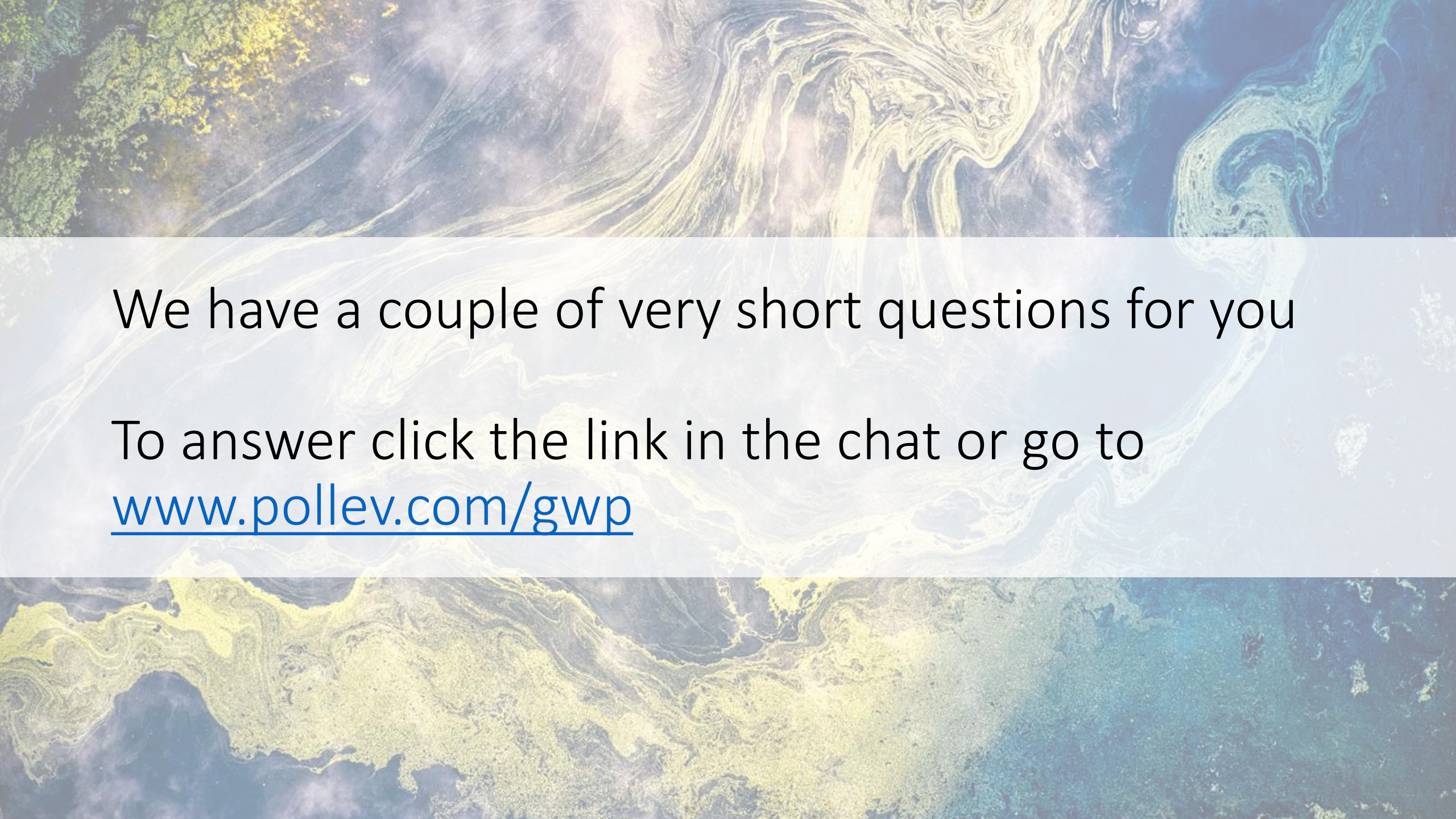
Introduction to the session by
Yumiko Yasuda, Senior Network and
Transboundary Water Cooperation Specialist, GWP

General Instructions before we begin:

- Please note that today's session is recorded.
- Please kindly keep your microphone muted.
- We will be using PollEv as an interactive tool for you to ask any questions to the panelists.
-Please use the ZOOM chat in case you encounter technical problem. We will be also posting relevant links to the chat.
- We want to meet you! Please introduce yourself in the chat.

Welcoming Message by Martha Rojas Urrego, Secretary General of the Convention on Wetlands

Appointed Secretary General of the Convention in 2016. She has more than 25 years of experience working on conservation, sustainable development, gender and humanitarian relief, from local to international levels. She was Deputy Secretary General, and Head of Advocacy at CARE, Head of Global Policy at IUCN and Executive Director of National Parks Colombia.



We have a couple of very short questions for you

To answer click the link in the chat or go to
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Thematic Presentations

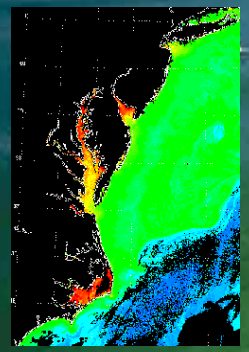
Moderated by Sarantuyaa Zandaryaa, Programme Specialist Division of Water Sciences, UNESCO

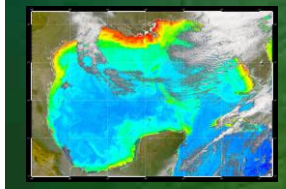
Hans Paerl, Kenan Professor of Marine and Environmental Sciences at the University of North Carolina's Institute of Marine Sciences

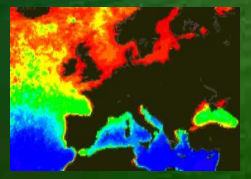
His collaborative research addresses microbially-mediated nutrient cycling and primary production dynamics, environmental controls and management of harmful algal blooms and their toxins, and assessing effects of human and climatic alterations of water quality and sustainability of inland, estuarine and coastal marine waters (see: https://paerllab.web.unc.edu/research/). He has published over 300 peer reviewed articles and book chapters on these subjects.

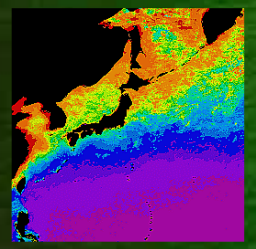
Eutrophication and harmful algal bloom dynamics along the freshwater to marine continuum

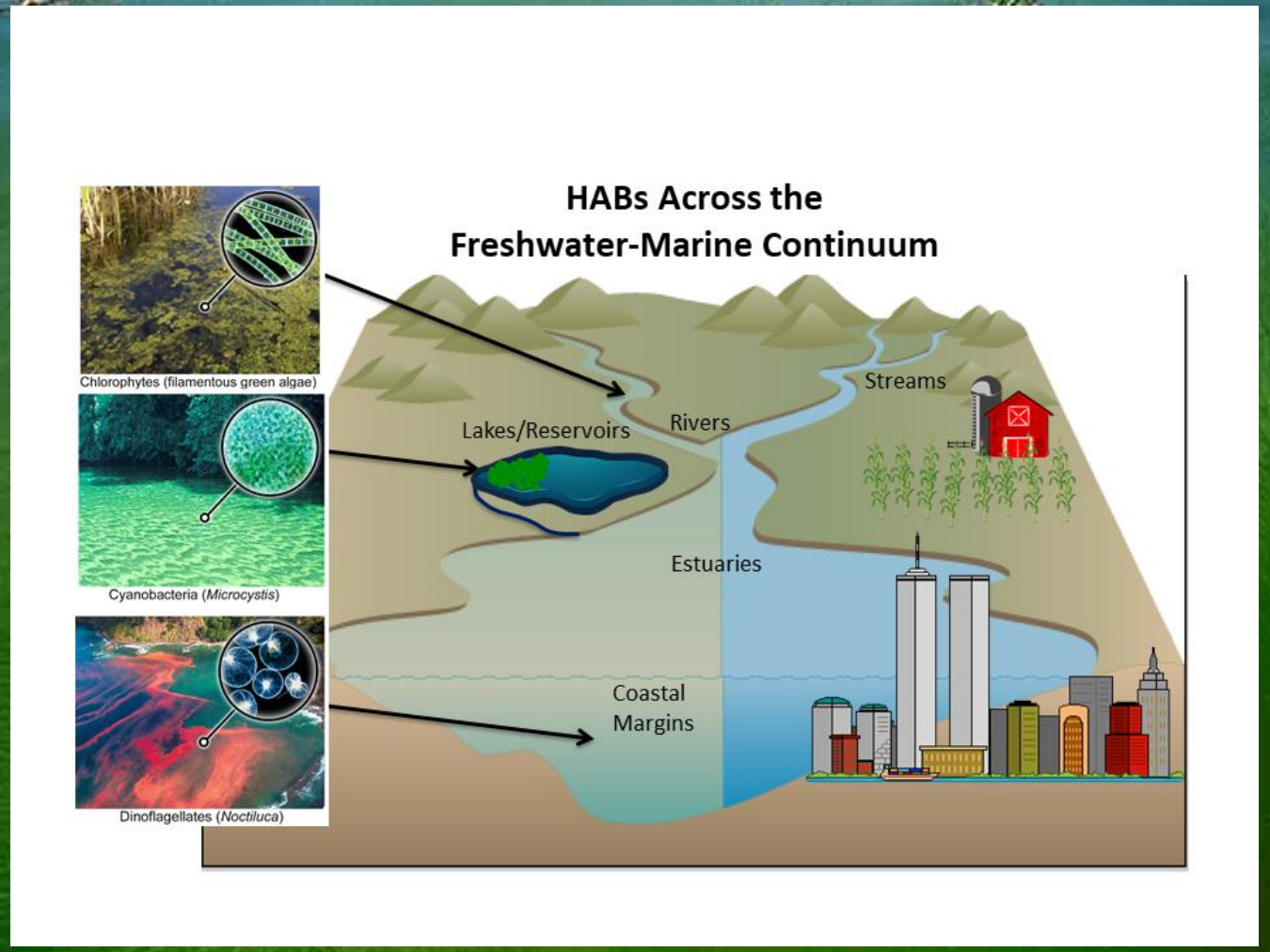
Hans Paerl, Univ. of North Carolina at Chapel Hill Instit. Marine Sciences, Morehead City, North Carolina, USA











http://paerllab.web.unc.edu/

Nutrient over-enrichment along the freshwater to marine continuum

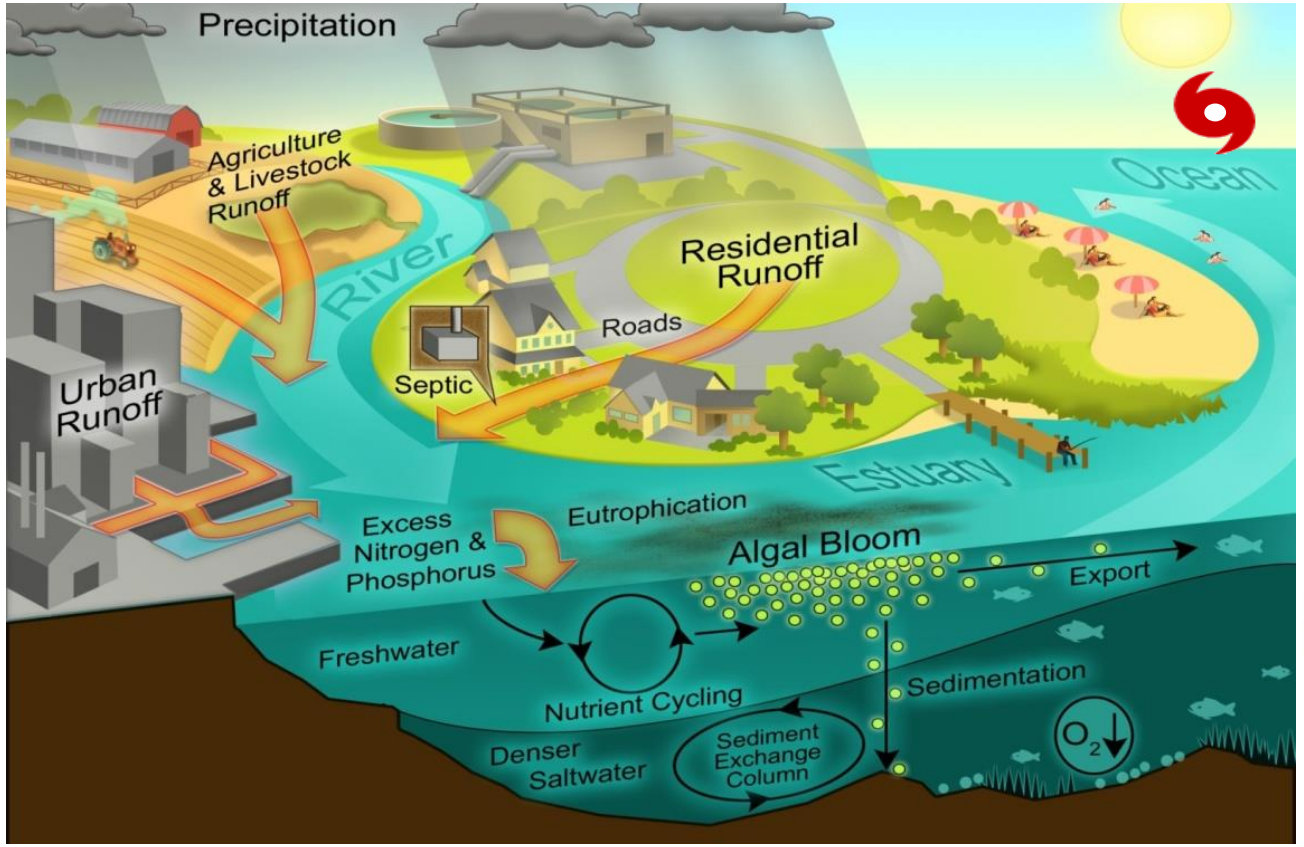
"The most rapidly-expanding threat to water quality and ecological condition".

"Scales of sources and impacts are increasing"

(National Research Council 2000; EU Water Framework Directive 2001; US EPA 2016)

- Dogma: Primary production controlled by P availability in freshwater, N in marine ecosystems.
- However: Accelerating human N & P loading has altered nutrient limitation/eutrophication dynamics
- Results: Human-impacted systems reveal a complex picture and hence a challenge to nutrient management and **in most cases BOTH N and P reductions are needed**

- **Climate change (warming more storms, droughts) plays an interactive role**



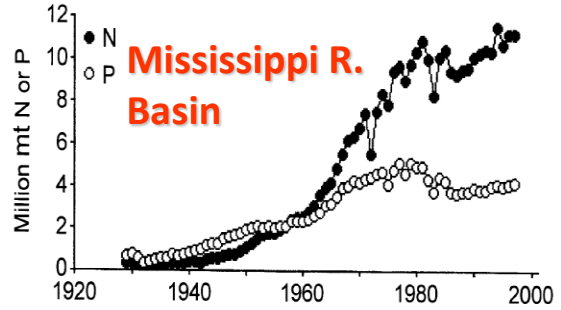
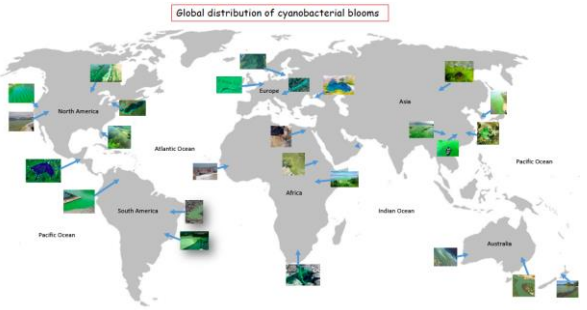


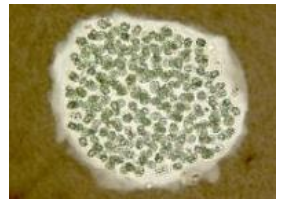
FIGURE 5.12. Nitrogen (as N) and phosphorus (as P_2O_5 equivalent) fertilizer use this century in the United States up to 1996–97. (*Modified from Turner and Rabalais 1991.*)



Recommendations for Nutrient Management

UNC INSTITUTE OF MARINE SCIENCES

- Reduce both N & P inputs in most cases along the continuum
  - Nutrient-bloom threshold are system-specific
    - However, in many cases >30% reductions should be targeted
  - Salinity is not necessarily a barrier to HAB expansion
  - May need to reduce N and P inputs even more in a warmer, stormier world
    - Blooms "like it hot"
    - Episodic & extreme events favor CyanoHABs (floods, droughts)
- Impose nutrient input restrictions year-round
  - Residence time is long in large lakes and coastal waters (> 6 months)
  - Warmer, longer growing seasons (earlier ice off, later ice on)

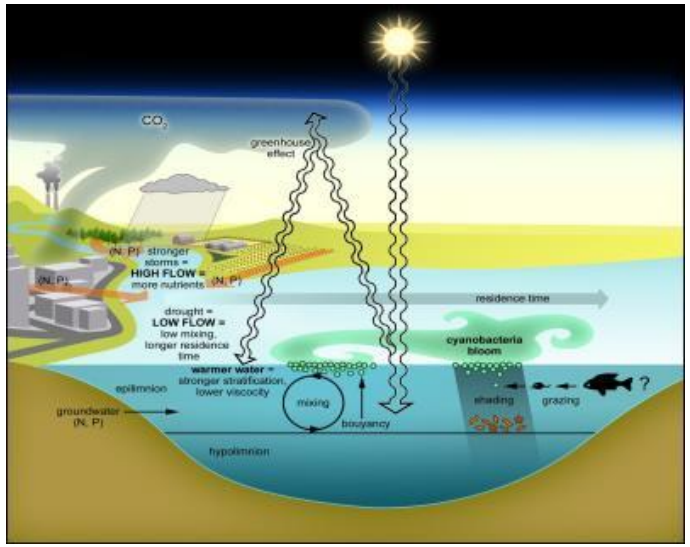


EPA United States Environmental Protection Agency | Office of Water | EPA - 820-S-15-001 | MC 4304T | February 2015

Preventing Eutrophication: Scientific Support for Dual Nutrient Criteria

NSF NIH NIEHS

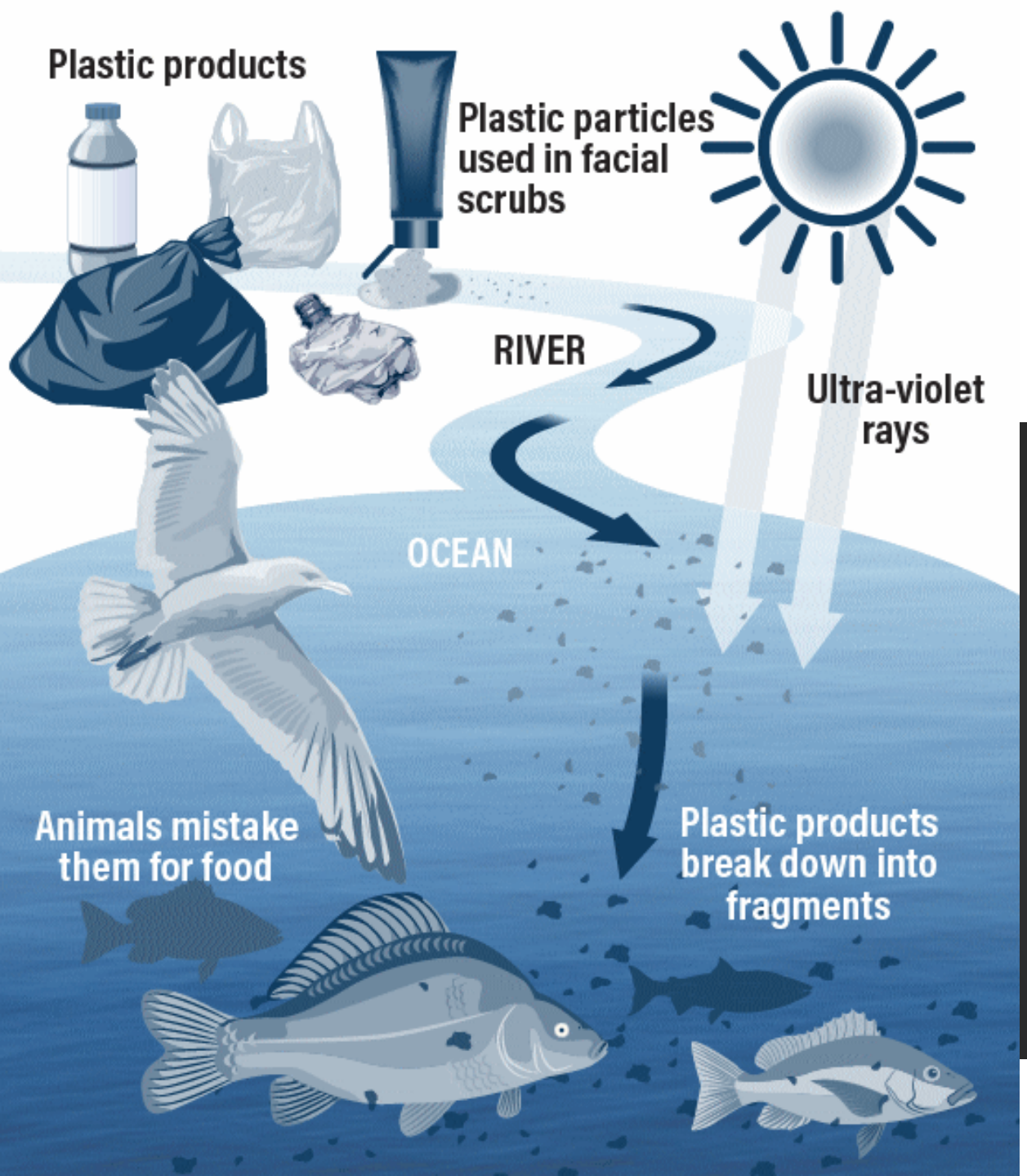
GREAT LAKES CENTER FOR FRESH WATERS AND HUMAN HEALTH AT BOWLING GREEN STATE UNIVERSITY BGSU



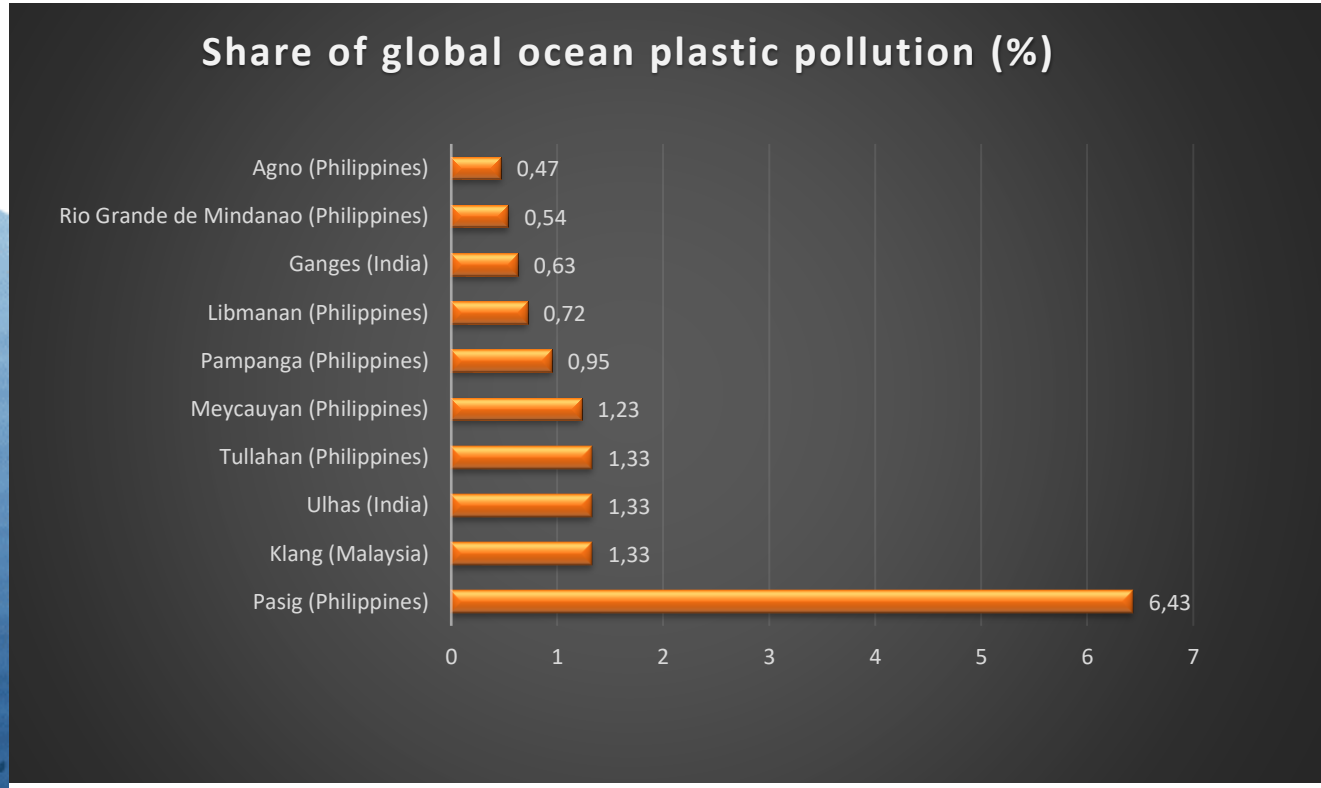
http://paerllab.web.unc.edu

Dr. Maria Antonia Tanchuling, Profesor at the Institute of Civil Engineering, University of the Phillippines Diliman

Her research interests include Water and sanitation, Solid Waste Management, and Plastic and microplastic pollution.



0.8 – 2.7M tons of plastics leaked to oceans every year



Meijer, et. al (2021). Science Advances 30 April 2021
DOI: 10.1126/sciadv.aaz5803

Factors leading to plastic pollution

Low waste collection rates

Ill-designed landfills/open dumpsites

Low recycling rates for plastics;

Negligible recycling for flexible plastics

Untreated wastewater as pathway of microplastics

Increasing consumption of plastics especially sachets and single-use packaging; e-commerce

Improve waste management infrastructure (formal and informal collection, recycling)

Technical and financial challenges to recycle low-value plastics; Redesigning Plastic packaging; Closing the Loop

Data collection, management and Analysis; identify points of plastic leakage

Sustainable consumption and production; holding corporations responsible for its packaging (Extended Producer Responsibility)

Improve wastewater treatment infrastructure

Dr. Eunice Ubomba-Jaswa, Research Manager, Water Resources Quality, Water Research Commission (WRC) in South Africa

At the WRC she manages a portfolio of projects that deal with the thematic areas of source water pollution and protection (including both microbial and chemical emerging contaminants), water-related human health and WASH activities.

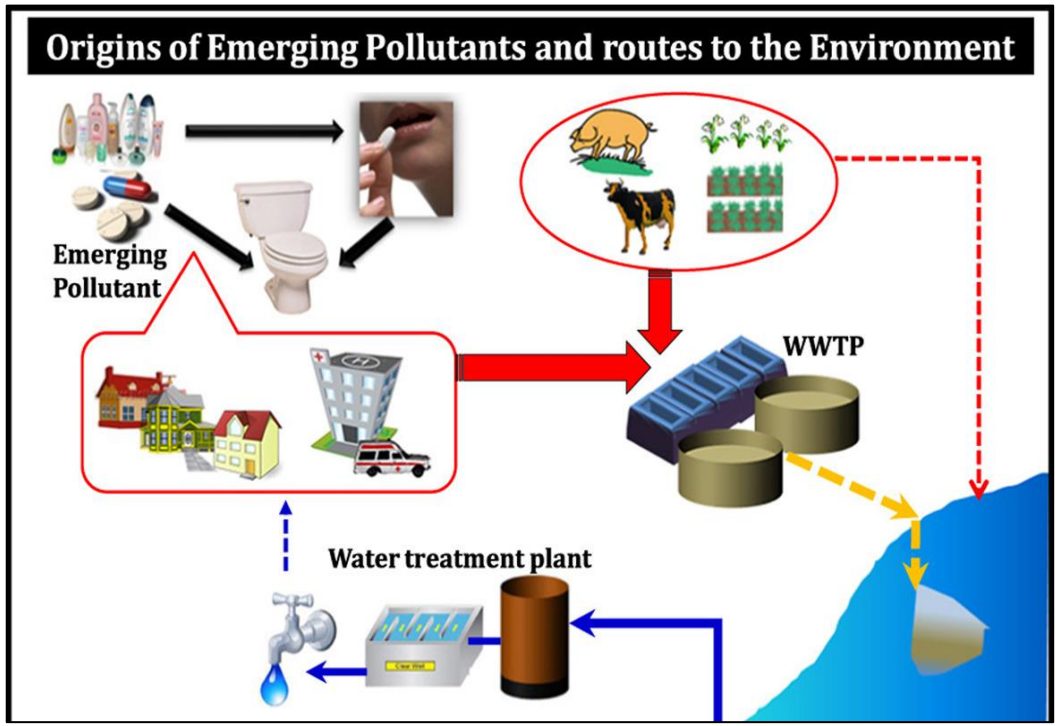
EMERGING CONTAMINANTS: POTENTIAL THREATS TO FRESHWATER AND MARINE ENVIRONMENTS

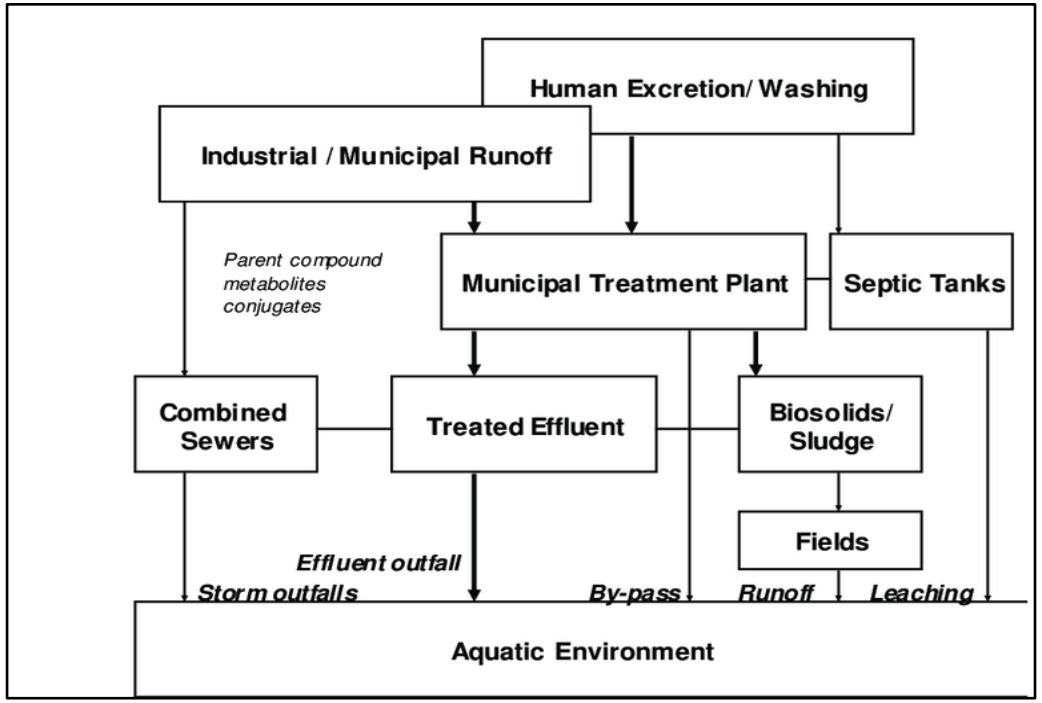
Eunice Ubomba-Jaswa, PhD.
Research Manager: Water Resource Quality
Water Research Commission, South Africa
email: euniceuj@wrc.org.za

Emerging Contaminants

synthetic or naturally occurring substances that are not commonly monitored in the environment, but which have the potential to enter the environment and cause ***known or suspected adverse ecological and (or) human health effects***

- Pharmaceuticals (PhACs), Personal Care Products (PCPs), Endocrine Disrupting Compounds (EDCs), Antimicrobial resistant organisms and genes





Source: Occurrence and fate of emerging contaminants in water environment: A review

Evidence of Emerging Contaminants in Freshwater and Marine Environments e.g., South Africa

ELSEVIER

Chemosphere

Volume 269, April 2021, 128737

Review

Emerging contaminants in South African water environment- a critical review of their occurrence, sources and ecotoxicological risks

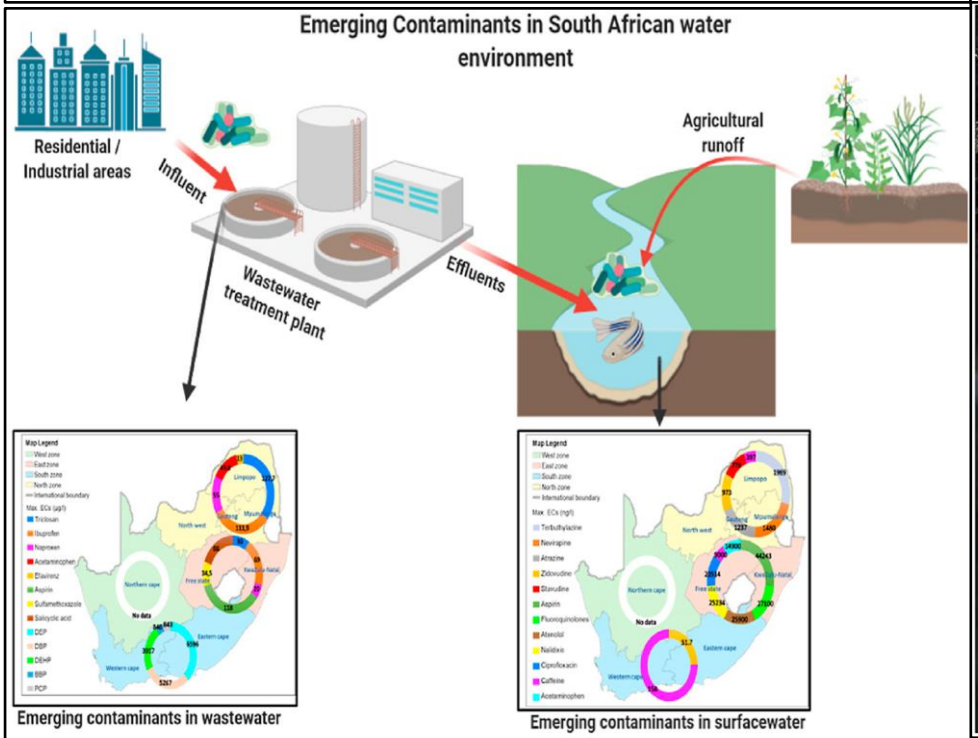
ELSEVIER

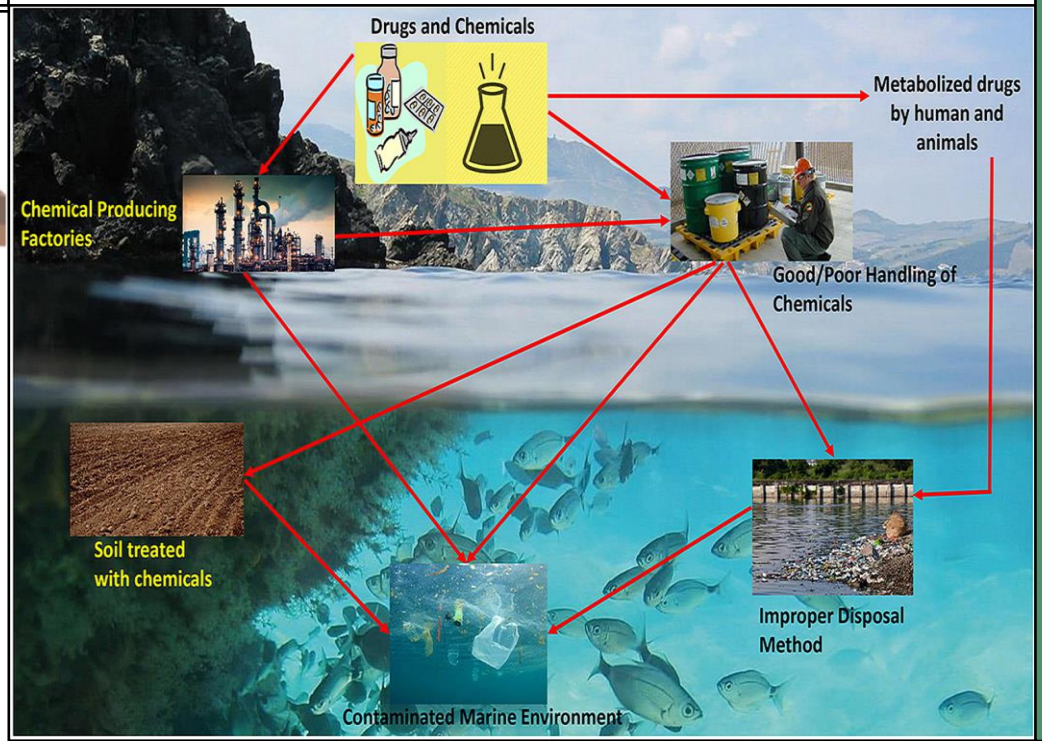
Environmental Pollution

Volume 252, Part A, September 2019, Pages 562-572

Occurrences, levels and risk assessment studies of emerging pollutants (pharmaceuticals, perfluoroalkyl and endocrine disrupting compounds) in fish samples from Kalk Bay harbour, South Africa

Cecilia Y. Ojemaye, Leslie Petrik



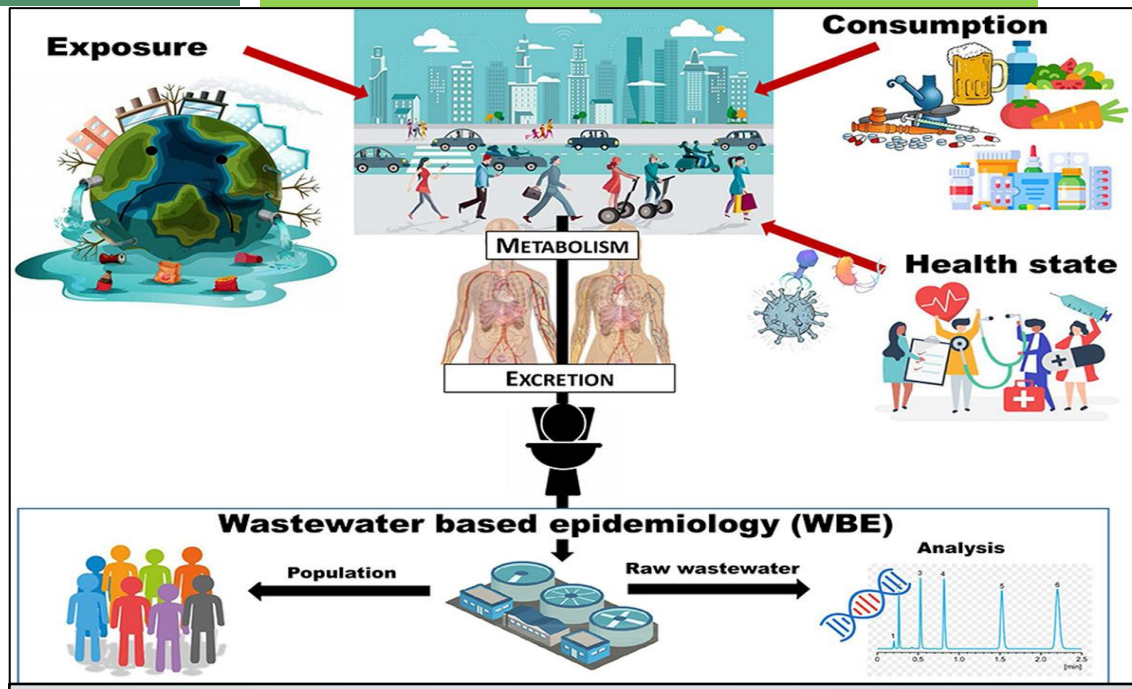


"The Source-to-Sea programme involves multiple government departments, at national, provincial and local level, as well as the private sector and other stakeholders, working in priority catchment areas, and providing job opportunities through the Working for the Coast program," said the Minister of Forestry, Fisheries and the Environment, Barbara Creecy, on the occasion of observing World Oceans Day, on 8th June 2021.

Risk-Based Management of Emerging Contaminants

- Identifying priority list of emerging contaminants and indicators (caffeine versus diclofenac or both).
- Development of analytical techniques and determination of toxicity (both human and ecosystem)
- One health and integrated surveillance – wastewater-based epidemiology
- Expansion and integrating of databases – knowledge hubs
- End of pipe measures – discharge levels
- Sound upstream management of chemicals (lifecycle)
- Advancing water treatment technologies – decentralized wastewater treatment systems – using renewable energy
    - WRC, Water Technologies Demonstration Programme

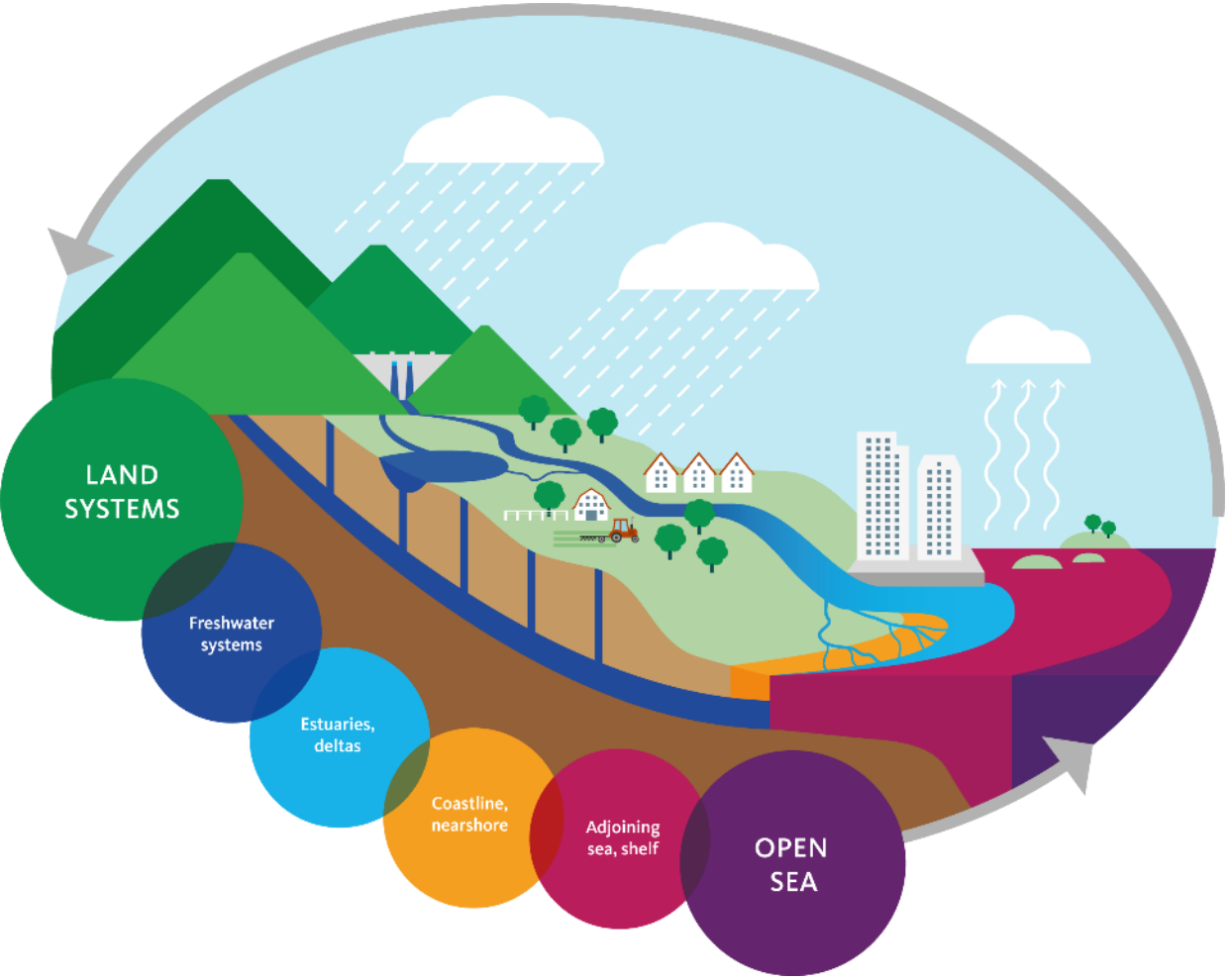
WRC reports on various water related research in a multitude of disciplines can be accessed and downloaded from the Knowledge Hub – www.wrc.org.za



Ruth Mathews, Senior Manager, SIWI and Coordinator of the Action Platform for Source-to-Sea Management

She provides her deep knowledge of the impacts of human activities on riverine, coastal and marine ecosystems to projects that reduce those impacts through improved governance and bottom-up engagement. As Coordinator of the Action Platform for Source-to-Sea Management (S2S Platform), she provides strategic leadership to the multi-stakeholder initiative to achieve its aims.

Source-to-sea management – addressing system linkages

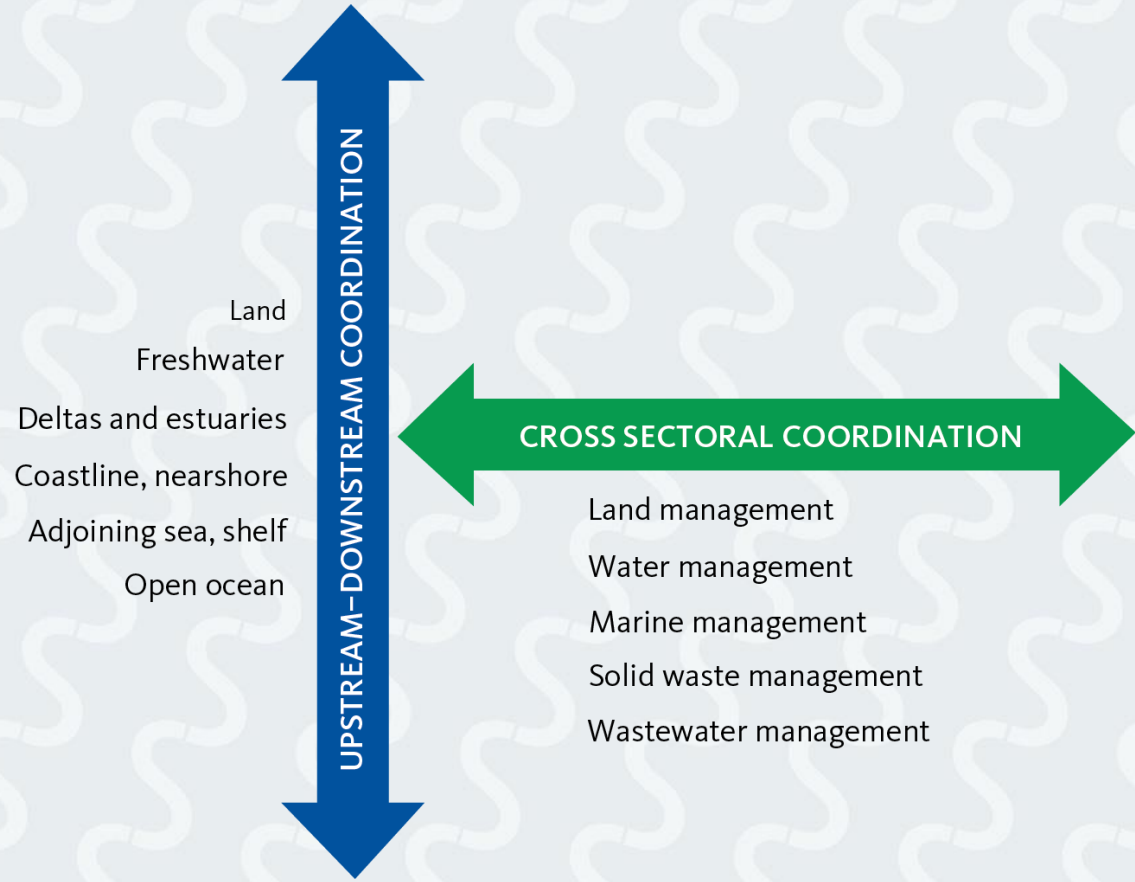


Key flows connect the source-to-sea system from land to open ocean

Source-to-sea management considers the entire source-to-sea system – stressing upstream and downstream linkages and stimulates coordination across sectors and segments.

Benefits of source-to-sea management

- Balances and protects development priorities from their source all the way to the sea.
- Links governance, operations, practices and finance across marine, coastal, freshwater and terrestrial systems.
- Stimulates cooperation between upstream and downstream actors as well as coordination across sectors.
- Ensures outcomes of mutual benefit from source to sea by addressing challenges that span traditional land-freshwater-marine boundaries.



Rüdiger Strempel, Executive Secretary of HELCOM

An international lawyer by training, Rüdiger Strempel has been the Executive Secretary of HELCOM since August 2019. He looks back on many years of experience in environmental law, policy, and diplomacy at the national and international levels, with a particular focus on international marine conservation. He has previously held the posts of Executive Secretary of the Agreement on the Conservation of Small Cetaceans of the Baltic, North-East Atlantic, Irish and North Seas (UNEP/ASCOBANS) and of the Common Wadden Sea Secretariat (CWSS) and has also worked for a number of other United Nations agencies. Moreover, Rüdiger has a background as a journalist and professional communicator and he is the author or co-author of numerous articles and several books.

Panel discussion

Moderated by Yumiko Yasuda Senior Network and Transboundary Water Cooperation Specialist, GWP

Feedback poll

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Conclusions and Recommendations

Jerker Tamelander, Director of Science and Policy, Secretariat of the Ramsar Convention on Wetlands

Closing remarks by Abou Amani Director of Division of Water Sciences, UNESCO

Thank you for joining us!