United Nations Educational, Scientific and Cultural Organization | International Hydrological Programme | International Initiative on Water Quality

Priorities for regulatory mechanisms and frameworks to address contaminants of emerging concern

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The Sustainable Development Goals (SDGs)

A global commitment to address emerging pollutants to improve water quality

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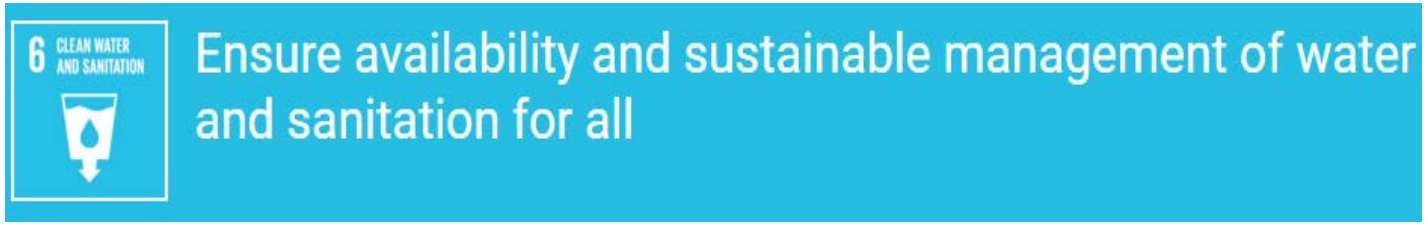

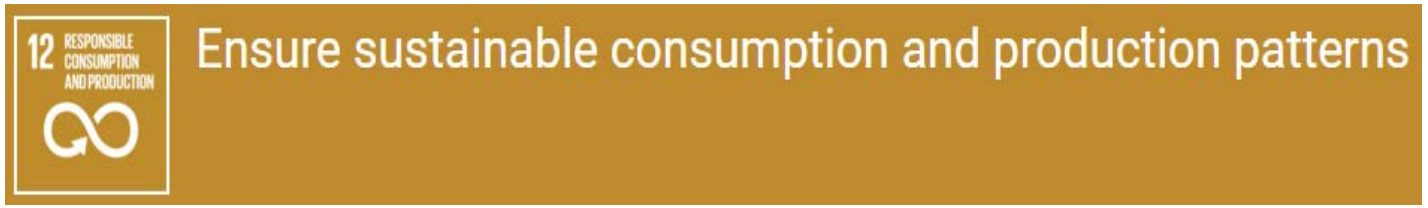

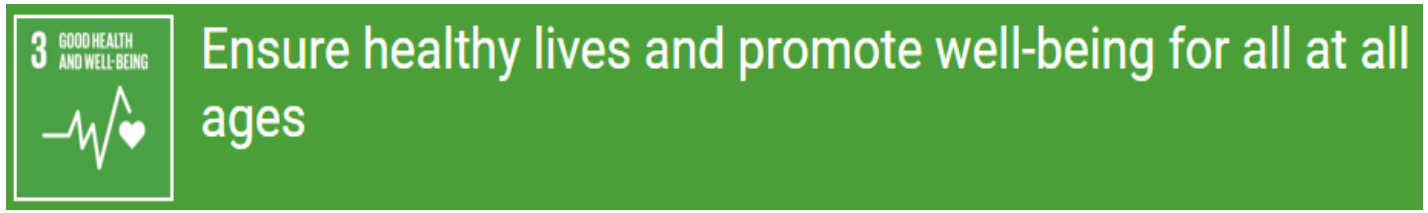

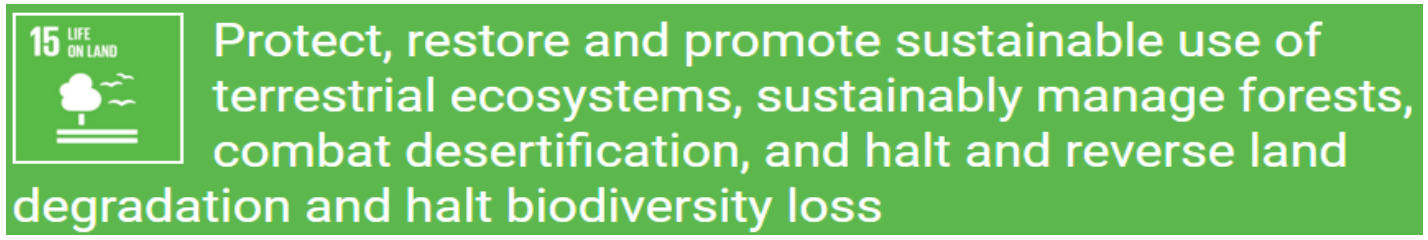

SDG 6 – Water

Target 6.3

… improve water quality by

SDG 12 – Production & Consumption

SDG 3 - Health

Target 3.3 *… combat water-borne diseases…*

Target 3.9 *… reduce deaths and illnesses from hazardous chemicals, air, water and soil pollution*

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UNESCO Project on Emerging Pollutants

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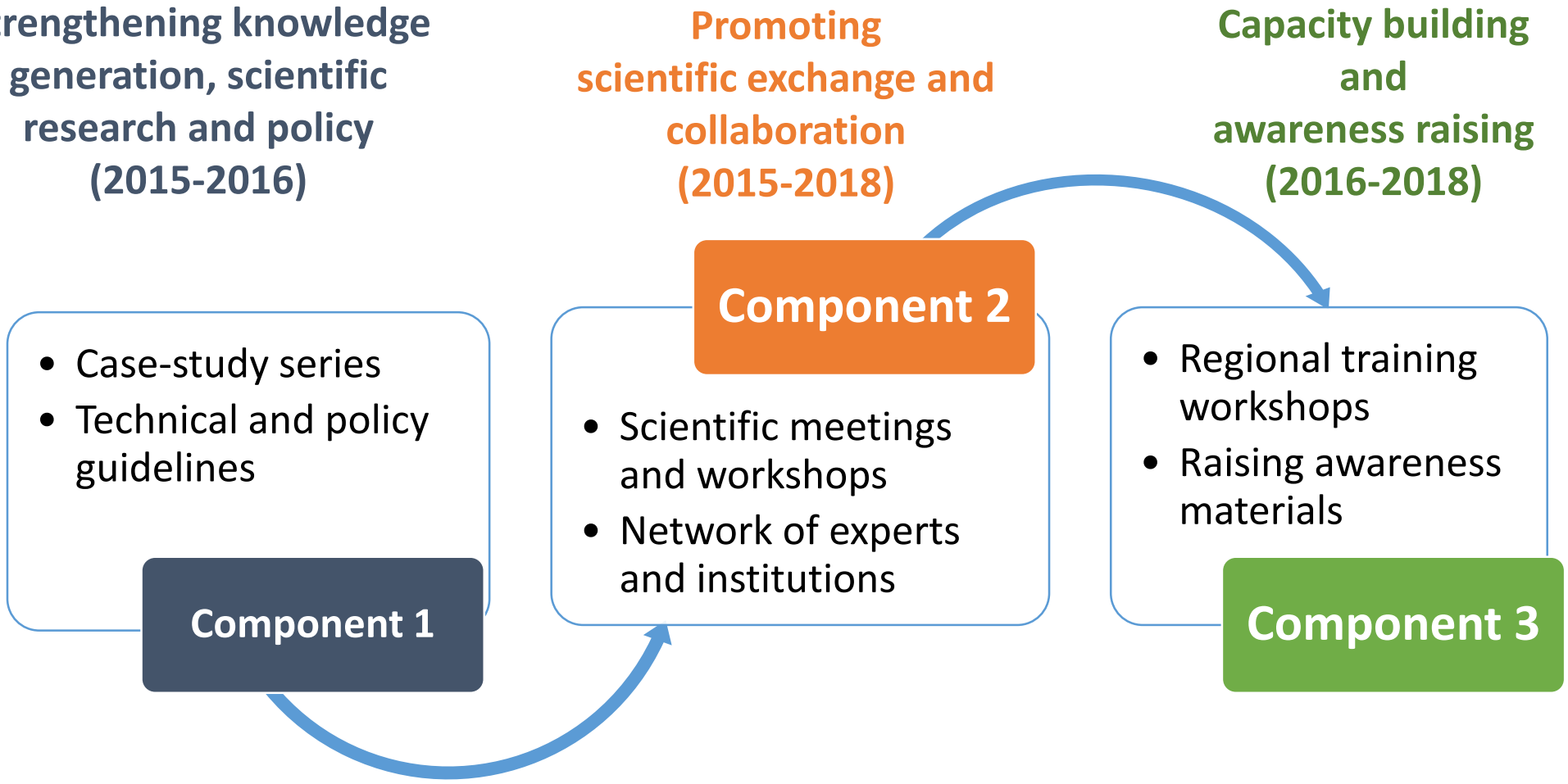
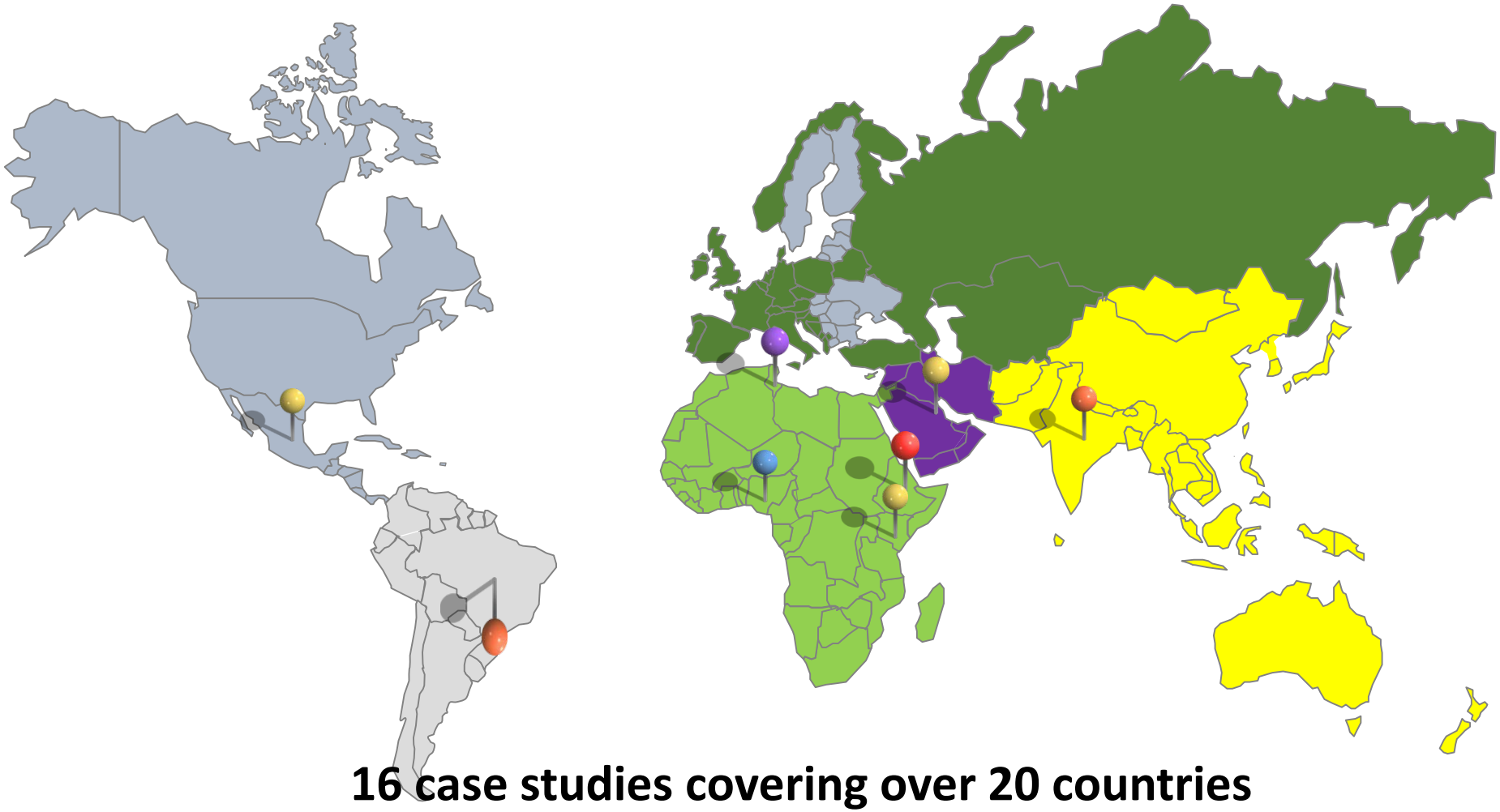


A flagship project under the International Initiative on Water Quality (IIWQ) of UNESCO
Funded by Sweden

UNESCO Case studies on Emerging Pollutants in Water and Wastewater



16 case studies covering over 20 countries

Global: 3	Regional: 3	**National: 10** (2 India, 2 Nigeria)

Findings of UNESCO case studies on emerging pollutants:

Emerging pollutants are ubiquitous

Emerging pollutants are present in all compartments of the aquatic environment—wastewater, surface waters, groundwater and sludge—in different levels of concentrations

Drinking water

- Sao Paolo, Brazil

Surface water resources

- Lake Victoria
- Lake Tana in Ethiopia
- Urban rivers in Ukraine
- Surface waters, China
- Lagos basin, Nigeria

Groundwater

- Groundwater in Yucatan, Mexico

Agricultural runoff

- Brazil

Wastewater

- Saint Lucia
- Nigeria
- Ukraine
- Tunisia

Reuse water

- Tunisia

Biosolids (sludge)

- Mumbai, India

Sea water

- Baltic sea

Findings of UNESCO case studies on emerging pollutants:

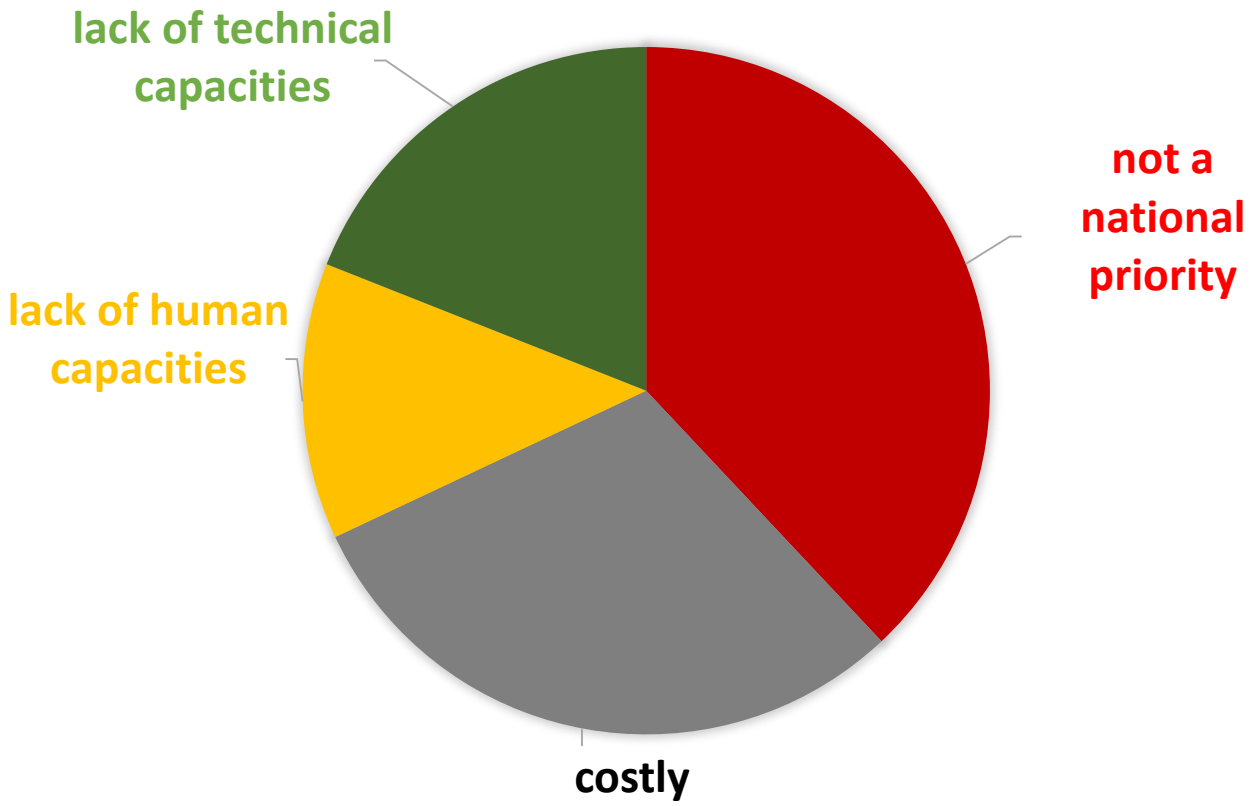
A policy and regulatory gap

There is a lack of policy tools and regulatory frameworks to address emerging pollutants in both developed and developing countries.

Existing policy and regulatory tools that can be related to emerging pollutants	
Developed countries	**Developing countries**
• **EU Directive 2013/39 'watch list'** considers the contamination of water with pharmaceutical residues as an emerging concern with the aim to gather monitoring data	• **No monitoring and regulatory frameworks** related to emerging pollutants
• **EU regulation for Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)** addresses all chemical substances in the environment (*being phased in and will be in full force by 2018*)	
• **2010 and 2013 HELCOM Ministerial Declarations** to collect information and assess the state of contamination by pharmaceuticals that are not monitored regularly in the aquatic environment in the Baltic Sea region	
• **USA: Contaminant Candidate List** for monitoring compound occurrence, including endocrine disrupting compounds	

Findings of UNESCO case studies on emerging pollutants:
Emerging pollutants are not a national priority

Reasons behind the lack of policy/strategy dealing with emerging pollutants in Tunisia



UNESCO case study on Occurrence of Contaminants of Emerging Concern in Irrigation Water in Oued Souhil Area, Nabeul, Tunisia

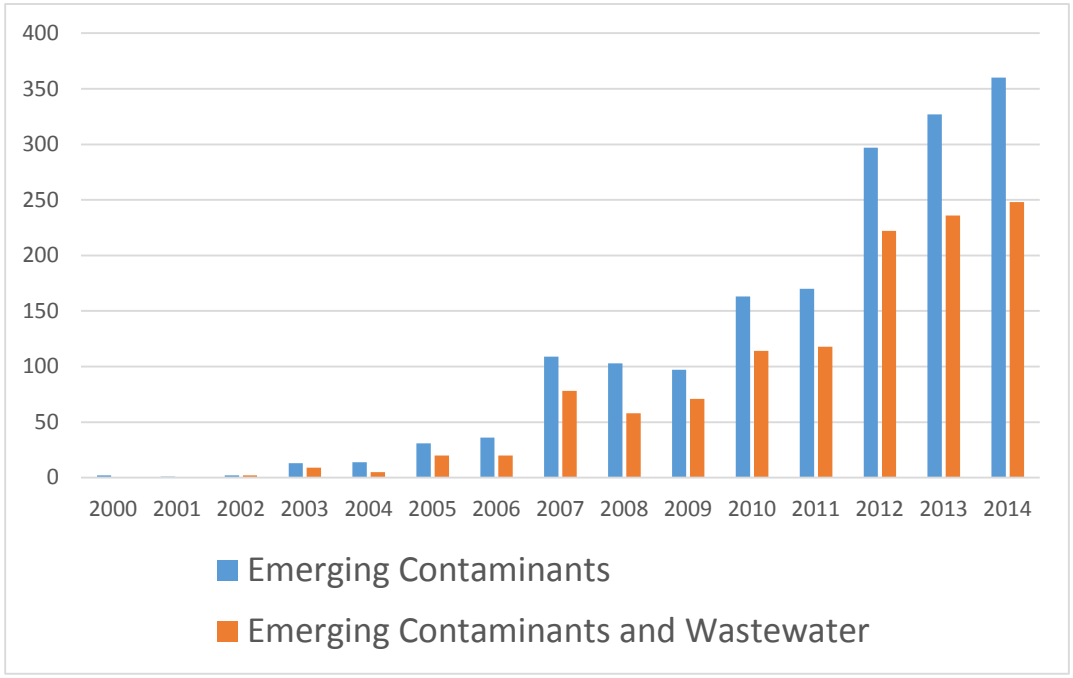
- An interview survey with 12 institutions in Tunisia - 9 governmental and 3 NGOs
- (41 interviewees)

Team Leader: Dr Olfa Mahjoub, INRGRF, Tunisia

Findings of UNESCO case studies on emerging pollutants:
Lack of knowledge, information and data

An emerging research agenda

- Limited knowledge and scientific understanding on emerging pollutants
- Existing data on emerging pollutants are limited to results of few scientific research studies



The number of publications identified through a search in Google Scholar from 2000 to 2014 for the term 'emerging contaminants' and combined search for 'emerging contaminants' AND 'wastewater'

UNESCO case study on Contaminants of Emerging Concern (CECs) in sewage sludge

A preliminary review of policy approaches in USA, Canada, EU and India

Case study team leader: Prof Gunilla Oberg, UBC, Canada

Findings of UNESCO case studies on emerging pollutants: Lack of human and technical capacity

Lack of human capacity

- Emerging pollutants are not included in university curricula for water and environmental professionals

Lack of technical capacity

- Existing laboratories are not equipped to monitor emerging pollutants

The Federal Ministry of Water Resources of Nigeria has 6 operational water monitoring laboratories across Nigeria. None of them monitors emerging pollutants:

- No adequate equipment
- Lack of trained personnel
- Lack of methodologies

UNESCO case study on Emerging Pollutants in Water and Wastewater in Nigeria

- A preliminary review of scientific research capacity and policy tools related to emerging pollutants
- A questionnaire survey with 50 institutions – public, research, NGO and private

Case study led by UNESCO Office in Abuja
in collaboration with Ministry of Science and Technology of Nigeria

Findings of UNESCO case studies on emerging pollutants:
Lack of awareness on emerging pollutants

No institutional awareness in water and non-water sectors

- policy-making level
- water and wastewater utilities
- environmental monitoring
- public health institutions

Lack of public awareness

- the general public and consumers
- NGOs

Highlighted in all 16 UNESCO case studies on Emerging Pollutants in Water and Wastewater

Priorities for regulatory mechanisms and frameworks to address contaminants of emerging concern

Policy tools that need to be developed:

Regulations

- Monitoring 'priority' substances
- Emission limits and requirements (*for example: for certain substances in wastewater*)
- Water quality standards

Economic instruments

- Subsidies (*for example: to encourage a certain practice, to improve/adopt technologies, etc.*)

Voluntary measures

- Engaging the private sector (*for example: the pharmaceutical industry*)

Information

- Promoting best practices
- Information campaigns

Enhance and promote research to:

- improve the scientific understanding on emerging pollutants
- assess human health and environmental impacts of emerging pollutants
- reduce the large uncertainties surrounding occurrence and effects of emerging pollutants
- identify 'priority' substance for monitoring and regulations

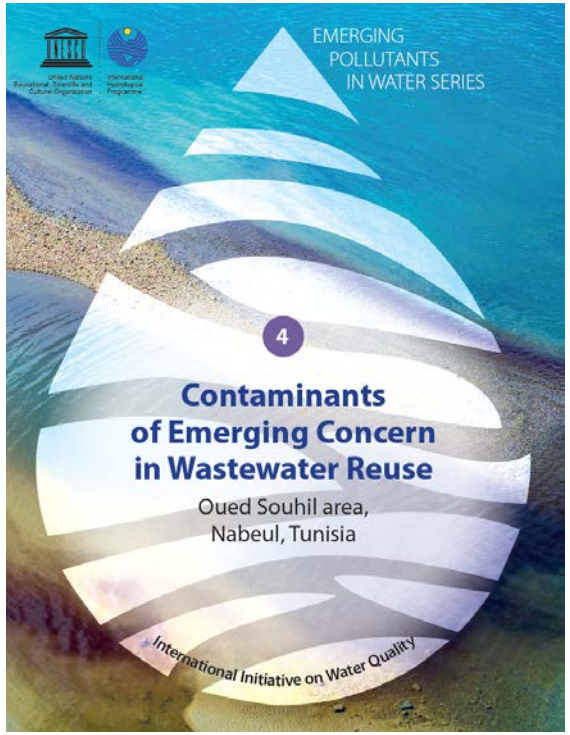
Promote scientific collaboration

- build human and scientific capacity in developing countries

Raise awareness at all levels

- promote sustainable production and consumption
- involve all stakeholders in water and non-water sectors (*policy-makers, water and environmental professionals, researchers, NGOs, agricultural sector, private sector*)

UNESCO Emerging Pollutants in Water Series



and others

http://en.unesco.org/emergingpollutants/strengthening-scientific-research-and-policy/case-studies

http://en.unesco.org/waterquality-IIWQ

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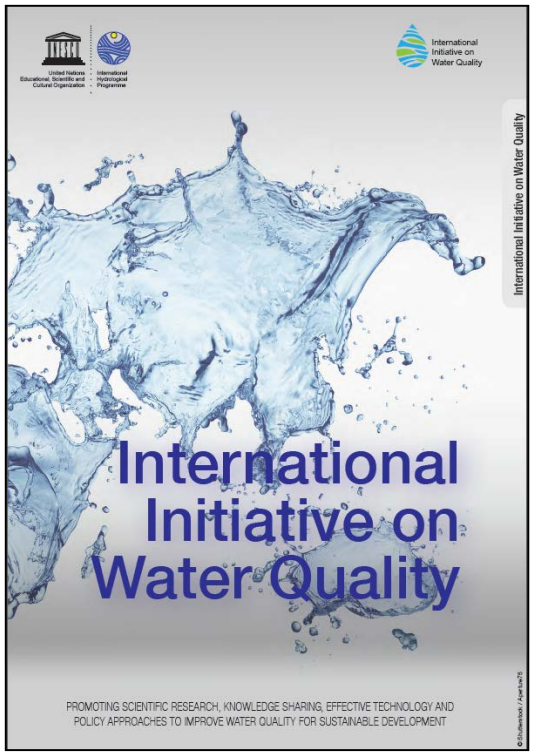

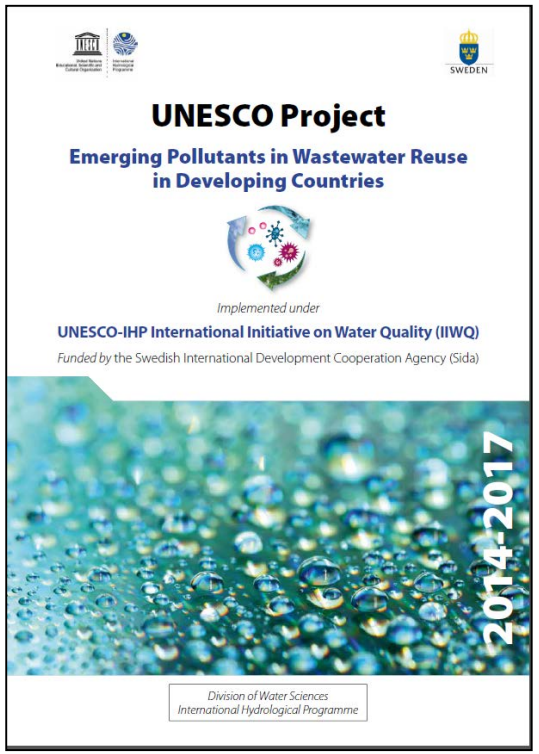

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Thank you

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