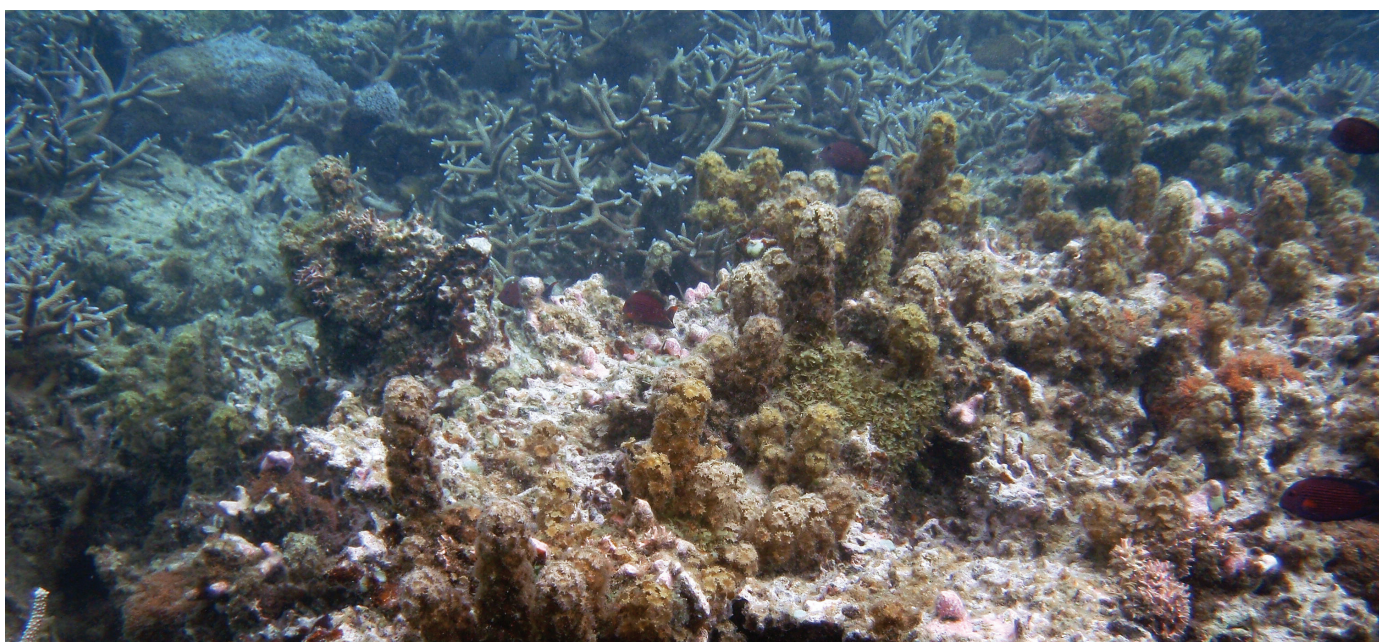




UN HABITAT



SICK WATER?

THE CENTRAL ROLE OF WASTEWATER MANAGEMENT IN SUSTAINABLE DEVELOPMENT

With global action and positive momentum towards improving access to safe water and sanitation, the United Nations Environment Programme (UNEP), the UN Human Settlements Programme (UN-HABITAT), and the UN Secretary General's Advisory Board on Water and Sanitation (UNSGAB), in partnership with the members of UN Water have collaborated to bring together their collective experience and expertise to bear on the challenges posed by illegal and unregulated wastewater. "Sick water? The central role of wastewater management in sustainable development" not only identifies the threats to human and ecological health and the consequences of inaction, but also presents opportunities, where appropriate policy and management responses over the short and longer term can trigger employment, support livelihoods, boost public and ecosystem health and contribute to more intelligent water management.



The statistics are stark: Globally, two million tons of sewage, industrial and agricultural waste is discharged into the world's waterways and at least 1.8 million children under five years-old die every year from water related disease, or one every 20 seconds.

Over half of the world's hospital beds are occupied with people suffering from illnesses linked with contaminated water and more people die as a result of polluted water than are killed by all forms of violence including wars. The impact on the wider environment is no less striking. An estimated 90 per cent of all wastewater in developing countries is discharged untreated directly into rivers, lakes or the oceans. Such discharges are part of the reason why de-oxygenated dead zones are growing rapidly in the seas and oceans. Currently an estimated 245 000 km² of marine ecosystems are affected with impacts on fisheries, livelihoods and the food chain.

The climate is also being impacted: Wastewater-related emissions of methane, a powerful global warming gas, and another called nitrous oxide could rise by 50 per cent and 25 per cent respectively between 1990 and 2020. Already, half of the world's population lives in cities, most of which have inadequate infrastructure and resources to address wastewater management in an efficient and sustainable way.

Twenty-one of the world's 33 megacities are on the coast where fragile ecosystems are at risk. Without urgent action to better manage wastewater the situation is likely to get worse: By 2015, the coastal population is expected to reach approximately 1.6 billion people or over one fifth of the global total with close to five billion people becoming urban dwellers by 2030. By 2050 the global population will exceed nine billion.

Some of these trends are inevitable. However the world does have choices in terms of the quantity and the quality of discharges to rivers and seas if a sustainable link is made from farms, rural areas and cities to the ecosystems surrounding them. In some cases, investments in improved sanitation and water treatment technologies can pay dividends. In other cases investments in the rehabilitation and restoration of nature's water purification systems – such as wetlands and mangroves – offer a cost effective path.

To be successful and sustainable, wastewater management must be an integral part of rural and urban development planning, across all sectors, and where feasible transcending political, administrative and jurisdictional borders. There are few, if any, areas where investments in integrated planning can sustainably provide greater returns across multiple sectors than the development of water infrastructure and the promotion of improved wastewater management.

UNEP and UN-Habitat are increasing their cooperation across several fronts including meeting the wastewater challenge. This report is one fruit of that collaboration. Investing in clean water will pay multiple dividends from overcoming poverty to assisting in meeting the Millennium Development Goals. It also makes economic sense. According to a recent report from the Green Economy Initiative, every dollar invested in safe water and sanitation has a pay back of US\$3 to US\$34 depending on the region and the technology deployed.

Meeting the wastewater challenge is not a luxury but a prudent, practical and transformative act, able to boost public health, secure the sustainability of natural resources and trigger employment in better, more intelligent water management.

What do we mean by wastewater?

Wastewater can mean different things to different people with a large number of definitions in use. However this report has taken a broad perspective, and defined wastewater as "a combination of one or more of: domestic effluent consisting of black-water (excreta, urine and faecal sludge) and greywater (kitchen and bathing wastewater); water from commercial establishments and institutions, including hospitals; industrial effluent, stormwater and other urban run-off; agricultural, horticultural and aquaculture effluent, either dissolved or as suspended matter (adapted from Raschid-Sally and Jayakody, 2008).

KEY MESSAGES:

1

Wastewater production is rising

The global population is expected to exceed nine billion people by 2050. Major growth will take place in developing countries, particularly in urban areas that already have inadequate wastewater infrastructure. The financial, environmental and social costs are projected to increase dramatically unless wastewater management receives urgent attention.

2

Wise and immediate investment will generate multiple future benefits

Immediate, targeted and sustained investments should take multiple forms. They should be designed to (i) reduce the volume and extent of water pollution through preventative practices; (ii) capture water once it has been polluted; (iii) treat polluted water using appropriate technologies and techniques for return to the environment; (iv) where feasible safely reuse and recycle wastewater thereby conserving water and nutrients; and (v) provide a platform for the development of new and innovative technologies and management practices. If investments such as these are scaled up appropriately they will generate social, economic and environmental dividends far exceeding original investments for years to come.

3

Improved sanitation and wastewater management are central to poverty reduction and improved human health

The poor are affected first and foremost by this global crisis. Over half of the world's hospital beds are occupied by people suffering from water related diseases. Diarrhoeal diseases make up over four per cent of the global disease burden, 90 percent of which is linked to environmental pollution, a lack of access to safe drinking water and sanitation. Comprehensive and sustained wastewater management in combination with sanitation and hygiene is central to good health, food security, economic development and jobs. In terms of public spending on health issues, investing in improved wastewater management and the supply of safe water provides particularly high returns.

4

Successful and sustained wastewater management will need an entirely new dimension of investments, to start now

Currently, most of the wastewater infrastructure in many of the fastest growing cities is lacking. It is outdated, not designed to meet local conditions, poorly maintained and entirely unable to keep pace with rising urban populations. Experiences have shown that appropriate investments done in the right manner can provide the required returns. However, it will require not only investments, but careful and comprehensive integrated water and wastewater planning and management at national and municipal levels. This must transcend the entire water supply and disposal chain involving ecosystem management (including coastal waters), agricultural efficiency and production and treatment of wastewater and a stronger focus on urban planning.

RECOMMENDATIONS:

The policy recommendations presented by the report propose a two-pronged, incremental approach to tackle immediate consequences whilst thinking to the long term:

A

Tackle immediate consequences

1. Countries must adopt a multi-sectoral approach to wastewater management as a matter of urgency, incorporating principles of ecosystem-based management from the watersheds into the sea, connecting sectors that will reap immediate benefits from better wastewater management.
2. Successful and sustainable management of wastewater requires a cocktail of innovative approaches that engage the public and private sector at local, national and transboundary scales. Planning processes should provide an enabling environment for innovation, including at the community level but require government oversight and public management.
3. Innovative financing of appropriate wastewater infrastructure should incorporate design, construction, operation, maintenance, upgrading and/or decommissioning. Financing should take account of the fact that there are important livelihood opportunities in improving wastewater treatment processes, whilst the private sector can have an important role in operational efficiency under appropriate public guidance.

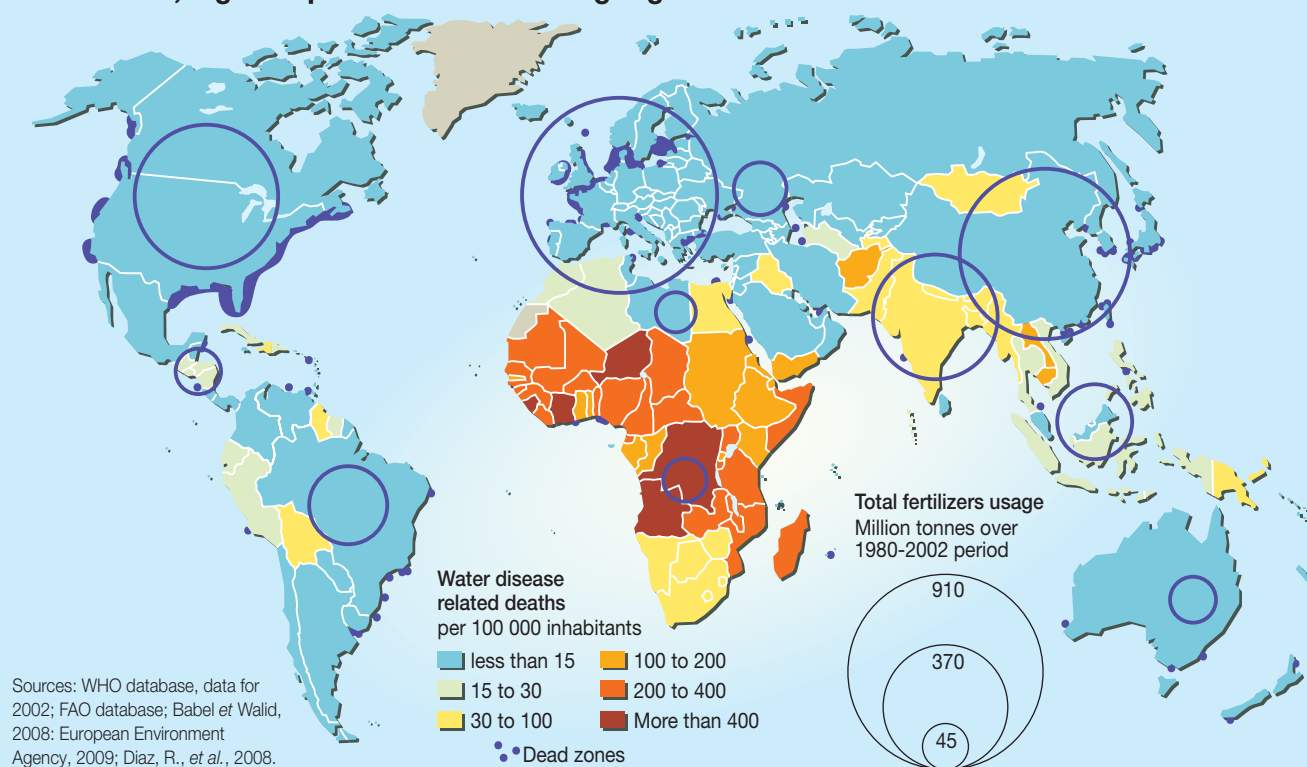
B

Thinking to the long term

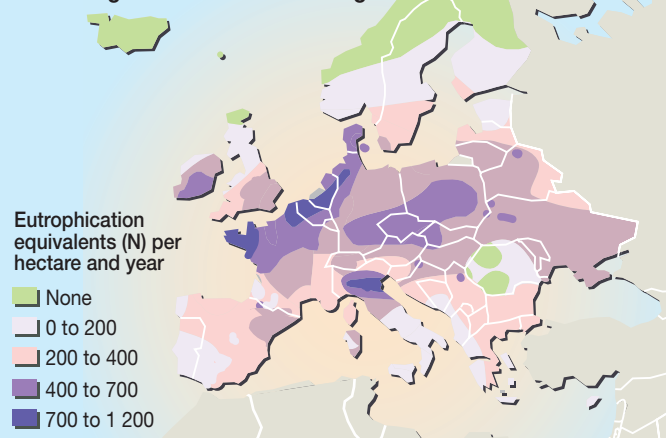
4. In light of rapid global change, communities should plan wastewater management against future scenarios, not current situations.
5. Solutions for smart wastewater management must be socially and culturally appropriate, as well as economically and environmentally viable into the future.
6. Education must play a central role in wastewater management and in reducing overall volumes and harmful content of wastewater produced, so that solutions are sustainable.



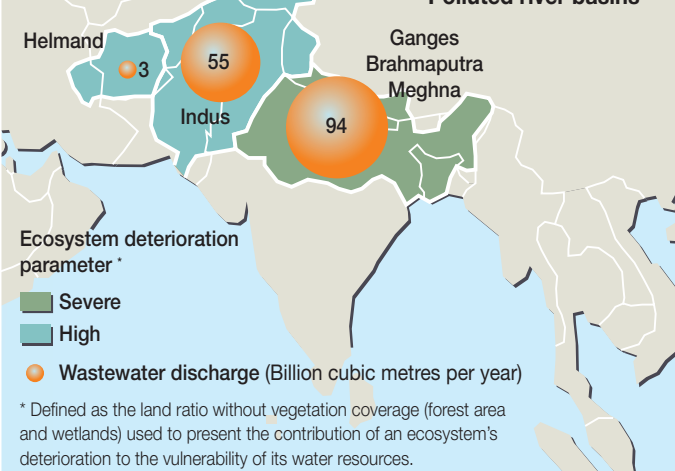
Wastewater, a global problem with differing regional issues



Variation within Europe: Exceeding critical nutrient loading



Polluted river basins



Corcoran, E., C. Nellemann, E. Baker, R. Bos, D. Osborn, H. Savelli (eds). 2010.

Sick Water?

The central role of wastewater management in sustainable development.

A Rapid Response Assessment. UNEP, UN-HABITAT, GRID-Arendal.

Launched on World water day, 22 March, 2010, *Sick water? The central role of wastewater management in sustainable development* was compiled by GRID-Arendal and is the result of an inter-agency collaboration led by UNEP and UN-HABITAT in partnership with UNSGAB, the UN Secretary General's Advisory Board on Water and Sanitation, and UN Water. The full report, e-book and additional materials are available for download at www.grida.no/publications/rr/sickwater

The collaborating agencies are available to assist governments who seek additional information or support beyond the full report.



GRID-Arendal

Teaterplassen 3
N-4836 Arendal
Norway
grid@grida.no
www.grida.no

www.unep.org
www.unhabitat.org