United Nations Educational, Scientific and Cultural Organization

World Water Assessment Programme

UN WATER

WWDR 2018

Nature-based Solutions for Water

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with contributions of the Lead Agencies and MANY others

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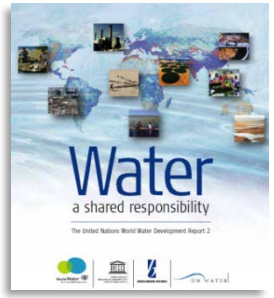
United Nations Educational, Scientific and Cultural Organization

International Hydrological Programme

UNITED NATIONS UNIVERSITY

UNDP

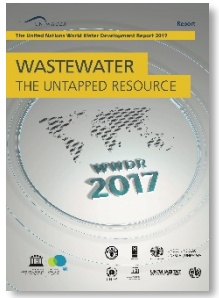
Background on **WWDR production process**



2006

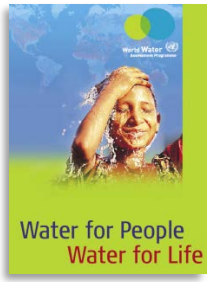
2012

2015



2017

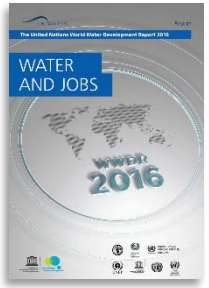
2003



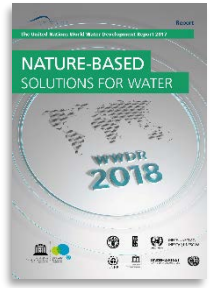
2009

2014

2016

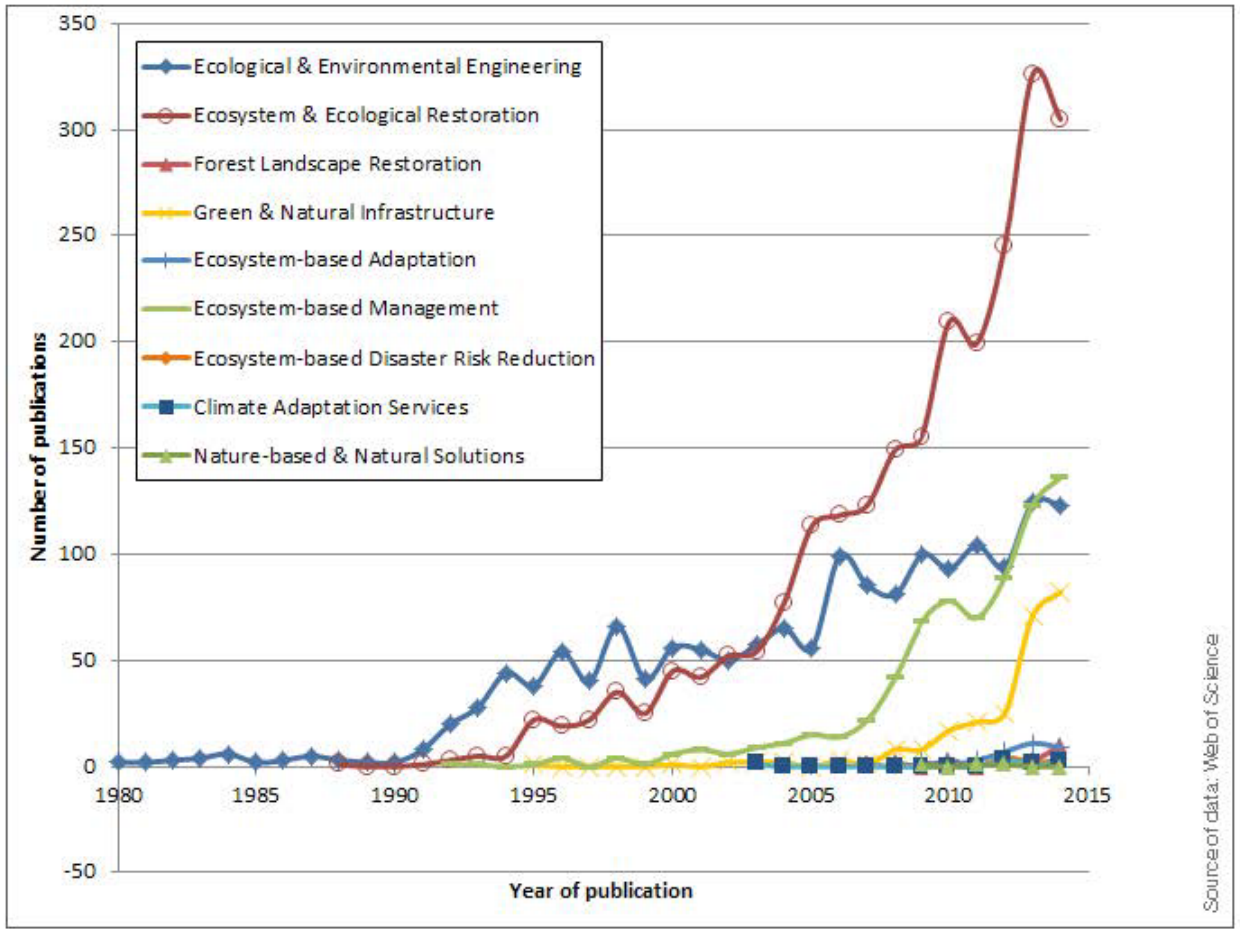


2018



Presenting the theme:

Nature-Based Solutions
for improved water management



What are nature-based solutions for water?

Nature-based solutions (NBS) are inspired and supported by nature and use, or mimic, natural processes to cost effectively contribute to the improved management of water. The defining feature of a NBS is, therefore, not whether an ecosystem being used is "natural" but whether natural processes are being proactively managed to achieve a water-related objective. A NBS uses ecosystem services to contribute to a water management outcome. A NBS can involve conserving or rehabilitating natural ecosystems and/or the enhancement or creation of natural processes in modified or artificial ecosystems. They can be applied at micro- (e.g. a dry toilet) or macro- (e.g. landscape) scales.

How can NBS be implemented to help achieve THREE main **water management objectives**?

I) **Improving water availability/supply, for instance**

- infiltration (precipitation, surface water) for groundwater recharge; the converse is poor land management that increases surface runoff

- soil moisture retention – key for vegetation (agriculture/food security)

- moisture recycling – role of evaporation and atmospheric circulation for precipitation patterns

II) **Improving water quality, for instance**

- Preventing water sources from being polluted in the first place

- Using NBS to treat/remove contaminants

III) **Disaster risk reduction**

- Mitigating the impacts of floods and droughts

Different NBS often address more than one of the water management objective.

Furthermore, **NBS act or can be implemented at different scales**

I) **Local/community scale NBS**

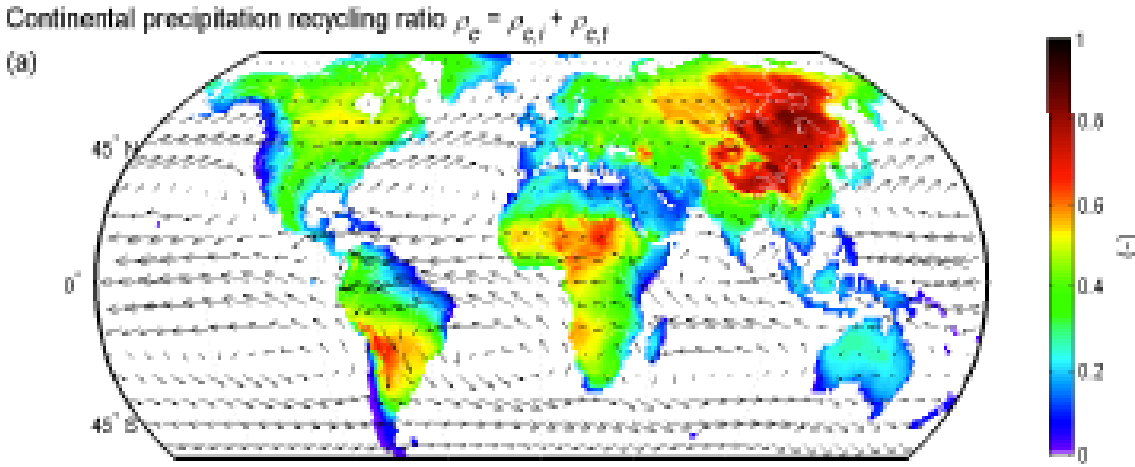
e.g., constructed wetlands for wastewater treatment, green infrastructure in cities, etc.

II) **Basin-level or 'landscape' scale NBS**

e.g., watershed management, including PES for watershed protection

III) **'Precipitationsheds' or inter-basin moisture recycling**

Precipitation in one basin may be dependent on evoporation and atmospheric circulation patterns in another. As such, applying NBS at the marco scale can have water supply implications in a completely different basin or country, adding a whole new scale to IWRM.



Source: Van der Ent et al., 2014; Earth Syst. Dynam.

Why so limited uptake of NBS?

Governance and Regional Chapters

Some Obstacles for Implementations

1. uncertainties around performance and cost-effectiveness
2. regulatory uncertainty and legal constraints
3. limited access to information and guidance on design, implementation, monitoring and assessment
4. fear of high implementation costs due to the need of site-specific solutions
5. lack of specific financing mechanisms for investments in NBS
6. generally high demands for coordination and collaboration between stakeholders

Selected preliminary

Key messages from WWDR 2018

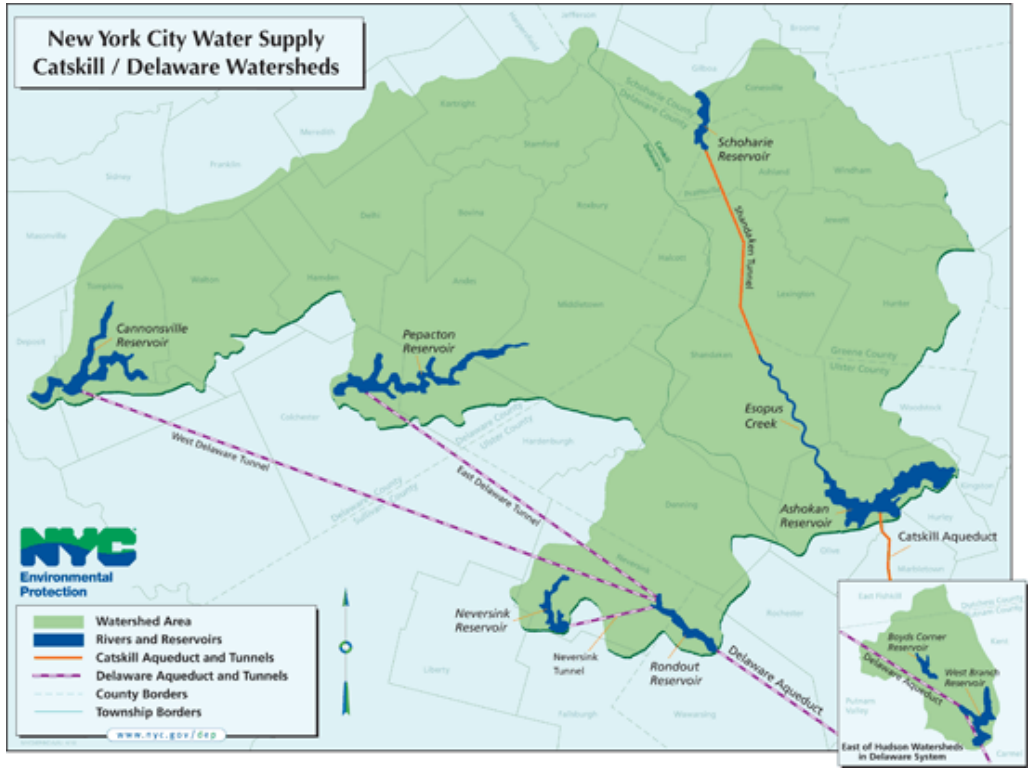
1. It is often not so much a question of choosing between grey *VERSUS* green infrastructure, but finding the most appropriate (site-specific), technically feasible and economically cost-effective combination of grey AND green infrastructure.

2. With a few exceptions, current financing and expenditure for water resources management is heavily skewed towards grey infrastructure solutions.

3. One of the most important obstacles to the uptake of NBS comes from the difficulty in assessing and comparing the costs and benefits of both grey infrastructure and NBS in terms of various water management objectives. Ideally, a common analytical framework (i.e. common performance indicators) would help solve this challenge.

The example of

NYC's Catskills/Deleware watershed protection programme (example PES)



The New York City committed between $1.4 – $1.5 billion in watershed protection projects so far, averaging $167 million per year. Had the City opted instead to build the filtration plant, taxpayers would have to pay approximately $6 billion to build the plant plus another $250 million per year for maintenance.

THANK YOU

WWDR and other publications, videos,
PPTs, TOOLS etc. are available at:

www.unesco.org/water/wwap