Definitions and outcomes of NWRM – EU project

DG Environment – Water Unit
Lucia Bernal Saukkonen

BUCHAREST 12TH NOVEMBER 2014,
WORKSHOP ON RIVER RESTORATION AND NWRM

Overview

- *Policy background*
- *Blueprint and CIS*
- *Pilot project on NWRM*
- *EU Policy Document*



Policy Background

- *An information package "Towards Better Environmental Options in Flood Risk Management" sent to Water Directors*
- *The White Paper on Adaptation to Climate Change (2011)*

  working with Nature = efficient
- *The "Blueprint to safeguard Europe's water resources" (2012) => CIS work- programme*
- *Biodiversity and Green Infrastructure Communication (2013)*
- *Climate Change Adaptation Strategy (2013)*

The Blueprint to Safeguard Europe's Waters

- Stresses the importance of green infrastructures for reducing the impacts of floods, droughts, and land use related pressures
- Proposes that Member States expand green infrastructures using the River Basin Management Plans. The Plans require an **integrated approach to managing water resources** across policy areas and sectors. NWRM to be supported by:
  - The Commission to develop with CIS tools for facilitating NWRM uptake in the next RBMPs and FRMPs
  - To prioritise funding of natural infrastructures and ecosystem based adaptation for the water sector in the ESIF
  - Use conditionalities, such as greening of the CAP

Follow up to the Blueprint

- *The new CIS work program took to account the Blueprint proposals:* ***Working Group PoM and deliverable on CIS***
- *COM Launched Pilot Project:" Integration of Natural Water Retention Measures in river basin management" (www.nwrm.eu)*
- *Commission draws attention to the inclusion of Green Infrastructure in the Partnership Agreements negotiated with Member States and other financing instruments*
- *Encourage synergies with other EU policies to be exploited*

Definition of NWRM

Natural Water Retention Measures are multi-functional measures that aim to protect and manage water resources and address water-related challenges by restoring or maintaining ecosystems as well as natural features and characteristics of water bodies using natural means and processes.

The main focus is to enhance and preserve the water retention capacity of aquifers, soil, and ecosystems with a view to improve their status. The application of NWRM supports green infrastructure, improves or preserves the quantitative status of surface water and groundwater bodies and can positively affect the chemical and ecological status of water bodies by restoring or enhancing natural functioning of ecosystems and the services they provide. The preserved or restored ecosystems can contribute both to climate change adaptation and mitigation.

Why Natural Water Retention Measures?

Assessment of RBMPs identified...

- *Hydromorphological alteration and diffuse pollution are the most significant issues leading to massive failure in WB status.*
- *Measures implemented until now have been insufficient.*
- The main causes of negative impacts on water status are interlinked. They include **climate change**, **land use**, economic activities, agriculture, tourism; urban development and demographic change.

Why Natural Water Retention Measures?

NWMR as one of the responses can:

- *reduce impact of diffuse pollution,*
- *regulate the flow regime in natural pattern*
- *reduce vulnerability to Climate Change,*
- *restoring the deteriorated morphological element on the riparian area and the floodplain,*
- *improve water status (surface and groundwater) (incl. DW, BW),*
- *be a Better Environmental Option for Flood risk management supporting Natural Flood Risk Management.*

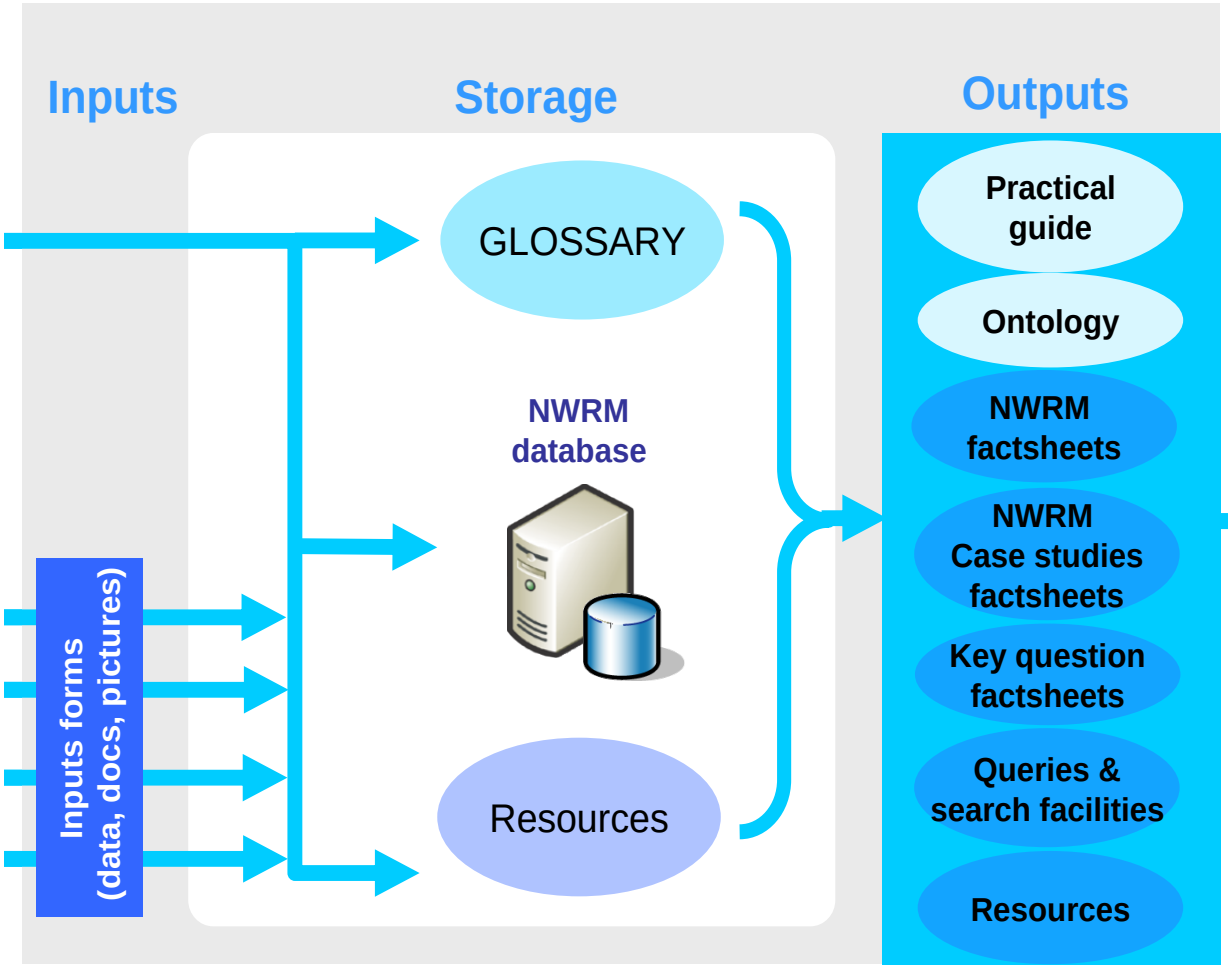
NWRM Pilot Project (*www.nwrm.eu*)

- ***to build the knowledge base on NWRM, to provide a detailed assessment of effectiveness, costs and benefits of NWRM***
- ***to further develop and maintain a catalogue of measures and case studies and associated database with geographical references***
- ***to promote knowledge and best practice exchange****:*
- ***To contribute to WFD CIS and to identify / create operational tools that can be used at national, river basin, and/or local level to facilitate inclusion of NWRM in the RBMPs and FRMPs****.*

Main Deliverables: *Practical Guide, Knowledge Database, Building a community of practise (by December 2014)*

11 partners: OIEau (FR), ACteon (FR), AMEC (UK), SRUC (SC), REC (HU), IACO (CY), Enveco (SW), REKK (HU), Imdea (SP), SLU (SE), BEF (LV)

Work organisation



European Commission

Natural Water Retention Measures

Home | The practical guide | About NWRM project | Catalogue of measures | Case studies | Glossary

From this page you can access the guide that will help you find your way to implement NWRMs, or directly access the different products: policy documents, catalogue of measures, case studies

NWRM are : Measures that aim to protect water resources using natural means and processes, therefore building up Green Infrastructure, for example, by restoring ecosystems and changing land use.

MORE ABOUT NWRM

Browse NWRM concepts

BROWSE

POLICY QUESTIONS

Access to measures

Access to case studies

ACCESS TO CASE STUDIES BY LIST

in-depth light

Catalogue of Measures

A1	Meadows and pastures
A2	Buffer strips and shelter belts
A3	Crop rotation
A4	Strip cropping
A5	Intercropping
A6	No tillage
A7	Reduced/conservation tillage
A8	Green cover
A9	Early sowing
A10	Traditional terracing
A11	Controlled traffic farming
A12	Reduced stocking density
A13	Mulching

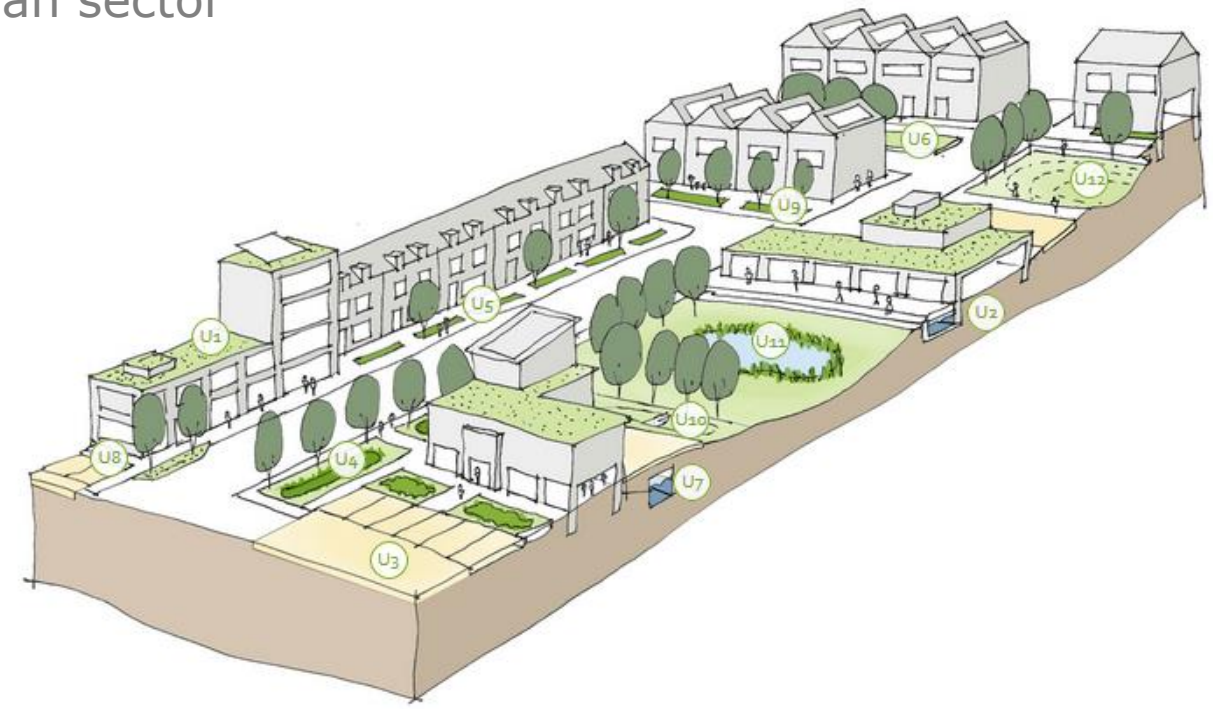
F1	Riparian buffers
F2	Headwater areas
F3	Reservoir catchments
F4	Targeted planting for “catching” precipitation
F5	Land use conversion
F6	Continuous Cover forestry
F7	“Water sensitive” driving
F8	Appropriate design of roads and stream crossings
F9	Sediment capture ponds
F10	Coarse woody debris
F11	Urban forest parks
F12	Trees in Urban areas
F13	Overland Flow Areas
F14	Peak Flow control structures

U1	Green Roofs
U2	Rainwater Harvesting
U3	Permeable Paving and other permeable surfaces
U4	Swales
U5	Channels and Rills
U6	Filter Strips
U7	Soakaways
U8	Infiltration Trenches
U9	Rain Gardens
U10	Detention / Infiltration Basins
U11	Retention Ponds
U12	Managed Aquifer Recharge

N1	Basins and ponds
N2	Wetland
N3	Floodplain reconnection
N4	Re-meandering
N5	Revitalisation of flowing waters
N6	Temporary tributaries flow
N7	Hydraulic annexes
N8	Riverbed (alluvial mattress)
N9	Levelling of dams/ longitudinal barriers
N10	Natural bank stabilisation
N11	Elimination of riverbank protection
N12	Lakes
N13	Artificial groundwater recharge (AGR)
N14	Floodplain restoration (polder)

Catalogue of Measures

Exemple: Urban sector



U01	Green Roofs
U02	Rainwater Harvesting
U03	Permeable surfaces
U04	Swales
U05	Channels and rills

Potential impacts of NWRM

"The means by which the measure alters the function or structure of the ecosystem or hydrological system. "

Biophysical impacts

On the website

By clicking in the BP you're interested in, you will obtain a list of the measures which have an effect on it *(High, medium or low)*

Mechanisms of Water Retention

Slowing and storing Runoff

- BP1 Store Runoff
- BP2 Slow Runoff
- BP3 Store river water
- BP4 Slow river water

Reducing Runoff

- BP5 Increase evapotranspiration
- BP6 Increase infiltration and/or recharge
- BP7 Increase soil water retention

Biophysical Impacts Resulting from Water Retention

Reducing Pollution

- BP8 Reduce Pollutant Sources
- BP9 Intercept Pollution Pathways

Soil conservation

- BP10 Reduce erosion and/or sediment delivery
- BP11 Improve soils

Creating Habitat

- BP12 Create aquatic habitat
- BP13 Create riparian habitat
- BP14 Create terrestrial habitat

Climate alteration

- BP15 Enhance precipitation
- BP16 Reduce peak temperature
- BP17 Absorb and/or retain CO_2

Potential impacts of NWRM

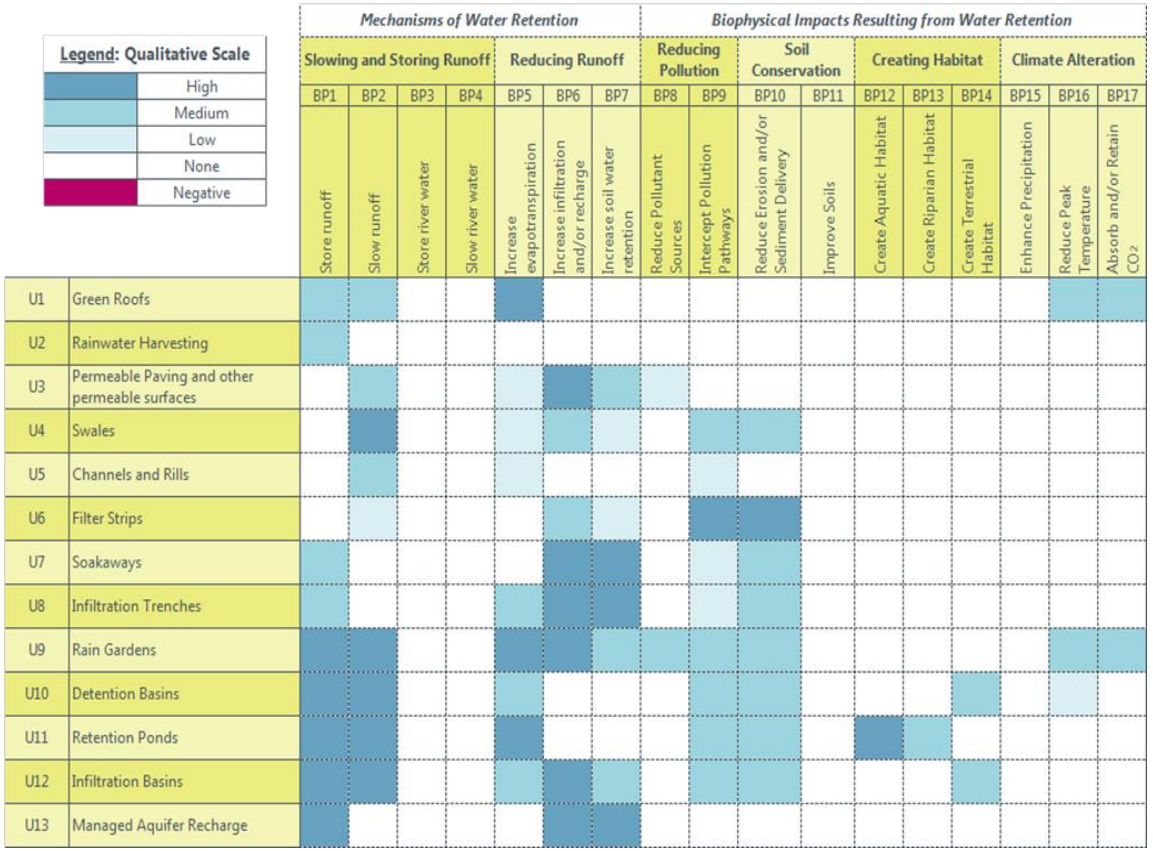
Biophysical impacts

On the website

Also available as separate documents

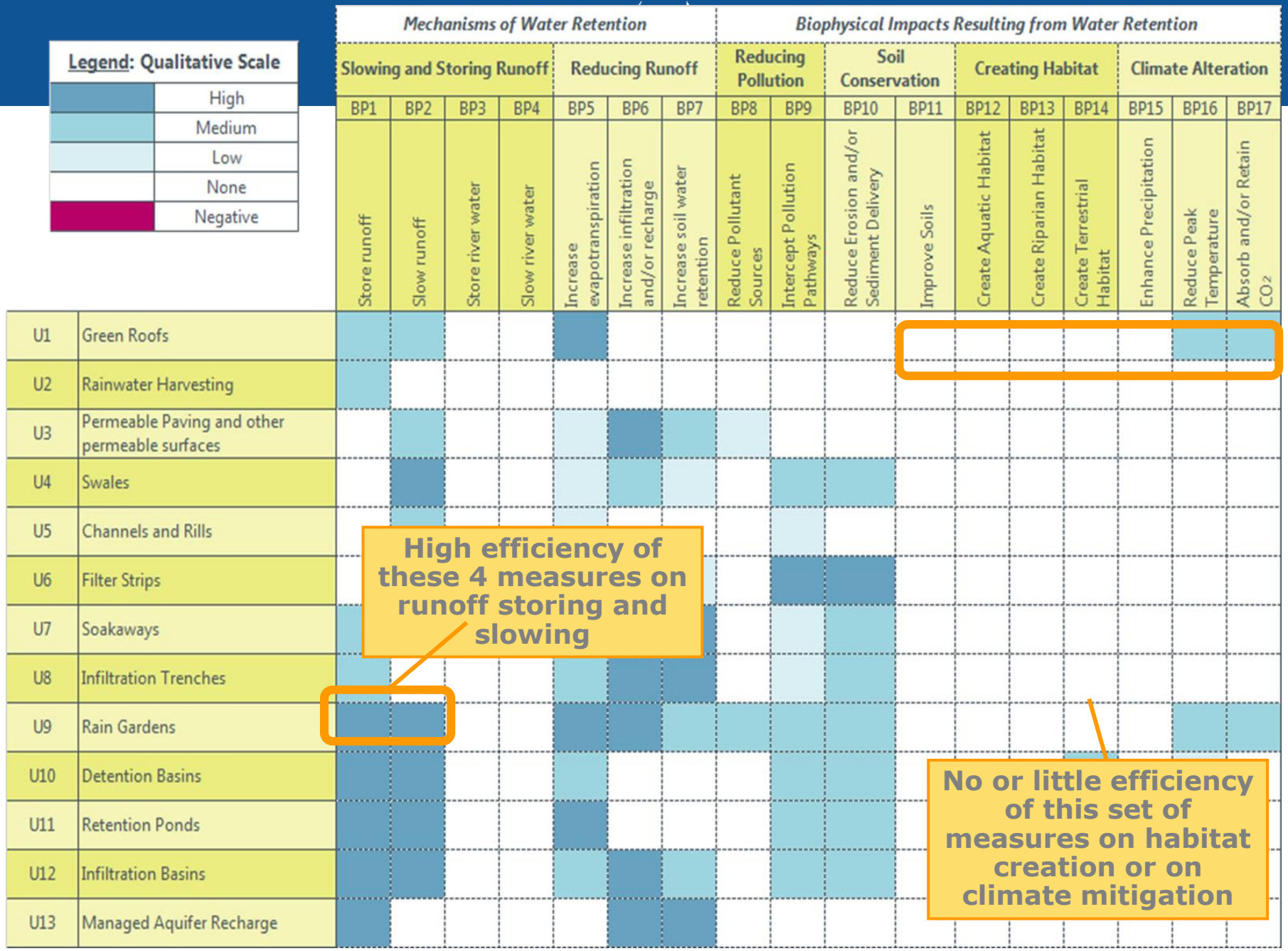
Matrix example:

" Biophysical Impacts for Urban sector's measures"



Legend: Qualitative Scale
High
Medium
Low
None
Negative

		Mechanisms of Water Retention							Biophysical Impacts Resulting from Water Retention									
		Slowing and Storing Runoff				Reducing Runoff			Reducing Pollution		Soil Conservation		Creating Habitat			Climate Alteration		
		BP1	BP2	BP3	BP4	BP5	BP6	BP7	BP8	BP9	BP10	BP11	BP12	BP13	BP14	BP15	BP16	BP17
		Store runoff	Slow runoff	Store river water	Slow river water	Increase evapotranspiration	Increase infiltration and/or recharge	Increase soil water retention	Reduce Pollutant Sources	Intercept Pollution Pathways	Reduce Erosion and/or Sediment Delivery	Improve Soils	Create Aquatic Habitat	Create Riparian Habitat	Create Terrestrial Habitat	Enhance Precipitation	Reduce Peak Temperature	Absorb and/or Retain CO_2
U1	Green Roofs	High	High			High											Medium	High
U2	Rainwater Harvesting	High																
U3	Permeable Paving and other permeable surfaces		Medium			Low	High	Medium	Low									
U4	Swales		High			Low	Medium	Low		Medium	Medium							
U5	Channels and Rills		Medium			Low				Low								
U6	Filter Strips		Low				Medium	Low		High	High							
U7	Soakaways	High					High	High		Low	Medium							
U8	Infiltration Trenches	High				Medium	High	High		Low	Medium							
U9	Rain Gardens	High	High			High	High	Medium	Medium	Medium	Medium						Medium	High
U10	Detention Basins	High	High			Medium				Medium	Medium				High		Low	
U11	Retention Ponds	High	High			High				Medium	Medium		High	Medium				
U12	Infiltration Basins	High	High			Medium	High	Medium		Medium	Medium				High			
U13	Managed Aquifer Recharge	High					High	High										


Legend: Qualitative Scale
High
Medium
Low
None
Negative
Mechanisms of Water Retention
Biophysical Impacts Resulting from Water Retention
Slowing and Storing Runoff
Reducing Runoff
Reducing Pollution
Soil Conservation
Creating Habitat
Climate Alteration
BP1
BP2
BP3
BP4
BP5
BP6
BP7
BP8
BP9
BP10
BP11
BP12
BP13
BP14
BP15
BP16
BP17
Store runoff
Slow runoff
Store river water
Slow river water
Increase evapotranspiration
Increase infiltration and/or recharge
Increase soil water retention
Reduce Pollutant Sources
Intercept Pollution Pathways
Reduce Erosion and/or Sediment Delivery
Improve Soils
Create Aquatic Habitat
Create Riparian Habitat
Create Terrestrial Habitat
Enhance Precipitation
Reduce Peak Temperature
Absorb and/or Retain CO2
U1 Green Roofs
U2 Rainwater Harvesting
U3 Permeable Paving and other permeable surfaces
U4 Swales
U5 Channels and Rills
U6 Filter Strips
U7 Soakaways
U8 Infiltration Trenches
U9 Rain Gardens
U10 Detention Basins
U11 Retention Ponds
U12 Infiltration Basins
U13 Managed Aquifer Recharge
High efficiency of these 4 measures on runoff storing and slowing
No or little efficiency of this set of measures on habitat creation or on climate mitigation

Agreed WG PoM Deliverable

- *A short Policy Document aiming:*
  - **To explain the policy relevance of NWRM, stimulate their uptake as effective means for achieving water and other environmental policy objectives.**
  - **To be used as tool by water directors to persuade other policy makers for joined action**
- *Targeting Water Directors and decision-makers at the National Competent Authorities for WF/FD and local and regional catchment-scale decision-makers.*
- ***Ensure coherence with tools and documents of the NWRM pilot project. The project will be providing the knowledge base, experiences, technical background and practical guidance tools to complement this document.***

The policy document – what will you find in?

- ✓ Executive summary
- ✓ What is the aim and target group of the policy document?
- ✓ What can you achieve with NWRM? (types of measures and expected benefits)
- ✓ Which policy relevance of NWRM? (=> WFD, FD, other Environmental Policy, Agriculture Policy...)
- ✓ Making NWRM operational: some recommendations
- ✓ Conclusions

The final version sent to Water Directors for the 24-25 Nov

Conclusions

- *Case Studies and science based predictions support their effectiveness, but there is yet not a wide uptake. Need for a change in the thinking.*
- *Some knowledge gaps exist on: specific conditions for optimising NWRM, combining them with other measures, quantifying their impact at large scale and calculating all their benefits.*
- *Multifunctional and Multi-sectoral => need to have collaboration between different governance actors and stakeholders*
- *Measures are relevant EU-Wide but their design needs to be tailored for each bio geographical region*
- *NWRM offer multiple benefits and opportunities for achieving WFD and FDs objectives and as such should be included in the RBMPs and FRMPs.*


Thank you for
your attention