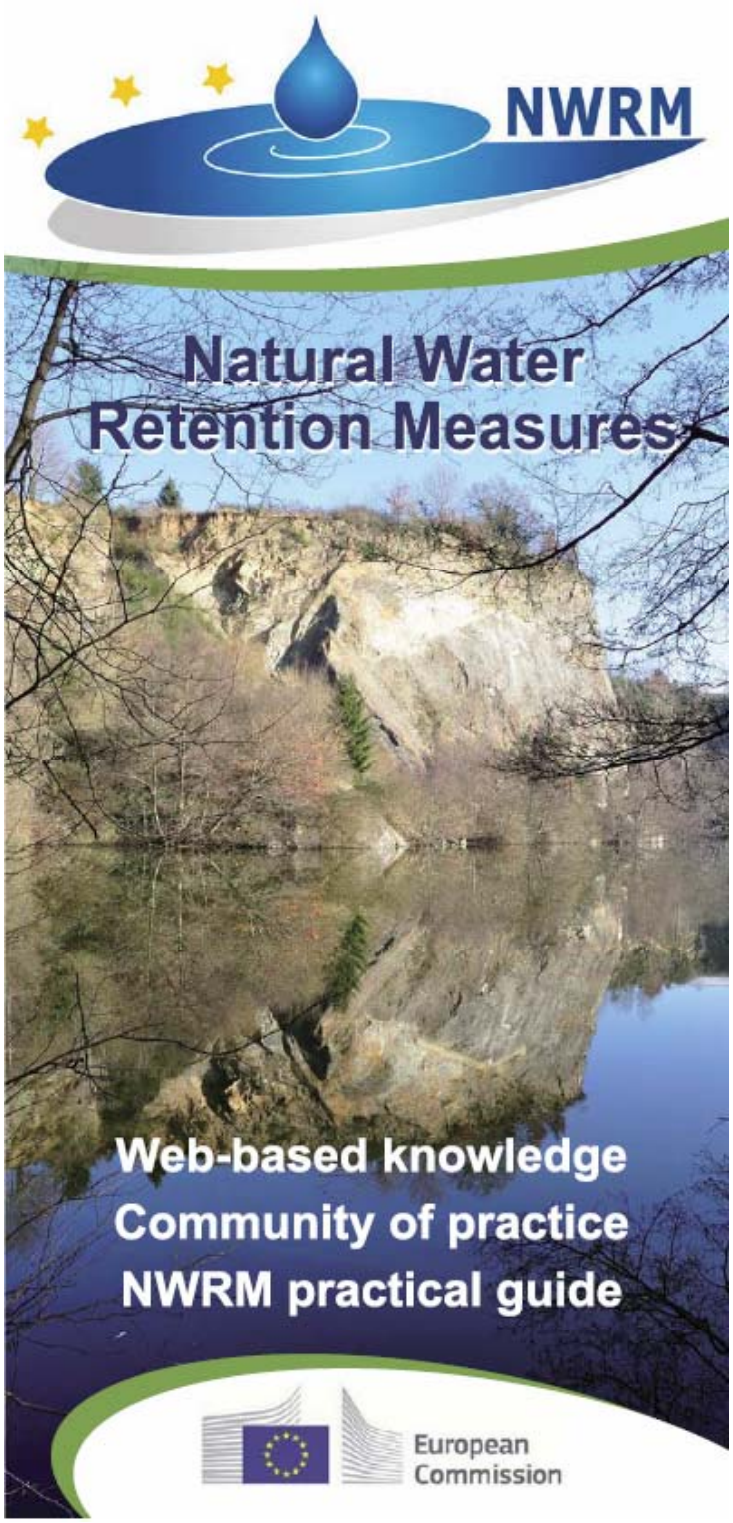


Pilot Project - Atmospheric Precipitation - Protection and efficient use of Fresh Water: Integration of Natural Water Retention Measures in River basin management

Service contract n°ENV.D.1/SER/2013/0010

Are NWRM "good candidates" for reaching the goals of the WFD and FD cost-effectively?

Food for thoughts

Pierre Strosser
ACTeon, France

Linking Floods Directive and Water Framework Directive

October 8th & 9th, 2014 – Rome, Italy

Office International de l'Eau

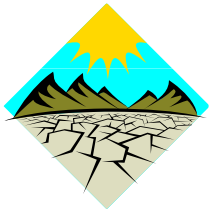
ACTeon environment

Why have NWRM “emerged”?

Widening the regulatory framework & policy objectives

Birds/habitats *WFD* *Floods* *Climate change* *Urban dev.*




Giving more room to soft measures (nature)

Making « best use » of (scarce) financial resources

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What are NWRM? (1)

Natural Water Retention Measures are multi-functional measures that aim to protect 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 of applying NWRM is to enhance the retention capacity of aquifers, soil, and aquatic and water dependent ecosystems with a view to improve their status. The application of NWRM supports green infrastructure, improves the quantitative status of water bodies as such, and reduces the vulnerability to floods and droughts. It positively affects the chemical and ecological status of water bodies by restoring natural functioning of ecosystems and the services they provide. The restored ecosystems contribute both to climate change adaptation and mitigation.

Source: EU Policy document (forthcoming)

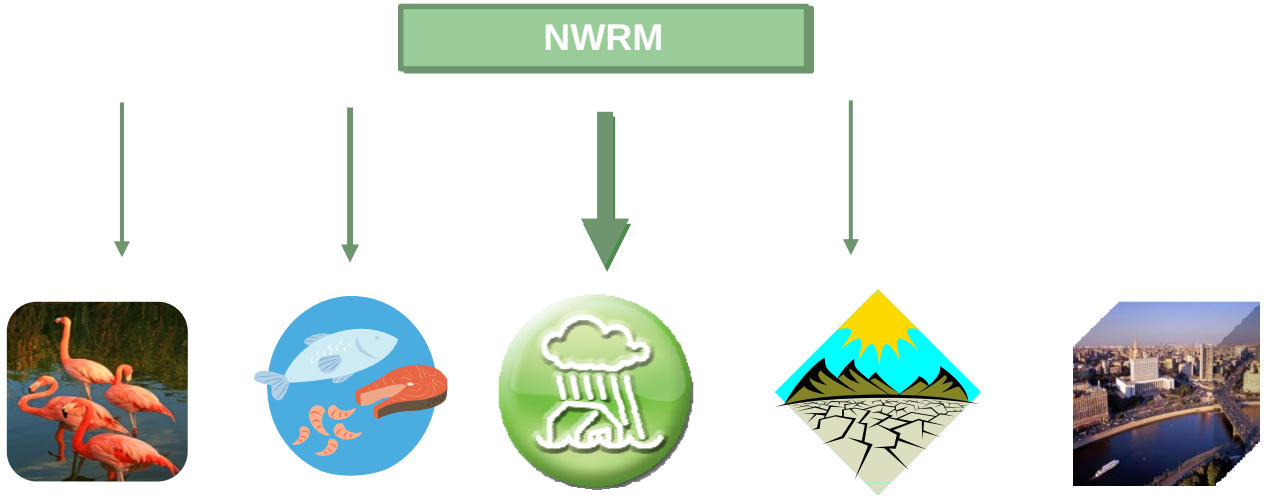
What are NWRM? (2)

Type	Class	Non-exhaustive list of examples
Direct modification in ecosystems	**Hydro-morphology (Rivers, Lakes, Aquifers, connected wetlands)**	Restoration and maintenance of rivers, lakes, aquifers and connected wetlands; Reconnection and restoration of floodplains and disconnected meanders, elimination of riverbank protection…
Change & adaptation in land-use & water management practice	**Agriculture**	Restoration and maintenance of meadows, pastures, buffer strips and shelter belts; Soil conservation practices (crop rotation, intercropping, conservation tillage...), green cover, mulching…
		Afforestation of upstream catchments; targeted planting for "catching"

NWRM	Description	Potential primary benefits
Reconnection of disconnected meanders 	The re-connection of meanders to the main channel will improve lateral connectivity, diversifying flows and habitats, but also cleaning the secondary arms that can retain water during peak water flow periods.	Enhanced conveyance potential & river continuity, peak runoff attenuation, sustainable drainage, maintenance of base flow, groundwater recharge
Conservation tillage 	By leaving crop residue on the soil surface, conservation tillage slows water movement and reduces soil erosion.	Water quality improvement, Decrease of runoff, Soil conservation, increase infiltration potential
Installation of green roofs 	The vegetation on top of a building or structure intercepts and retains precipitation. Green roofs hence reduce peak flows and pollutant loads and soften extreme temperature in cities.	Sustainable Drainage & Runoff Control, amenity space; Water quality improvement

Are NWRM new?

- **No… as these measures do already exist and are implemented as part of sector plans/strategies**
  - **Think of…. *Green Infrastructure, Room for the River, Ecosystem-based Adaptation, Natural Flood Risk Management, Sustainable Drainage…***
- **What changes is the way we look at them, focusing on "retention" and on the multiple benefits these measures can deliver**



Are NWRM cost-effective solutions? (1)

- **What would be <u>your</u> answer?**

Are NWRM cost-effective solutions? (2)

- **A quiz from Carlos M. GOMEZ (IMDEA): do you know:**
  - **Usain Bolt?**
  - **Ashton Eaton?**

Are NWRM cost-effective solutions? (2)

- **Answer 1 – Yes, they are!**

The village of Belford, downstream, had a history of flooding. The costs of conventional flood defence improvements have been estimated at around 3 M€. In contrast, upstream NWRMs were estimated to deliver the same level of flood protection at a cost below 0.25 M€.

Are NWRM cost-effective solutions? (3)

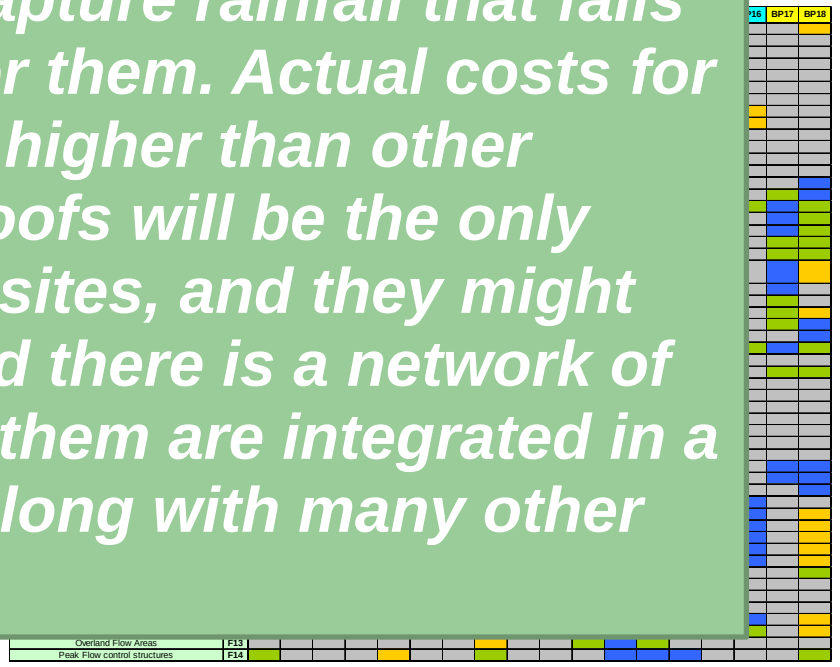
- **Answer 2 – No, they are not!**

When land costs are significant in particular in peri-urban areas, then reducing flood risk by giving more space to rivers can be less cost-effective then with more traditional measures.

Are NWRM cost-effective solutions? (4)

- **Answer 3 – It depends…**

Green roofs are often less cost-effective than other measures as they only capture rainfall that falls directly over them. Actual costs for green roofs are often 4+ times higher than other alternatives. However, green roofs will be the only solution on some constrained sites, and they might become cost-effective provided there is a network of individual initiatives and all of them are integrated in a green infrastructure strategy along with many other measures



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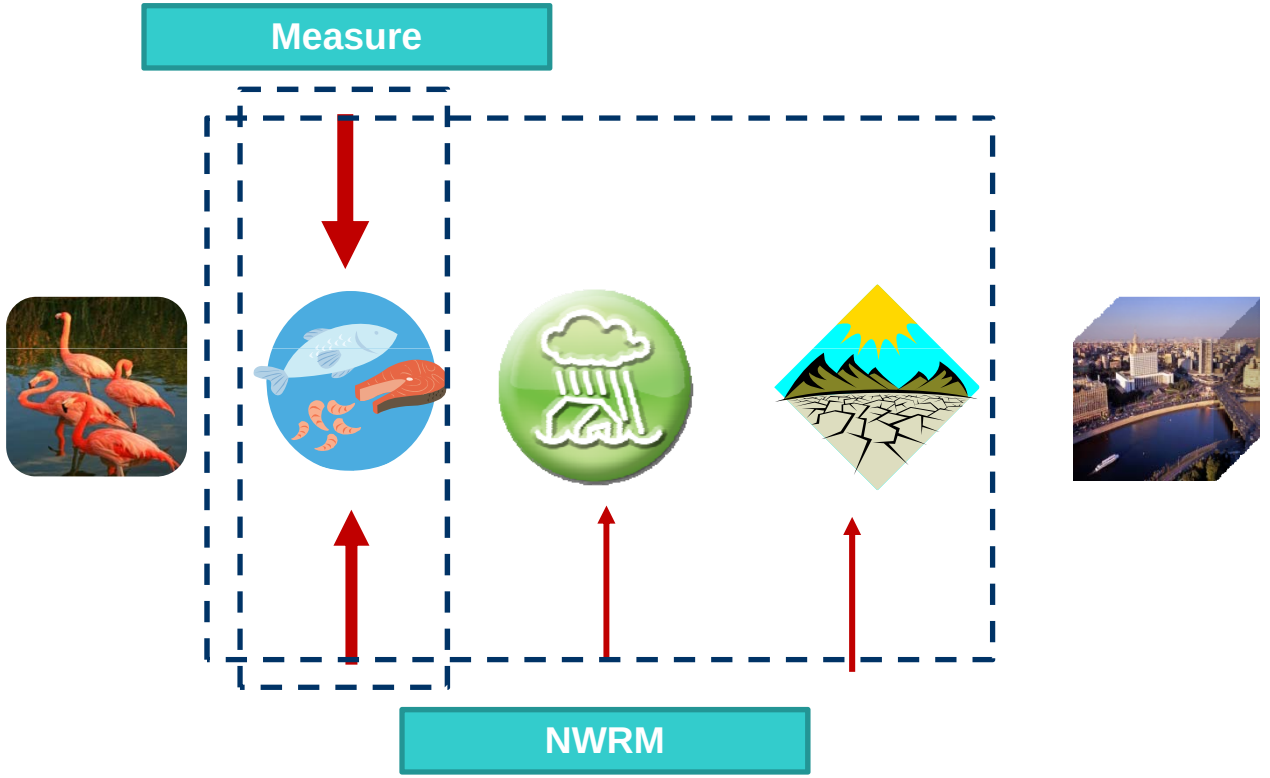
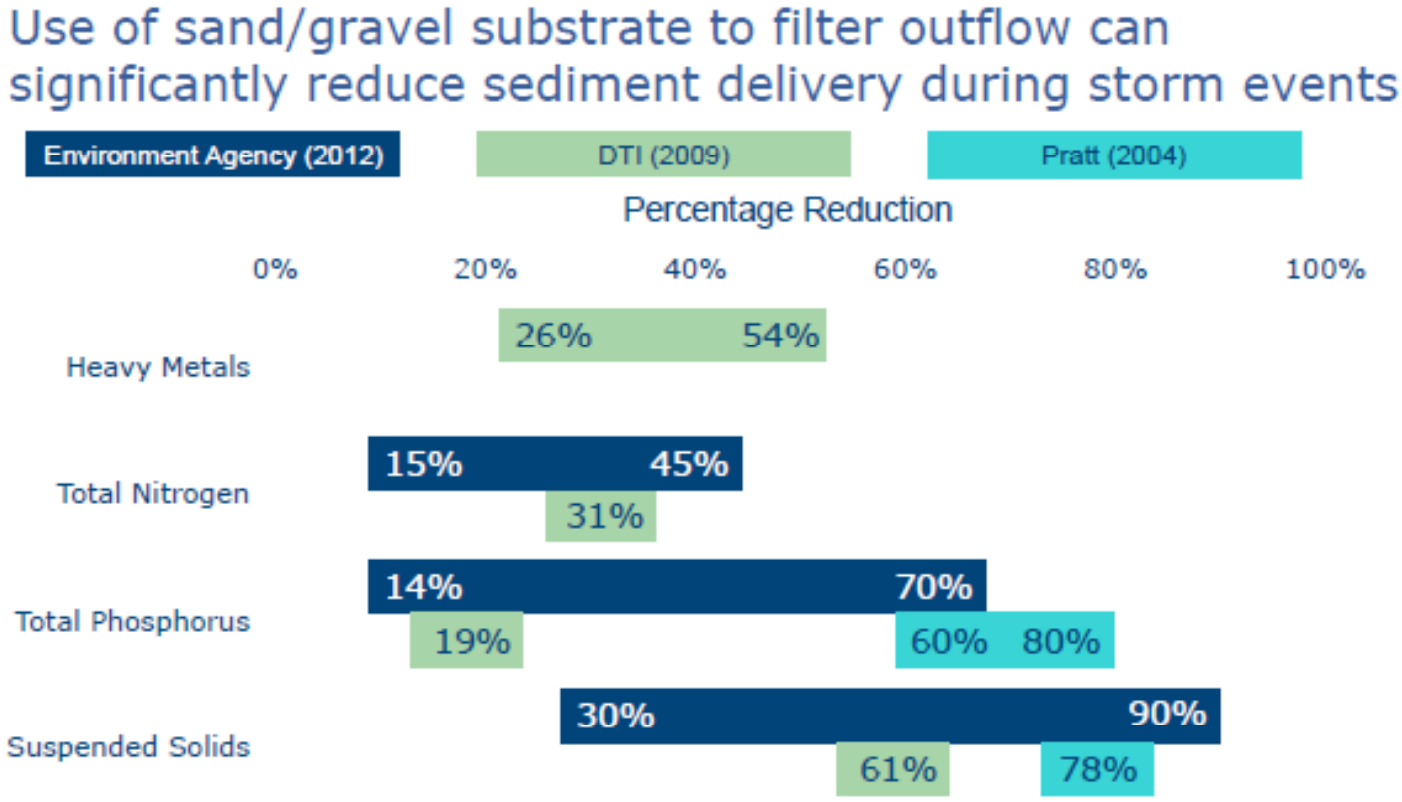
Are NWRM cost-effective solutions? (5)

- **Answer 4 – It also depends… on what you consider in your assessment. Contributing to a single policy goal, or contributing to several policy goals and accounting for the multi-benefits of NWRM?**



Are NWRM cost-effective solutions? (5)

- **Answer 4 – It also depends… on what you consider in your assessment. Contributing to a single policy goal, or contributing to several policy goals and accounting for the multi-benefits of NWRM?**



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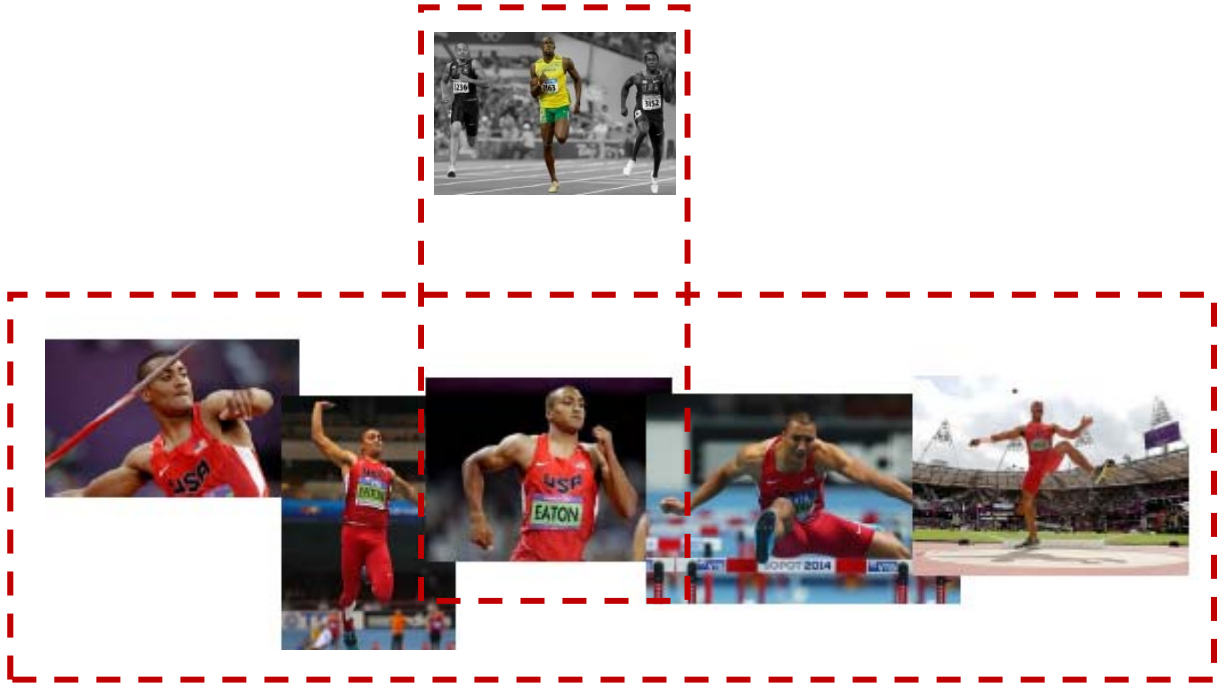
Are NWRM cost-effective solutions? (6)

- **Finally…. who is Ashton Eaton?**



World record in both the decathlon and heptathlon events

Any question, comments?

To be developed during the session

Moving to the session itself

What can NWRM effectively deliver? Impacts on biophysical processes and on WFD and FD indicators (Sonia Siauve – OIEau, NWRM pilot project)

Selecting NWRM in join planning for RBMP and FRMP - the experience from Austria (Clemens Neuhold, Austria)

Additional experiences and input from participants

Pre-conditions for supporting the design and implementation of NWRM (Pierre Strosser - ACTeon, NWRM pilot project)

Interactive Session: Identifying priorities for enhancing the knowledge base

Final discussion (key messages, additional issues, what could be "next“ for the CIS process, RTD, innovation platforms, etc.)