Water and Environment Support
in the ENI Southern Neighbourhood region

Explore the Potential of Natural Water Retention Measures (NWRM) at the catchment scale
Activity No. : N-W-JO-2

Proposed Guidelines / Criteria for the selection of appropriate sites of retention and detention systems

Stakeholders' Consultation Workshop

15 May 2024

Kempinski Hotel, Amman, Jordan

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NWRMs Applicability vs Dams

- Policy and Decision makers are often (if not always) reluctant to use NWRMs instead of "traditional" practices namely "a dam construction". Dams as flood protection units are indeed efficient in term of routing flood peaks downstream by attenuating and translating flood peaks even in the case that water level is on the overflow level at the onset of a flood event.
- However, the construction of a (multipurpose) dam includes a lot of uncertainties (e.g. hydrological, geological, geotechnical, financial) that may disproportionally enhance the total cost of the project and the construction period, if not to abolish any plans.
- The "million dollar question" is if cumulatively the effects of many small-scale NWRMs may have a –more- significant effect on flood peaks attenuation and storage in the catchment with less economic costs.

Proposed actions

Task 4: Review of economic incentives and regulation regarding storm water management

A cost–benefit analysis will be performed for the selected NWRMs, comparing the economic and environmental **benefits** of the water retained in natural and/or artificial storages (economically by the associated usage (irrigation, water supply, etc.), flood defense and environmentally by the water quality of the recipients) with the **costs** of applying the NWRMs. According to the analysis and the sustainability of the concept in general, the economic incentives for further adopting NWRMs will be proposed and a regulation framework on the application of the NWRMs for the whole of the country will be prepared.

Results

- Cost – benefit analyses of NWRMs comparing the costs (cost of construction, pollution, etc.) with the benefits per m^3 retained in storage (including benefits from flood defense).
- Assessment of funding options according to the nature of retention (groundwater, surface water) and purpose of water use.
- Economic incentives for the application of NWRM
- Basic structure of regulation manual regarding application of NWRM in Jordan.

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Proposed Selection Criteria

- Hydrology (rainfall intensity, catchment area, etc.).
- Topography (Slope relief, etc.)..
- Proximity To Existing Water Bodies Or Sewage Networks.
- Soil Infiltration Rate.
- Space Constrains and Accessibility.
- Soil Quality.
- Susceptibility to Storm Water Sedimentation.
- Socio-Economic factors.
- Existing Flood Protection Infrastructure.

Guidelines for the Selection of Appropriate Sites of NWRMS

- Existing Site Use and Natural Drainage Conditions.
- Estimation of Existing Flood Risk (Hazard and Vulnerability)
- Hydrology of the Area.
- Geology, Soils, Land Use and Vegetation Cover.
- Site Analysis Guidelines.
- Soil Permeability Testing .
- Socio-Economic Analyses.
- Existing Flood Protection Infrastructure.

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Thank you for your attention