Water and Environment Support
in the ENI Southern Neighbourhood region

Storm water management and Natural Water Retention Measures
Activity No. : N-W-IL-2

Kick-off meeting
video-conference

14 September 2020, Tel Aviv, Israel

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Overview of the Water and Environment Support (WES) Project

Presented by: Suzan TAHA, WES Key Water Expert

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WES in a Snapshot

- WES aims at **protecting the environment and improving the management of scarce water resources** in the Mediterranean.

- It strives to address the country needs for **creating** the **enabling environment** and enhancing the **capacities** of stakeholders in the Partner Countries (PCs) to tackle **problems related to pollution prevention and water use efficiency**.

- WES capitalises on previous successful EU funded regional projects (Horizon 2020 CB/MEP; SWIM SM; SWIM-Horizon 2020 SM).

WES Identity

Water and Environment Support
in the ENI Southern Neighbourhood region

Facts & Figures	
Partner Countries:	Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Libya, Palestine* and Tunisia
Project value:	7.917.200 Euros
Duration:	May 2019 – May 2023 (48 months)
Project team:	**Team Leader:** **Professor Michael Scoullos, scoullos@wes-med.eu** **Water Expert:** **Ms Suzan Taha, taha@wes-med.eu** **Environment Expert:** **Mr Anis Ismail, a.ismail@wes-med.eu** **Communication & Networking Expert:** **Ms Pam van de Bunt, vandebunt@wes-med.eu** **Stakeholders engagement expert:** **Dr. Emad Adly, wes.gc@raednetwork.org**
WES Focal Points (FP) (Israel)	**FP Water:** **Ms. Olga SLEPNER: Advisor to the Director General and Head of the International Relations Unit, Governmental Authority for Water and Sewage** **FP Environment:** **Ms. Tahel YASHFE: International Relations Division, Ministry of Environmental Protection**

*This designation is not to be construed as recognition of the State of Palestine and is without prejudice to the individual positions of the Member States on this issue.

WES Identity

Our Consortium

LDK Consultants Global EEIG (Leader)

Mediterranean Information Office for Environment, Culture and Sustainable Development (MIO-ECSDE)

Arab Network for Environment and Development (RAED)

Association of Cities and Regions for Sustainable Resource Management (ACR+)

CIHEAM – Mediterranean Agronomic Institute of Bari (CIHEAM Bari)

Gopa Infra GmbH

Ramboll Denmark A/S

Royal HaskoningDHV

Regional Activity Centre for Sustainable Consumption and Production (ARC-SCP/RAC) of UN Environment/Mediterranean Action Plan

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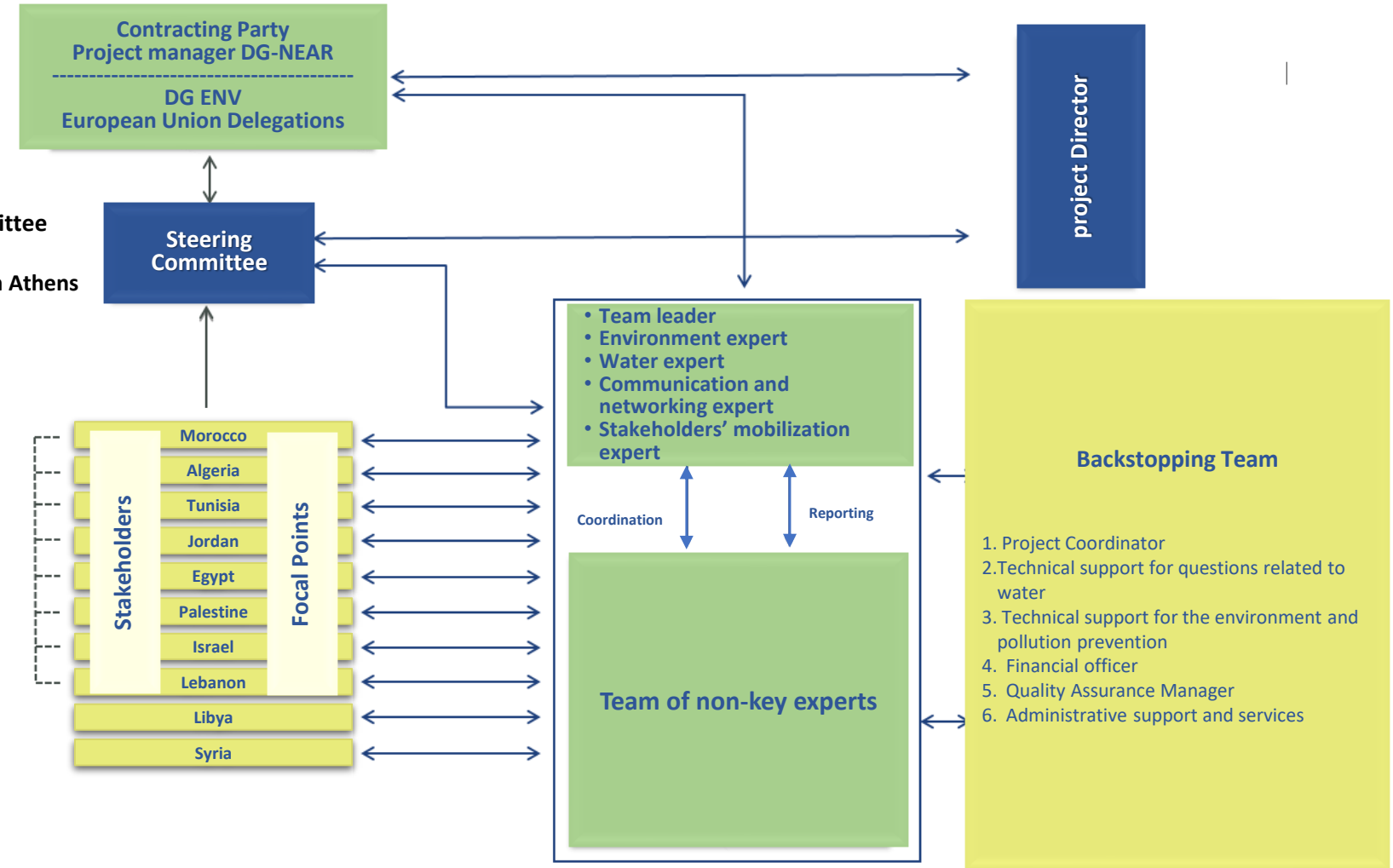
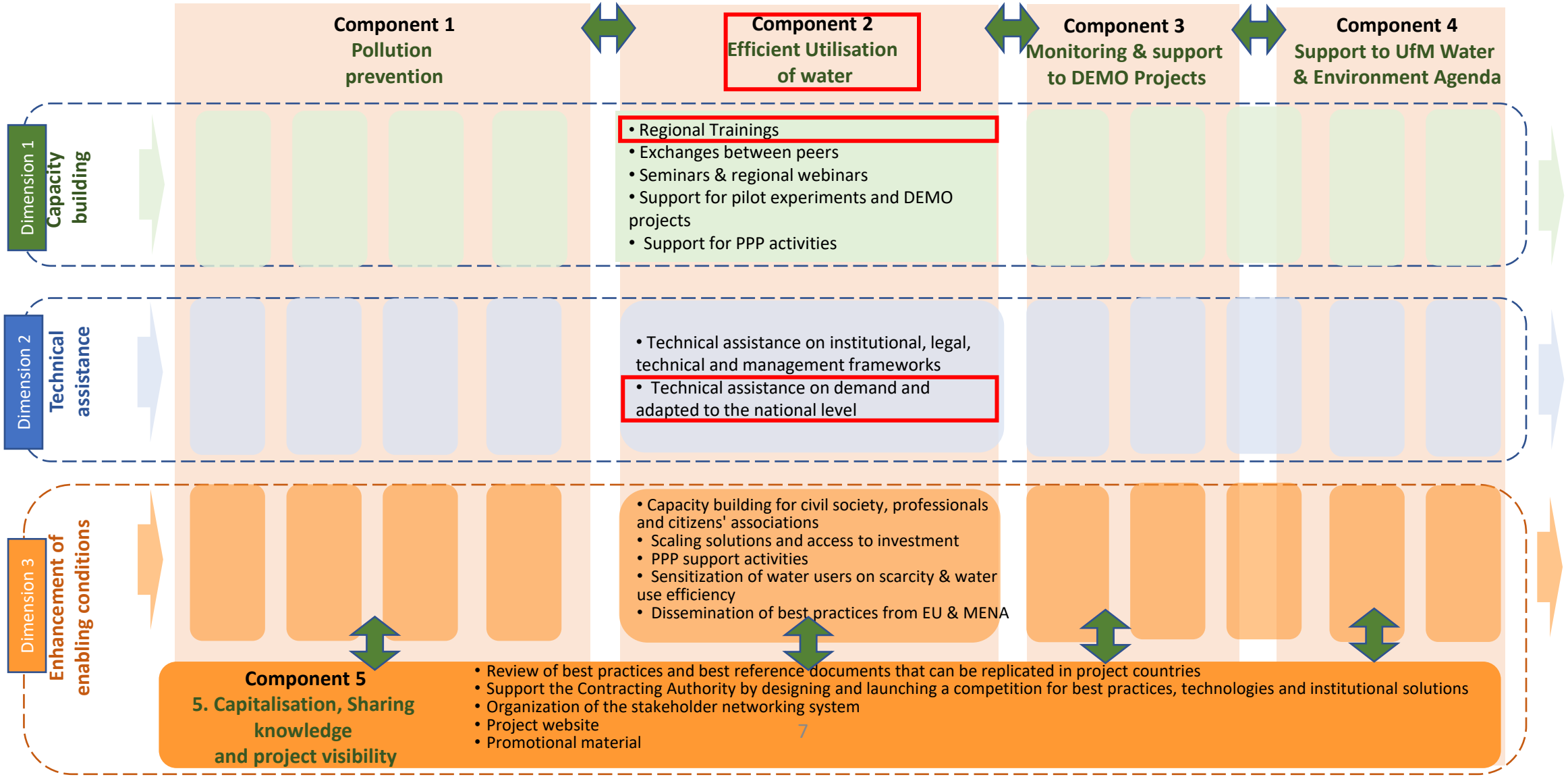
Project coordination

Water and Environment Support
in the ENI Southern Neighbourhood region



Project Architecture

Water and Environment Support
in the ENI Southern Neighbourhood region



Technical assistance, Capacity building, Networks between stakeholders

Water and Environment Support
in the ENI Southern Neighbourhood region

- **Regional Level :**

  ✓ **20 regional activities**
  trainings / workshops, study tours to European or South Mediterranean Countries, webinars and guided peer-to-peer exchanges).

  Regional Trainings :

  8 on water, 8 on environment, 4 Horizontal

  Study Tours:

  4 to 8 Study Tours

  Exchanges between peers:

  10 peer-to-peer exchange exercises combined with 4 webinars

- **National Level:**

  ✓ **4 national activities** in each partner country (2 on water and 2 on the environment).

  ✓ **2** WES **national meetings** acting as collaboration platforms, to assess progress, plan next steps, etc.

Project Component

Component 1: Pollution prevention topics

- **Theme 1:** Reduce **plastic pollution and marine litter**
- **Theme 2:** Promotion of mechanisms, tools and conditions for the transition to a **circular economy**
- **Theme 3: Prevent and reduce Pollution** reaching the Mediterranean from **specific industrial** sectors
- **Theme 4:** Support for the implementation of **integrated environmental management**

Project Component

Component 2: Topics related to efficient water use

- **Theme 1:** Assessment and estimation of **water use (by sector)**
- **Theme 2:** Investigations and introduction **of water efficiency gains** at the **decentralized level**
- **Theme 3: Water resources assessment, cost recovery and affordability of water services**
- **Theme 4: Legal and regulatory** aspects related to the integration of water use efficiency into national and regional frameworks
- **Theme 5:** Improving **water efficiency and productivity in agriculture**

Project Activities

Water and Environment Support
in the ENI Southern Neighbourhood region

Component 2 – Regional Activities

- **RW-1-REG:** Training on the practical application of the water-energy-food-ecosystem nexus and related policies and regulations WEFE
- **RW-2-REG:** Training on water accounting
- **RW-3-REG /RW-3-P2P:** Capacity Building (CB) on Water Demand Management (WDM)
- **RW-4-REG / RW-4-P2P:** CB on non-conventional water resources with a focus on water harvesting, including retention and recharge of aquifers with storm water
- **RW-5-REG/ RW-5-ST :** CB on Treatment of wastewater for reuse
- **RW-6-REG/RW-6-P2P/RW-6-ST:** Training on Non-Revenue Water (NRW)
- **RW-7- REG/RW-7-ST:** Training of WUAs on optimal irrigation management and practices using appropriate irrigation methods for improved irrigation efficiency and soil fertility, and highlighting the benefits of using treated wastewater and rainwater harvesting.
- **RW-X-WEB: Two webinars**

Project Activities

Component 2 – Horizontal Regional Activities

- **HW-1-REG / HW-1-P2P:** Capacity building on PPP, entrepreneurship in the green / blue economy and banking services for the water / wastewater sector
- **HE-3-REG:** Education for sustainable development: focusing on treatment for the reuse of wastewater and unconventional water resources

Project Activities

Component 2 – Technical Assistance (Israel)

- **N-W-IL-2: Storm water management and Natural Water Retention Measures**

Launched 14 September 2020

- **N-W-IL-1: Evaluation of new methods to reduce the cross subsidies in the agricultural water tariff in Israel**

TOR under review by the EU Delegation

Nom des experts non clés	Fonction dans l'activité
Dr. Demetris ZARRIS	International Expert specialised in Hydrology and Technical Coordinator
Ms. Tali WEXLER	Local Expert in Landscape Architecture
Ms. Elena AVRAMIDI	GIS Expert

Thank you four your attention

Water and Environment Support
in the ENI Southern Neighbourhood region

Storm water management and Natural Water Retention Measures
Activity No. : N-W-IL-2

Kick-off meeting by video conference

14 September 2020, Jerusalem, Israel

General context of the project and proposed actions

Presented by: Mr. Guy Reshef, Deputy Director General (Hydrological Service, Israel Water Authority)

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WATER AUTHORITY

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content

- Who are we?
- General context of the WES activity
- Objectives of the Activity
- Contribution of Israel Water Authority (IWA)

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Who are we?

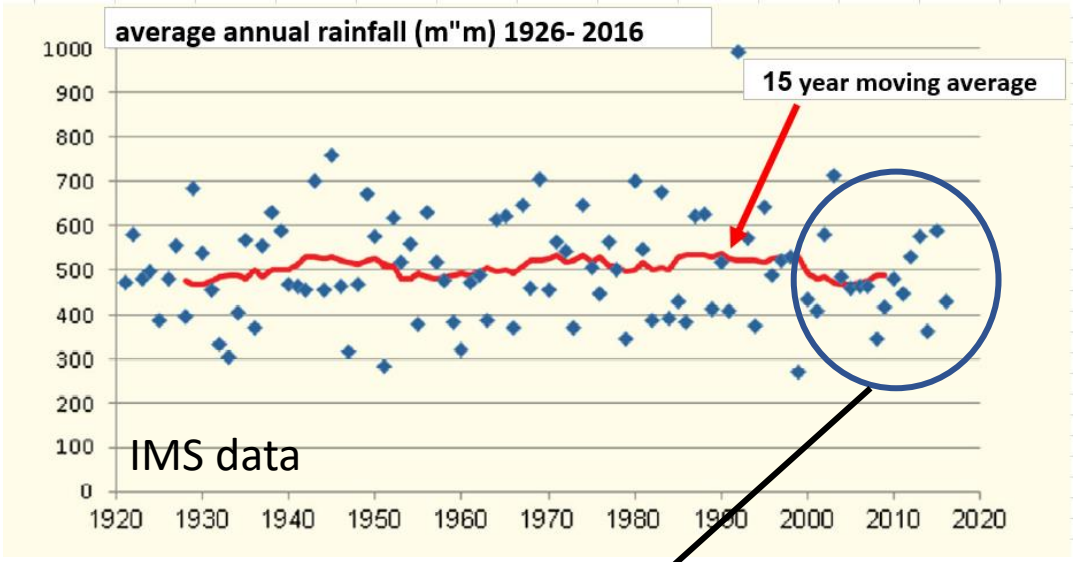
- The Israel Water and sewage Authority is the governmental body authorized by law to coordinate all aspects related to the water and sewage sector in Israel Including its management, planning, development, operation and regulation

- The main goal of the Water Authority is to enable a regular and reliable supply of water to all water consumers in the quality and quantity required, at reasonable prices, **while preserving the water sources for future generations**

General context of the WES activity

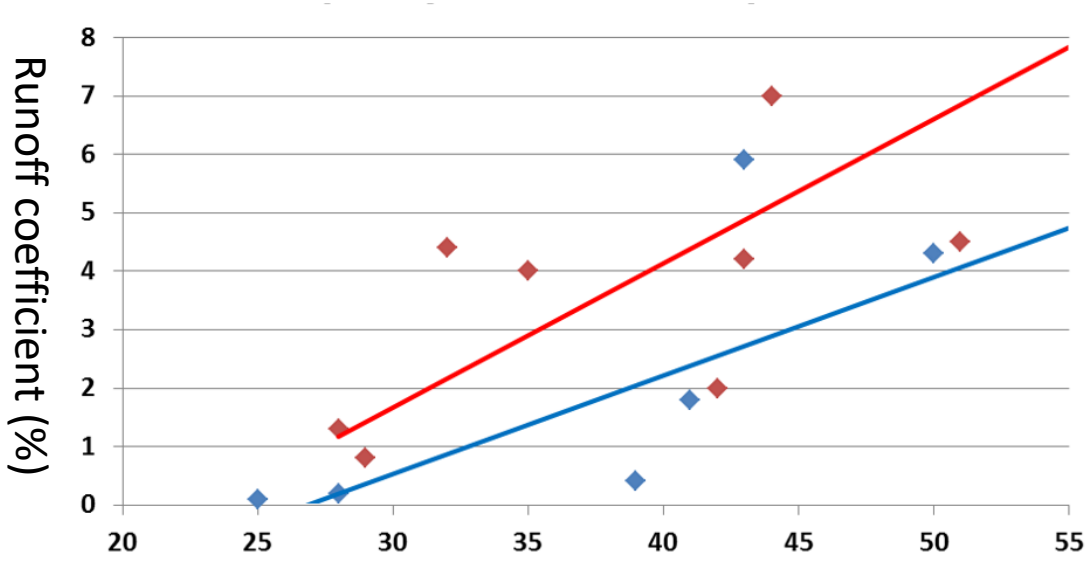
- The State of Israel is characterized by a very small and narrow territory with extremely dense populated areas (rank 29 in the world) and high population growth.
- An accelerated process of increasing urbanization is taking place. The urban area in the coastal aquifer has doubled since the 70's
- This process is accompanied by a **reduction of recharge** to the groundwater sources and an **increase in storm water flows**.
- Over the past decade, a number of **urban runoff management guides** have been published. The Integrated national plan for water 34/b4 does not give a sufficient answer for surface water management
- Last year the National Planning Division, in collaboration with the Water Authority, promoted the preparation of a policy document on the subject of urban runoff management.

Urbanization effect on runoff



Higher runoff coefficient on a national scale since 2000

Seasonal runoff coefficient in the Sorek basin



natural period

Urbanization period

E.Siegel 1998

Objectives of the mission and overview of the proposed actions

Water and Environment Support
in the ENI Southern Neighbourhood region

Objectives

- Enrich knowledge and know-how of NWRM including storm water management in urban areas
- Review of best management practices for NWRM
- Learn from the experience achieved from designing NWRM in two pilot cases in Israel at the feasibility level.
- Review of economic incentives and regulation to support and amplify storm water management
- Better understand the relationship between rural and urban storm water in the context of storm water management

NWRM- Natural Water Retention Measures

Overview of the Tasks

- Review of BMPs and NWRM for storm water management, aquifer recharge, debris retention transported by runoff, direct use in agriculture etc. and holding a workshop
- Selection of pilot case studies in Israel
- Basic design of NWRM in the selected pilots
- Review of economic incentives and regulation regarding storm water management
- Concluding workshop

Contribution of IWA

- Providing relevant data and information
- Sharing regulatory knowledge of the Israeli water sector
- Sharing experience in local NWRM projects and practice
- Formulation of the expert group to review the results of the evaluation
- Providing the necessary assistance to the international expert and to the project in order to identify the relevant stakeholders

Thank you for your attention

Water and Environment Support
in the ENI Southern Neighbourhood region

Storm water management and Natural Water Retention Measures:
Activity N° : N-W-IL-2

Kick-off meeting
by video-conference

14 September 2020, Tel Aviv, Israel

Presentation of the WES Technical Assistance activity in Israel

Presented by: Dr. Demetris Zarris , Non-key Thematic Expert and Technical Coordinator of the activity

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Plan

1 – Definition of Natural Water Retention Measures (NWRM)

2 - Proposed actions under the activity and Expected results

3 - Target beneficiaries and stakeholders involved

4 - Human resources implicated

5 - Action plan of the activity

Definitions

Natural Water Retention Measures (NWRMs)

NWRMs 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 (EU Policy Document).

- ✓ Retain water (runoff or river flows) beyond the existing capacity of systems, releasing it at a controlled rate, or infiltrating it to groundwater;
- ✓ Use the retention capacity of soils and of aquatic ecosystems to provide other environmental and well-being improvements, such as water quality, biodiversity, amenity value or resilience and adaptation to climate change impacts;
- ✓ Are usually applied at relatively 'small scale', in comparison to the size of the water catchment or territory in which they are implemented;
- ✓ Emulate a natural process, although are not always 'natural' features themselves (as clearly illustrated by green roofs).

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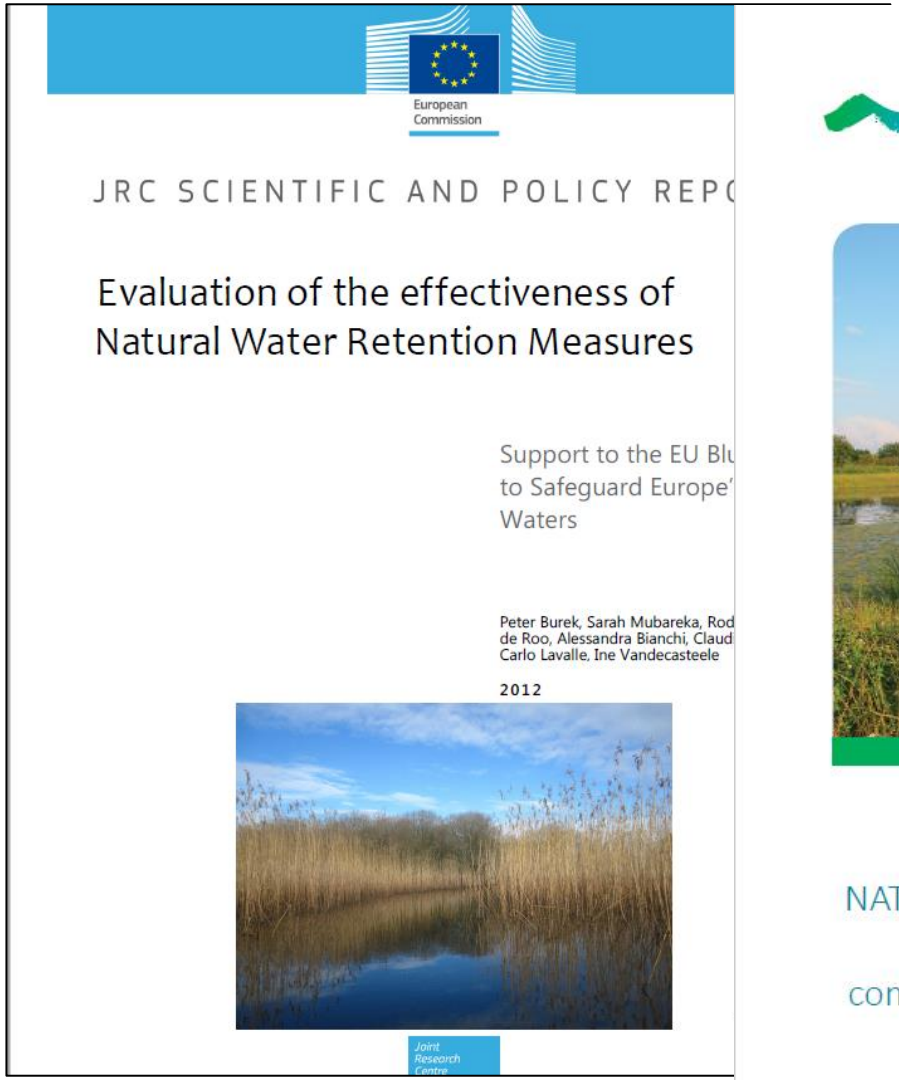
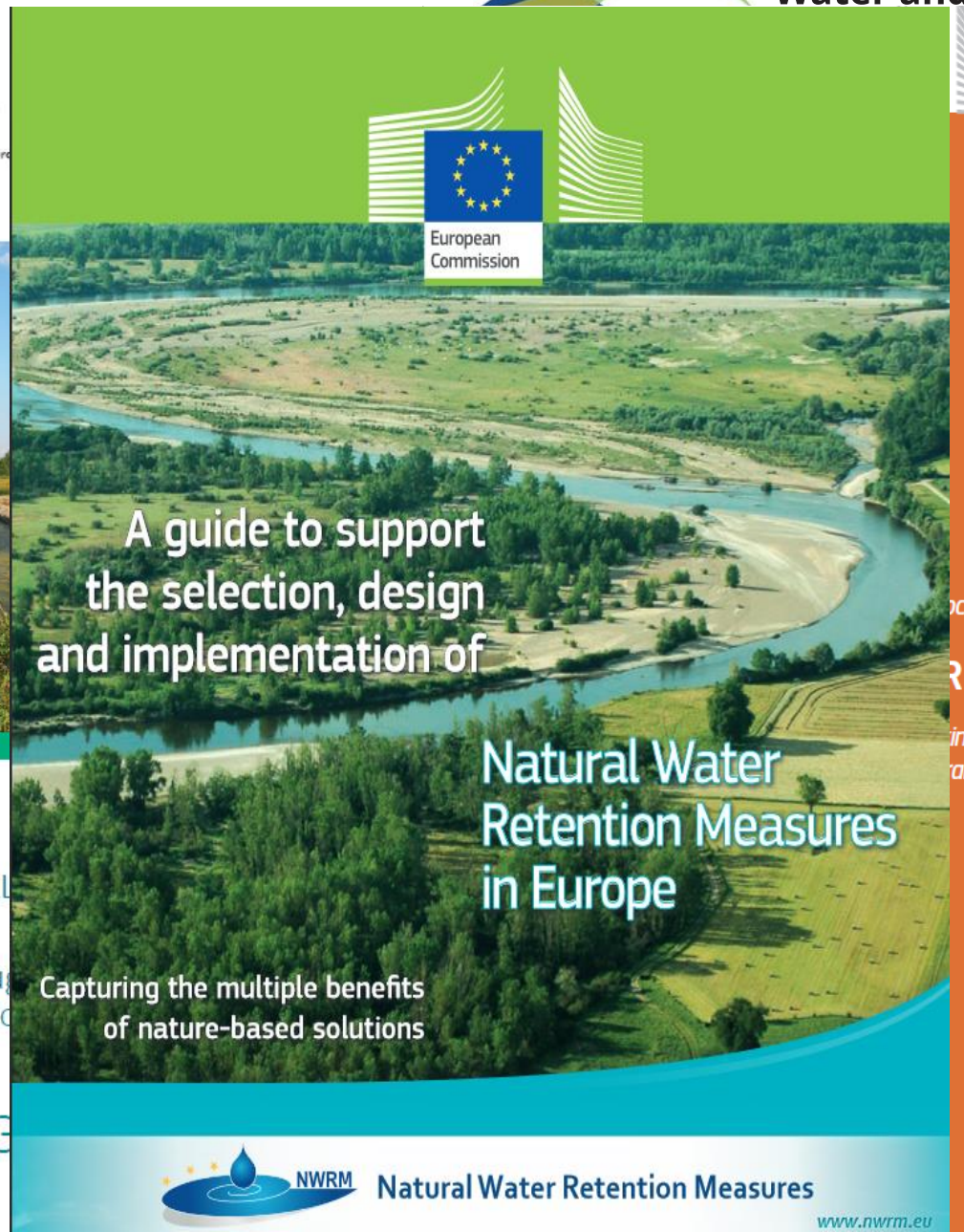
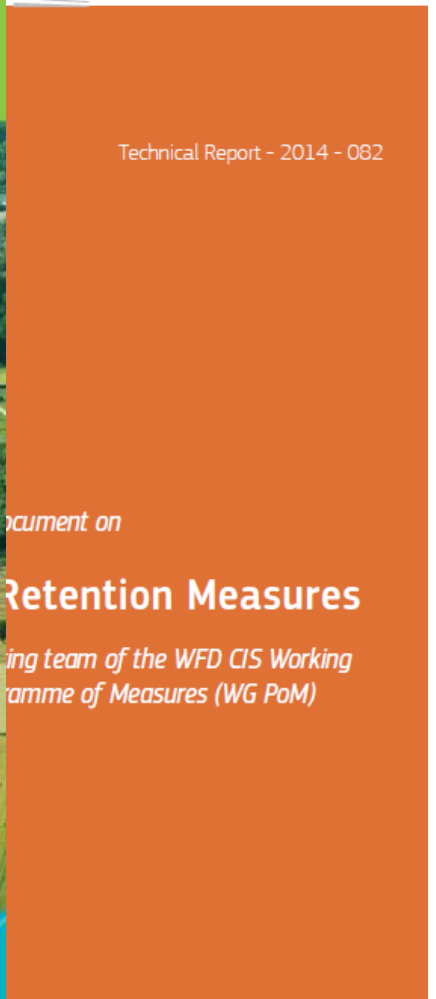
Definitions



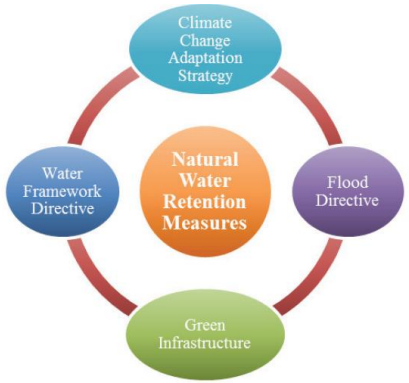




Definitions

Table 1. Illustrating the diversity of measures classified as NWRM[1]

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…
	Forestry and Pastures	Afforestation of upstream catchments; targeted planting for "catching" precipitation; Continuous cover forestry; maintenance of riparian buffers; urban forests; Land-use conversion for water quality improvements…
	Urban development	Green roofs, rainwater harvesting, permeable paving, swales, soakaways, infiltration trenches, rain gardens, detention basins, retention ponds, urban channel restoration…



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Natural Water Retention Measures (NWRMs)

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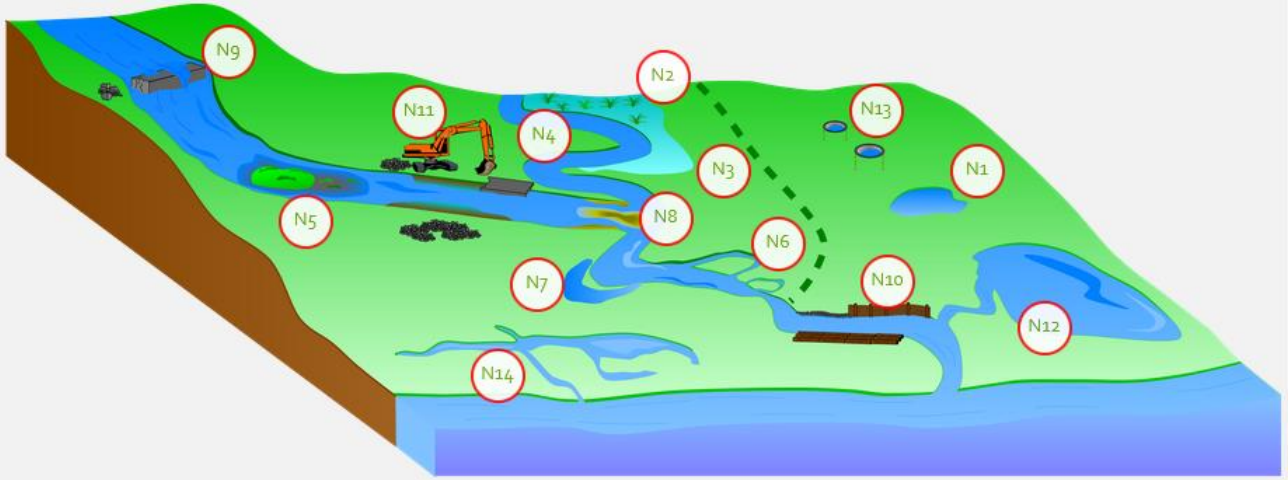
in the ENI Southern Neighbourhood region

River Hydromorphology

Home » Hydro morphology

Hydro morphology



N01	Basins and ponds
N02	Wetland restoration and management
N03	Floodplain restoration and management
N04	Re-meandering
N05	Stream bed re-naturalization
N06	Restoration and reconnection of seasonal streams
N07	Reconnection of oxbow lakes and similar features
N08	Riverbed material renaturalization
N09	Removal of dams and other longitudinal barriers
N10	Natural bank stabilisation
N11	Elimination of riverbank protection
N12	Lake restoration
N13	Restoration of natural infiltration to groundwater
N14	Re-naturalisation of polder areas

Natural Water Retention Measures (NWRMs)

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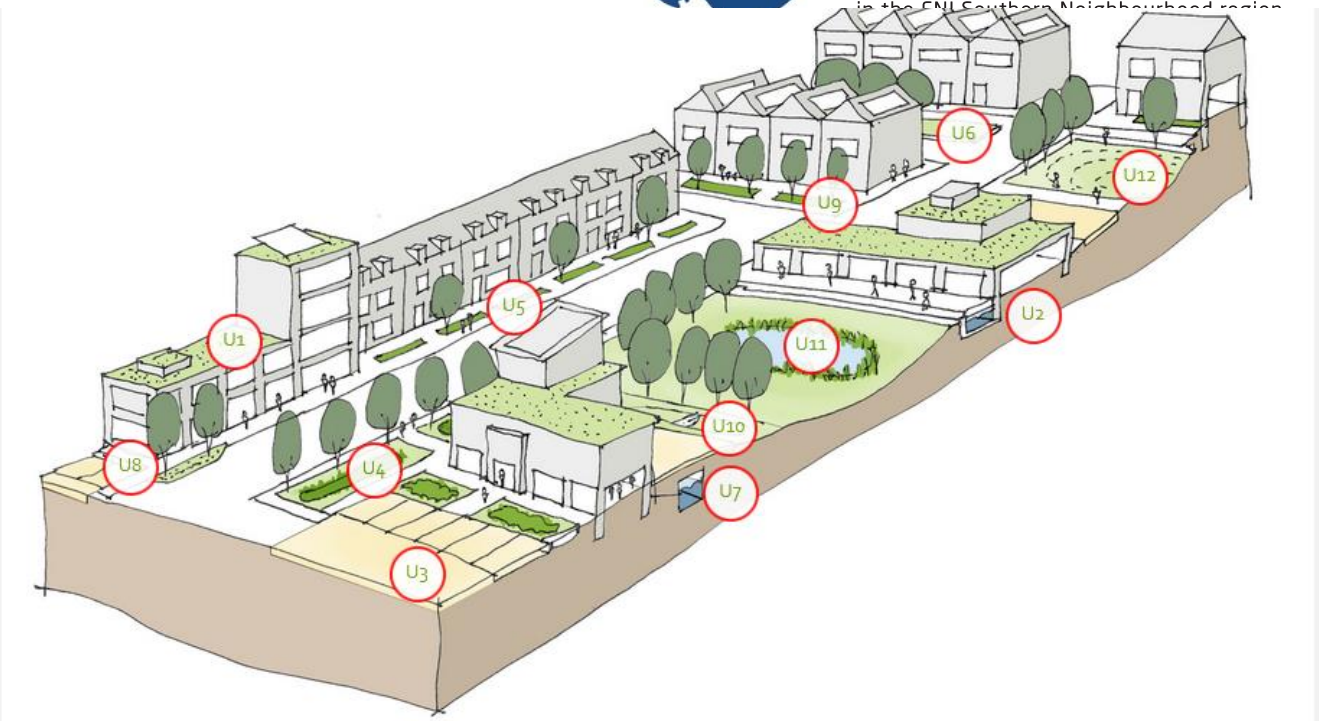
Urban Drainage



U01	Green Roofs
U02	Rainwater Harvesting
U03	Permeable surfaces
U04	Swales
U05	Channels and rills
U06	Filter Strips
U07	Soakaways
U08	Infiltration Trenches
U09	Rain Gardens
U10	Detention Basins

Natural Water Retention Measures (NWRMs)

Water and Environment Support

bourhood region

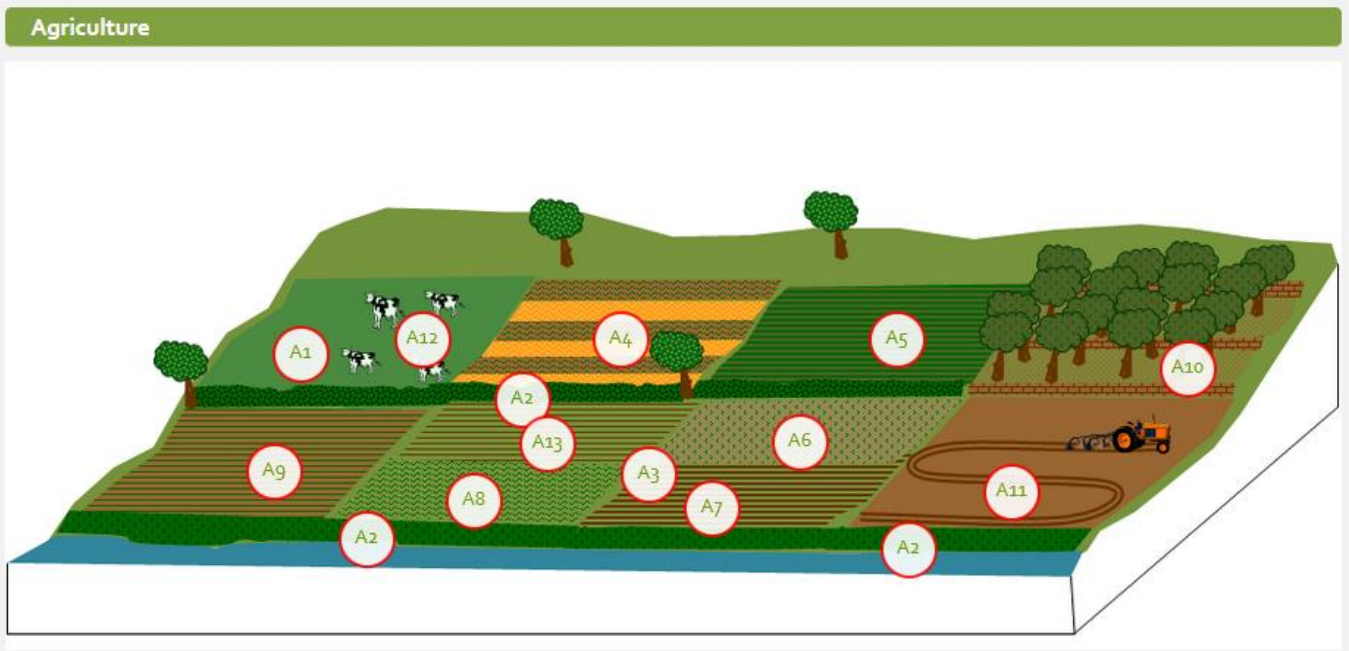
Forestry and Natural Areas

F01	Forest riparian buffers
F02	Maintenance of forest cover in headwater areas
F03	Afforestation of reservoir catchments
F04	Targeted planting for 'catching' precipitation
F05	Land use conversion
F06	Continuous cover forestry
F07	'Water sensitive' driving
F08	Appropriate design of roads and stream crossings
F09	Sediment capture ponds
F10	Coarse woody debris
F11	Urban forest parks
F12	Trees in Urban areas
F13	Peak flow control structures
F14	Overland flow areas in peatland forests

Natural Water Retention Measures (NWRMs)

Water and Environment Support

Agriculture



A01	Meadows and pastures
A02	Buffer strips and hedges
A03	Crop rotation
A04	Strip cropping along contours
A05	Intercropping
A06	No till agriculture
A07	Low till agriculture
A08	Green cover
A09	Early sowing
A10	Traditional terracing
A11	Controlled traffic farming
A12	Reduced stocking density
A13	Mulching

Target beneficiaries and stakeholders involved

Water and Environment Support
in the ENI Southern Neighbourhood region

Main beneficiaries

- ✓ Israel water & Sewage Authority
- ✓ Ministry of Environment Protection; namely:
  - Marine Environment Protection Division
  - Water and Stream Division

Stakeholders involved

- ✓ Municipalities
- ✓ Ministry of Construction and Housing
- ✓ Planning Administration in the Ministry of Finance
- ✓ Ministry of Agriculture
- ✓ Union of costal municipalities
- ✓ Stream and Drainage Authorities
- ✓ NGOs and CSOs of relevance including women's associa
- ✓ Academics and consultants (young preferably)
- ✓ Direct users (farmers and others)

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Proposed actions

Task 1: Review of Best Management Practices (BMP) and Natural Water Retention Measures (NWRMs) for storm water management with a workshop

Because NWRMs is a relative novel term and approach on stormwater management, it is essential to fill a list of available measures from international literature adjusted to arid and semi-arid regions with flush flood characteristics that fits better to hydrological conditions in Israel.

Results

- Workshop collectively defining NWRMs that best fit to Israel.
- Technical report that summarizes all available NWRMs tailored for Israeli conditions.
- Identification of relative stakeholders.

Tools for deployment:

- Search for projects databases on the Internet
- The European Union Reports on NWRMs.

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Proposed actions

Task 2: Selection of pilot case studies in Israel

Two pilot cases (one urban / peri-urban area and one rural/natural area) in Israel will be carefully selected to further accommodate the applicability of the measures and the objective to produce a framework guide for similar projects in the future.

Results

- Report describing the selection process, the adopted criteria, the specific characteristics of the selected areas, etc.
- Data collection, processing and storage in GIS database and timeseries databases.

Tools for deployment:

- Development of GIS databases.
- Development of database with timeseries.

Proposed actions

Task 3: Basic design of NWRMs in the selected pilot areas

For the selected pilot cases, the conceptual design of the selected NWRMs will take place by means of (a) hydrologic modelling and (b) hydraulic design. The conceptual design will estimate how much of the mean annual water runoff can be retained in natural or artificial storages, and how much can be diverted into the groundwater by percolation and will include the design of the basic infrastructure to accomplish that. Landscape Architecture will provide guidance for the design according to the prevailing semi-arid landscape and building tradition.

Results

- Design of NWRMs in both pilot areas - by means of hydrologic modelling and hydraulic design (according to the prevailing semi-arid landscape and building tradition).
- Estimation of storm water volume retained in natural or artificial storages.
- Design of proposed work at the feasibility level

Tools for deployment:

- Hydrologic Modelling with HEC – HMS (Soil Moisture Accounting (SMA)) method.
- Hydraulic Modelling with HEC-RAS for open channel flows and SWMM for sewer modelling

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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, flood, pollution, etc.) with the benefits per m3 retained in storage.
- 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 Israel.

Tools for deployment:

- Hydrologic Modelling with HEC – HMS (Soil Moisture Accounting (SMA) method.
- Hydraulic Modelling with HEC-RAS for open channel flows and SWMM for sewer modelling.

Proposed actions

Task 5: Concluding workshop

A closing workshop is expected to be organized involving relevant national and local stakeholders in order to present and further promote the sustainability of NWRMs in Israel.

The results of the activity including those from both pilot cases will be presented alongside the cost – benefit analyses to illustrate the viability for the general application of NRWM in the country.

Guidelines/criteria for the selection of appropriate sites of retention and detention systems will also be prepared and be presented during the workshop.

Results

- The results of the activity are presented to the beneficiaries (in a one-day national consultation workshop), and evaluated, and priorities of NWRM options are selected
- A dialogue between the different stakeholders is established (in a one-day workshop) and a set of actions is selected for which the country commits to implement during the WES project.
- Guidelines/criteria for the selection of appropriate sites of retention and detention systems.

Tools for deployment:

- Presentations with Q&A
- Consultation among stakeholders on the applicability of the NWRMs in Israel.

Schedule

Task	M 1	M 2	M 3	M 4	M 5	M 6	M 7	M 8	M 9	M 10	M 11	M 12	M 13	M 14
TOR preparation														
TOR approval by EC (up to 3 weeks)														
Contracting														
Task 1														
Task 2														
Task 3														
Task 4														
Task 5														

Actions made necessary by the Covid-19 crisis

Task 1: Review of Best Management Practices (BMP) and Natural Water Retention Measures (NWRMs) for storm water management with a workshop

- ✓ Remote review
- ✓ In case mobility is still restricted, stakeholder workshop to be implemented remotely

Task 2: Task 2: Selection of pilot case studies in Israel

- ✓ Might have to be implemented through the assistance of the partners and local expert

Tasks 5 – Date and mode of implementation of the final workshop to be revised according to the containment measures in Israel.

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Introducing the Nonkey experts – 5 mins

Suzan TAHA (WES Key Water Expert)

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Human resources and implementation

The project will be led by a team of experts (03) non-key experts:

- Demetris ZARRIS, DiplEng, M.Sc., Ph.D: Non-Key Expert (NKE), specialised in Hydrology (International) and Technical Coordinator
- Tali WEXLER: NKE2 – Local expert in Landscape Architecture
- Elena Avramidi: NKE3 – GIS Expert
- Also with contributions from the Senior Expert in Stakeholders Engagement Dr. Emad Adly and Senior Expert in Communication: Ms. Pam van de Bunt

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Discussion
Requirements and Challenges – 20 mins

Moderated by: Suzan TAHA (WES Key Water Expert) & Demetris Zarris (Non-key Thematic Expert and Technical Coordinator of the activity)

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Discussion – Requirements & Challenges

General

- Mobility of local experts
- Remote work
- Timely provision of information
- Stakeholder engagement in the activity
- Agree during the final workshop on the implementation of the selected actions recommended by the activity in order to ensure the development of the impact of the activity
- Facilitation of contact with local representatives of the pilot areas
- Facilitate the implementation of the communication plan

Data availability and quality :

- Background maps [raster-vector] (e.g.: Digital Terrain Model, topographic maps, soil / geologic maps)
- Existing water harvesting and storage works [dams, lakes, etc.]
- Land use information with water demand of different water uses with map.
- Timeseries data on different scales (hourly for floods, daily for general water budget) including rainfall, runoff, evapotranspiration.

Tools and Software (S/W)

- GIS Tools (ArcMap, Spatial Analyst, 3D Analyst)
- Water Balance calculation tools (HEC-HMS model)
- Hydraulic Model (HEC-RAS for open channels and SWMM for both open and conduit systems)

Thank you for your attention

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14 September 2020, Tel Aviv, Israel

Improving the impact of communication and dissemination

Presented by: Pam van de Bunt– Key Communication and networking Expert

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Communicate !

Why do we need to communicate?

- Spreading information about the project and its results is essential for understanding and duplication of results
- We need to go beyond communicating only with our direct partners and stakeholders
- An increased awareness is the basis for action

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WES general communication objectives

Water and
Environment Support
in the ENI Southern Neighbourhood region

- To increase awareness of water and environmental issues currently under pressure in the Mediterranean
- Increase the commitment of decision-makers and other stakeholders
- Mobilise civil society
- Ensure visibility of WES and the EU support for water and environmental issues in the region

Specific communication objective

- To enhance knowledge on best management practices for storm water management

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Target groups

- Israel Water Authority
- Municipalities and the Union of Coastal Municipalities
- Relevant authorities including planning committees at regional and national level
- Stream and Drainage Authorities
- Relevant NGOs
- Academics and consultants (young preferably)
- Direct users (farmers and others)
- Media

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Communication tools

- Social media
- Two short information bulletins on project progress and project results to be distributed among the various stakeholders in order to raise awareness and provide them with best practices
- Press releases

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Water and
Environment Support
in the ENI Southern Neighbourhood region

Thank you

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Water and Environment Support
in the ENI Southern Neighbourhood region

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14 September 2020, Tel Aviv, Israel

Stakeholders Engagement and Evaluation of Impact

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LDK Consultants Engineers & Planners SA

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Stakeholders' Engagement

Stakeholders' Engagement → important impacts

- The main stakeholders will be identified and targeted with the focal point and the partners.
- Stakeholders who could be involved in the workshops (as applicable):
  - ✓ Municipalities
  - ✓ Ministry of Construction and Housing
  - ✓ Planning Administration in the Ministry of Finance
  - ✓ Ministry of Agriculture
  - ✓ Union of costal municipalities
  - ✓ Stream and Drainage Authorities
  - ✓ NGOs and CSOs of relevance including women's associations
  - ✓ Academics and consultants (young preferably)
  - ✓ Direct users (farmers and others)

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Evaluate the impact of WES Capacity Building

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- In general, WES measures direct results during the implementation of capacity building activities: quizzes, exercises, scorecard, engagement sheet, etc.
- Indicator NW-IL-2: Number of actions (emanating from the recommendations of the activity) effectively implemented by the targeted actors, compared to those that have been agreed upon during the final workshop
- WES measures mid-term results after activities have taken place
  - ✓ post-training impact survey (online) sent to all participants
  - ✓ direct contact / direct interview with a few selected participants

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Thank you

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For more information

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