

Under the High Patronage of His Majesty King Mohammed VI



XIX WORLD WATER CONGRESS
International Water Resources Association (IWRA)
Marrakech, Morocco | 1-5 December 2025

Kingdom of Morocco



Ministry of
Equipment and Water

Transforming Malta's National Water Management Framework through the application of the WEFE Nexus

Manuel Sapiano
Energy and Water Agency - Malta
2nd December 2025

Introduction



XIX WORLD WATER CONGRESS
International Water Resources Association (IWRA)
Marrakech, Morocco | 1-5 December 2025

Total surface area: 316km²

Population density: 1690inh/km²

Urban land-cover: >25%

Climate: Semi arid Mediterranean

Mean Annual Rainfall: 550mm

High inter- and intra- annual variability

Natural water availability: 70m³/cap/year

High Population
Density

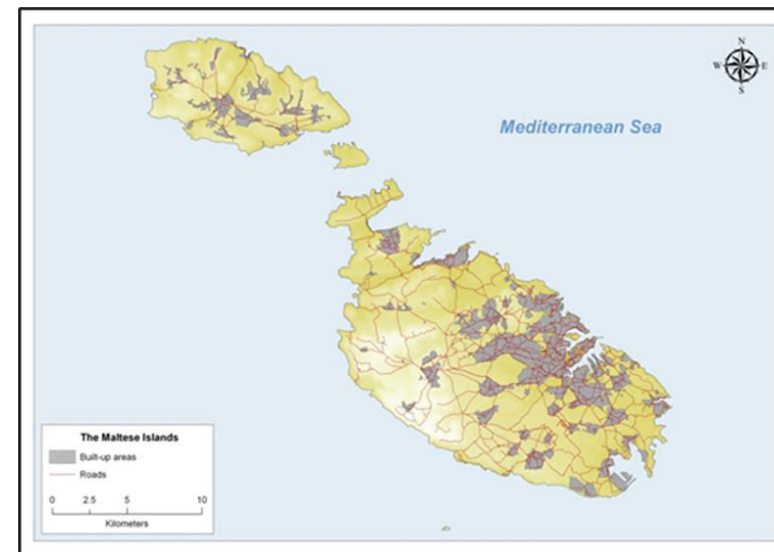


High Water
Demand

Semi-Arid
Climate



Low Availability of
Natural
Resources

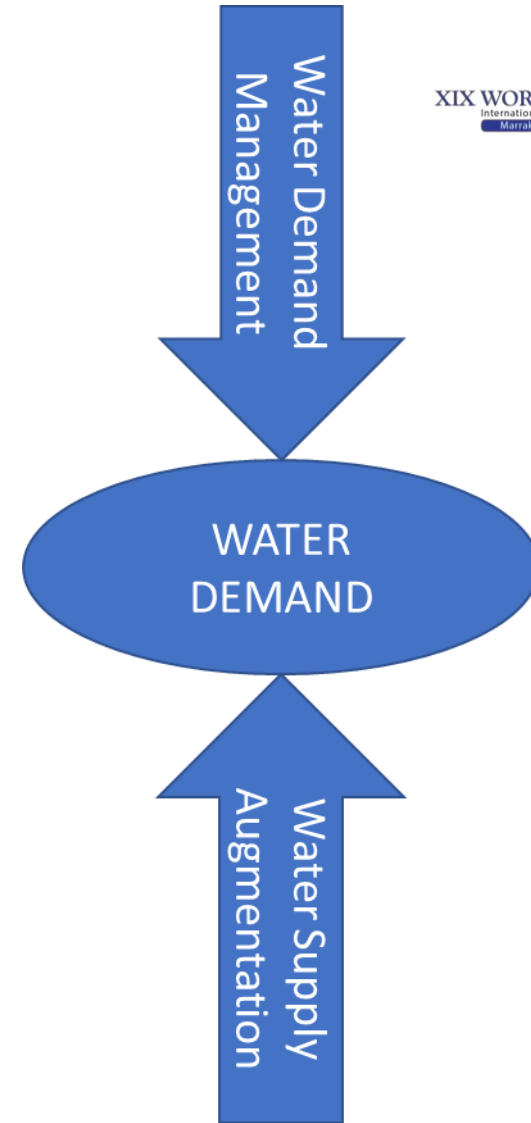


Introduction

Under these circumstances, development of a water management framework needs to start with acknowledging reality.

Even if water demands are kept at highly efficient levels, there is insufficient natural freshwater resources to sustainably meet national demand.

Malta's water management framework is based on a two-pronged strategy to achieve water security: meeting water demand through the conjunctive use of water supply augmentation and water demand management measures, in an increasingly sustainable manner.



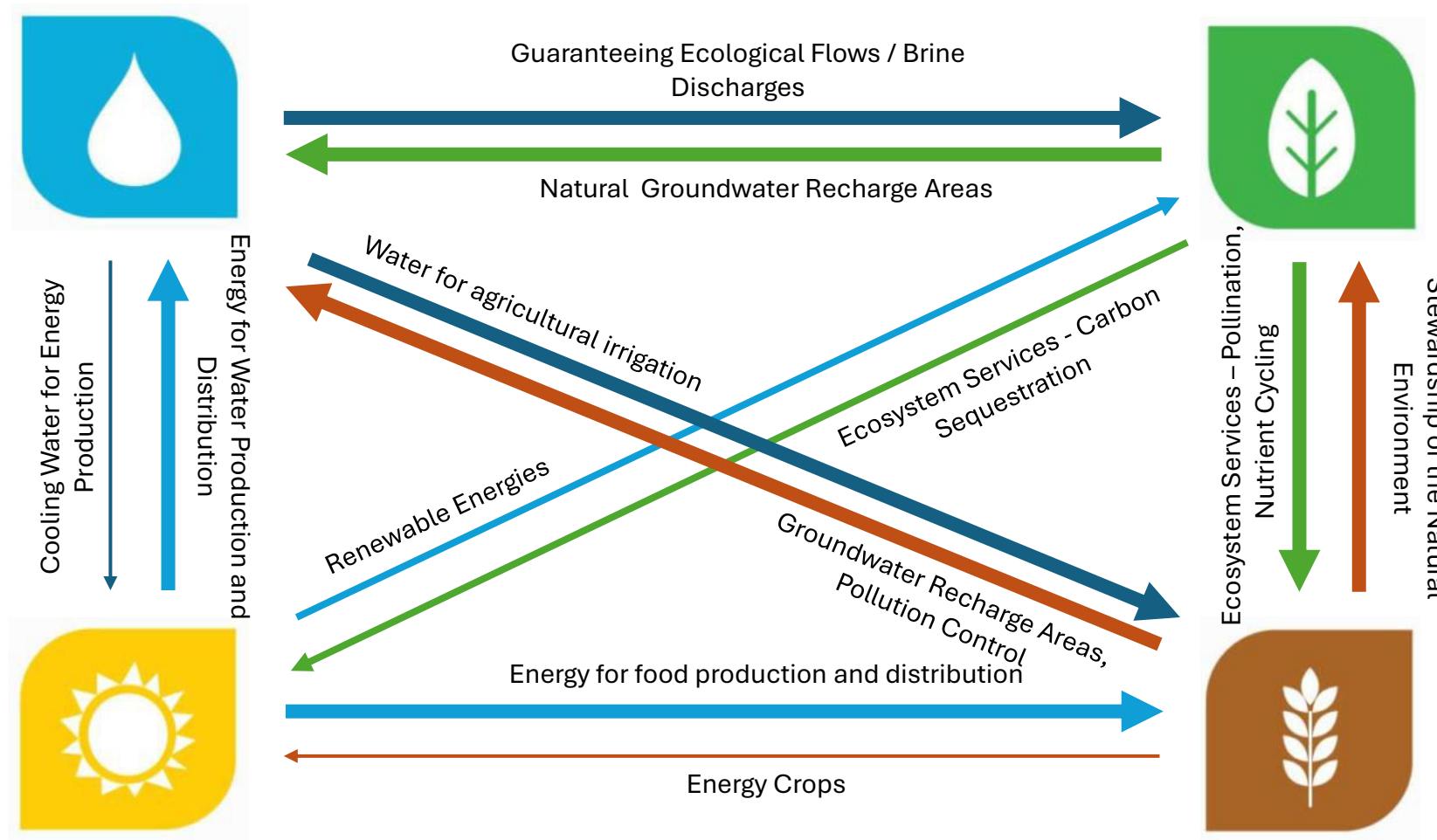
XIX WORLD WATER CONGRESS
International Water Resources Association (IWRA)
Marrakech, Morocco | 1-5 December 2025



Defining the WEFE Nexus



XIX WORLD WATER CONGRESS
International Water Resources Association (IWRA)
Marrakech, Morocco | 1-5 December 2025



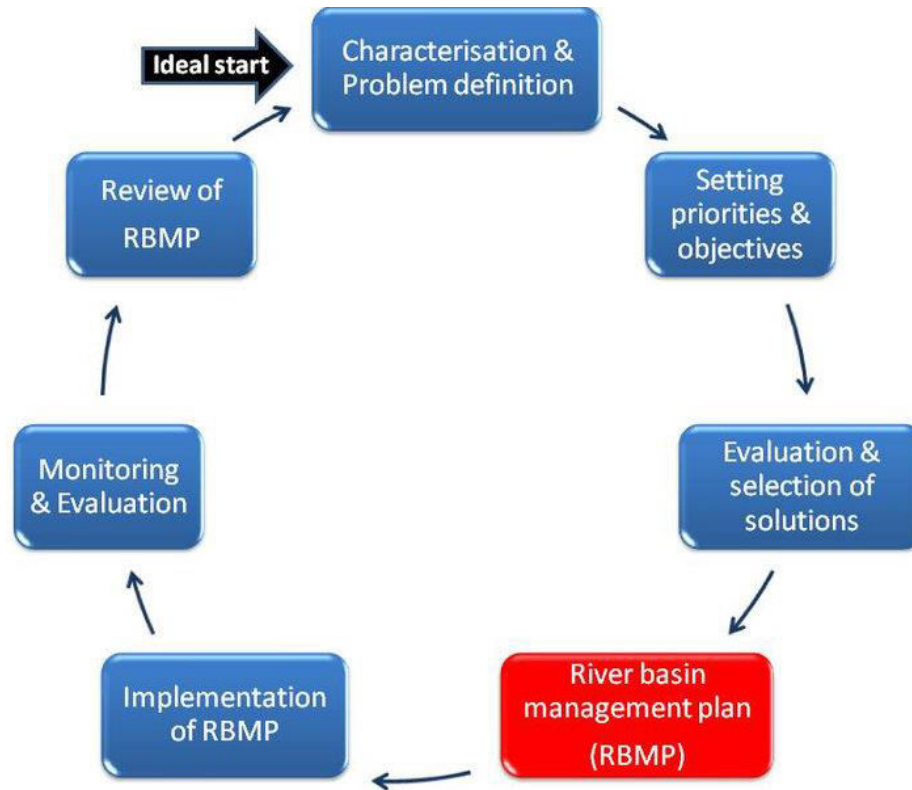


River Basin Management Plans

Key Water Management Frameworks in EU Member States with links to:

- Effective stakeholder engagement,
- Economic Analysis of water use,
- Ecosystem Protection,
- Energy Efficiency,
- Climate Change,
- Water use by agriculture and other economic sectors, and
- Research and Development.

Inherently RBMPs requires the application of the WEFE Nexus context.





Malta 3rd RBMP

Includes measures addressing:

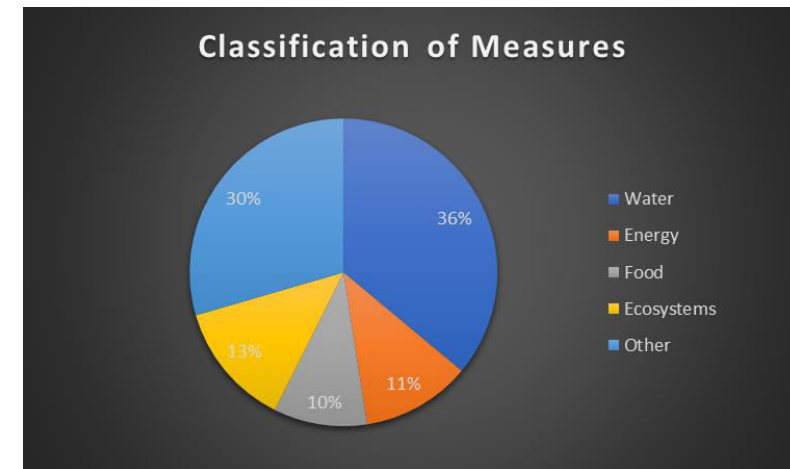
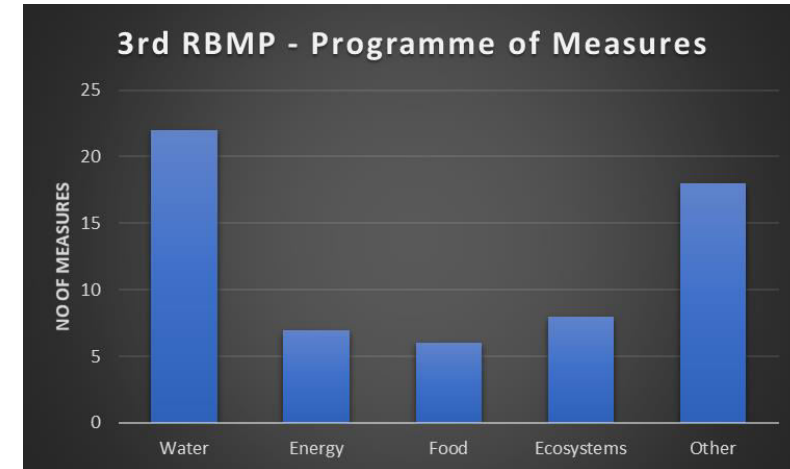
- (i) Security of supply for the agricultural sector
- (ii) Energy efficiency in water services provision
- (iii) Protection of water dependent ecosystems

Linking up the 3rd RBMP with the WEFE Nexus.

Future RBMPs must increasingly look at:

- (i) Water Demand Management and the mainstreaming of decentralized non-conventional water resources;
- (ii) Water efficiency in agricultural production;
- (iii) Increased use of renewable energy for water production; and
- (iv) Increased consideration to ecological flows

Will require linkages between the different WEFE Policy Pillars.



Nexus Proofing Tool

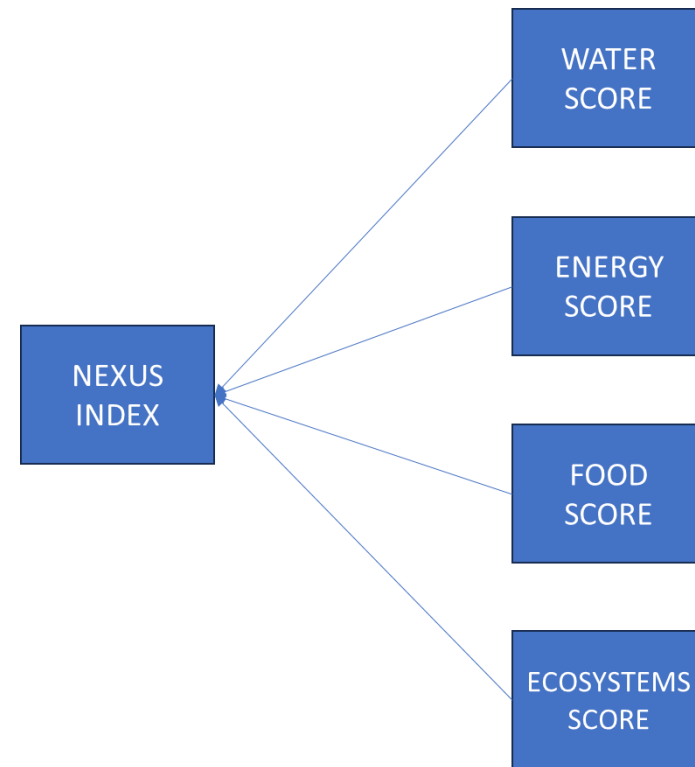


Proposal: Development of a Qualitative Tool to assess the NEXUS alignment of measures proposed under the 4th RBMP and hence support its planning process.

Permits the identification (prioritization) of the most NEXUS-friendly measures.

Objective: Raise awareness of Policy Makers on the linkages and cross-benefits arising from the alignment of different sectoral policies.

Applicability: Management Plans under the four nexus pillars.





Nexus Linkages

W-En Limit the use of water used for energy production (such as for cooling and/or hydropower).	W-F Develop water resources used for agricultural irrigation and/or increase the efficient use of water resources in agriculture.	W-Ec Sustain ecological flows to terrestrial ecosystems (including through substitution of supply).
En-W Limit or reduce the Energy Requirements for Water Production through encouraging energy efficiency in water production or through water demand management.	En-F Optimise the energy use for food production and distribution	En-Ec Promote the adoption of renewable energies
F-W Reduce the impact of contamination by nutrients and plant protection products from agricultural areas	F-En Promote the development of Energy Crops	F-Ec Promote the role of the agricultural sector as the steward of the natural environment
Ec-W Promote measures for the sustainment of natural recharge areas	Ec-En Promote Carbon Sequestration Activities	Ec-F Promote ecosystems services such as Pollination and/or Nutrient Cycling





Weighting – Rating Framework

Development of a semi-quantitative assessment matrix – to assess how the measures included under the management plan address the four nexus pillars

Score Water	$W_{W-En} \times R_{W-En} + W_{W-F} \times R_{W-F} + W_{W-Ec} \times R_{W-Ec}$
Score Energy	$W_{En-W} \times R_{En-W} + W_{En-F} \times R_{En-F} + W_{En-Ec} \times R_{En-Ec}$
Score Food	$W_{F-W} \times R_{F-W} + W_{F-En} \times R_{F-En} + W_{F-Ec} \times R_{F-Ec}$
Score Ecosystems	$W_{Ec-W} \times R_{Ec-W} + W_{Ec-En} \times R_{Ec-En} + W_{Ec-F} \times R_{Ec-F}$
NEXUS Score	$W_W \times Sc_W + W_E \times Sc_E + W_F \times Sc_F + W_{Ec} \times Sc_{Ec}$

Scoring system is best applied through the involvement of a wide-range of stakeholders, to ensure fair representation of different views.

Weighting Table	
W-En	0
W-F	3
W-Ec	2
En-W	3
En-F	1
En-Ec	1
F-W	3
F-En	0
F-Ec	2
Ec-W	3
Ec-En	1
Ec-F	1
Water	3
Energy	2
Food	1
Ecosystems	1





Assessment Framework

Measure ID	Name of Measure	Water Score				Energy Score			
		Sc	W-En	W-F	W-Ec	Sc	En-W	En-F	En-Ec
			Limit the use of water used for energy production (such as for cooling and/or hydropower).	Develop water resources used for agricultural irrigation and/or increase the efficient use of water resources in agriculture.	Sustain ecological flows to terrestrial ecosystems (including through substitution of supply).		Limit or reduce the Energy Requirements for Water Production through encouraging energy efficiency in water production or through water demand management.	Optimise the energy use for food production and distribution	Promote the renewable energy
SW01	Upgrading of Urban Waste Water Treatment Plants	0.00	0	0	0	0.00	0	0	0
SWJ2	Upgrading of the Sewer Network	0.00	0	0	0	0.00	0	0	0
SW03	Sewer discharge permitting and monitoring	0.00	0	0	0	0.00	0	0	0
SW04	Use of Sustainable Urban Drainage Systems and Nature Based Solutions targeting improvement of water quality	0.00	0	0	0	0.00	0	0	0
SW05	Reducing pollution risks associated with sewage overflows	0.00	0	0	0	0.00	0	0	0
SW06	National guidance document on the application of WFD Article 4(7)	0.00	0	0	0	0.00	0	0	0
SW07	Review of Malta's Nitrate Action Programme	0.00	0	0	0	0.00	0	0	0
SW08	Incentive schemes for Integrated Pest Management	0.00	0	0	0	0.00	0	0	0
SW09	Environmental Permitting System	0.00	0	0	0	0.00	0	0	0
	Enabling the identification of substance								

Rating	Allocation Basis
0	Measure not related to Nexus Linkage
1	Measure contributes indirectly to Nexus Linkage
2	Measure contributes directly to Nexus Linkage but does not have a high quantitative impact
3	Measure contributes directly to Nexus Linkage and has a high quantitative impact

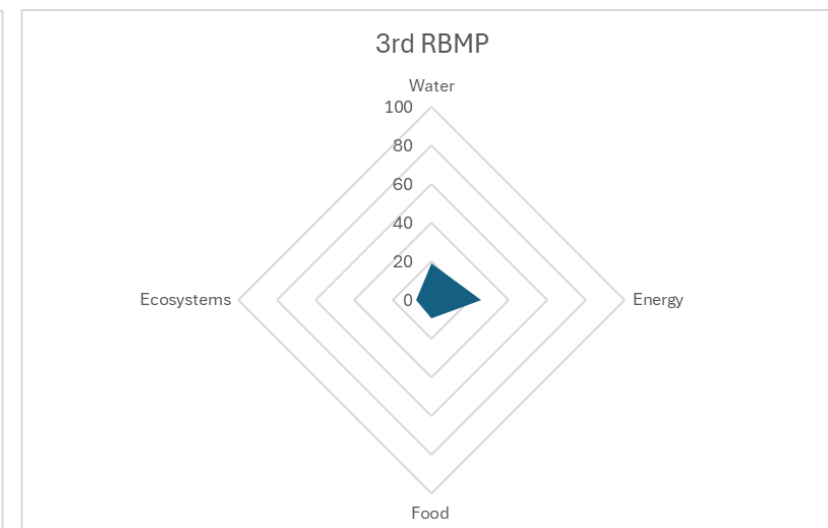
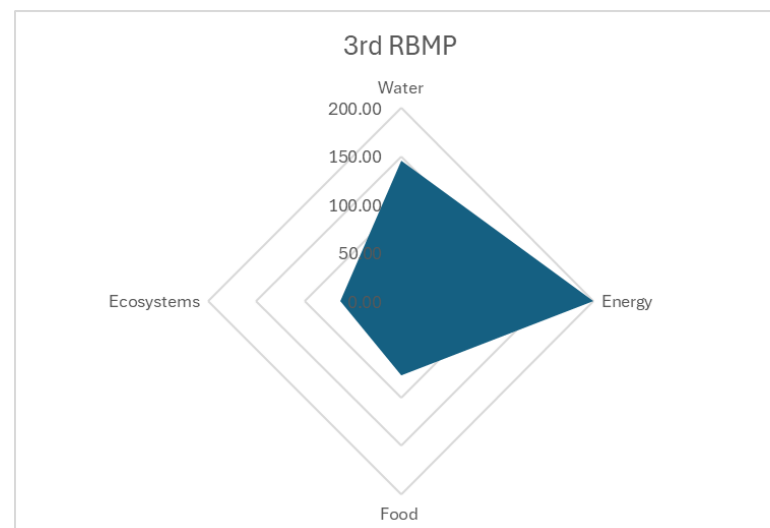




Application to Malta's 3rd RBMP

Unsurprisingly, Malta's 3rd RBMP shows a strong relation with the Energy dimension – reflecting the reliance on Non Conventional Water Resources for water supply.

However, tool is not intended to assess plans retrospectively; but more to be used during the planning process introducing a feedback loop which ensures increased “nexus friendliness” in sectoral management plans.

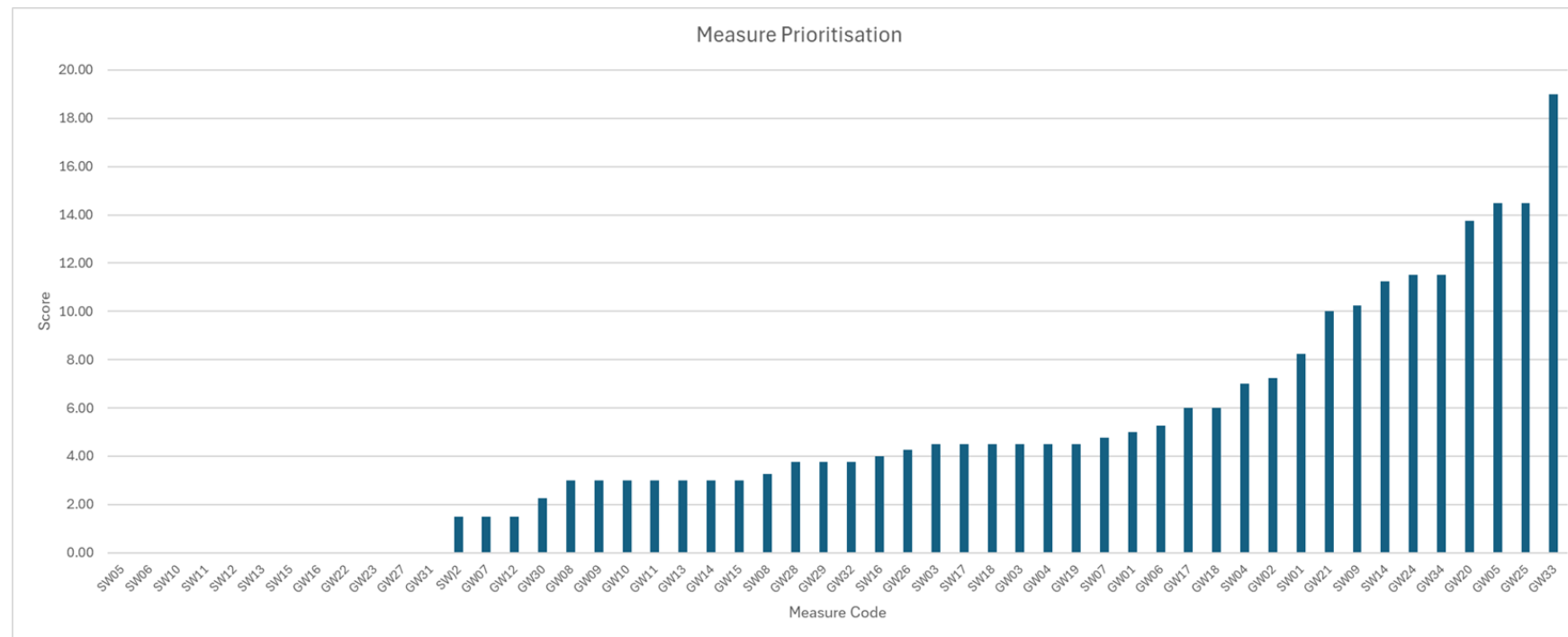




Prioritisation of Measures

Tool permits the prioritisation of measures based on their nexus contribution.

“Nexus score” can also be considered as an indicator of the economic value of the measure – leading to the valuation of the contribution of a specific measure to the achievement of the objectives under other Nexus Pillars.



WEFE4MED



Mediterranean Water, Energy, Food, Ecosystems Nexus Community of Practice

www.wefe4med.eu

Objective: to foster the adoption of a Water-Energy-Food-Ecosystems Nexus approach in the Mediterranean through a Nexus Community of Practice (NCoP) to confront the climatic and environmental challenges facing societies and the agro-ecological system through:

- facilitating the identification, testing, dissemination and replication of Nexus solutions in the Mediterranean;
- showcasing to policymakers and other stakeholders the advantages of Nexus approach using specific case studies; and
- promoting the deployment of regional demonstration sites as laboratories for replication, upscaling and policy design.



RETOUCH NEXUS

www.retouch-nexus.eu



XIX WORLD WATER CONGRESS
International Water Resources Association (IWRA)
Marrakech, Morocco | 1-5 December 2025



Monitor **water governance*** by providing a set of Nexus-smart indicators that reflect **multi-actor*** and **cross-sectoral*** interactions



Present and advocate more **integrated***, Nexus-based, climate-resilient water governance systems.



Design economically and financially sustainable cross-sectoral, **multi-level*** Nexus-based water systems



Promote and implement more transparent and inclusive water governance through innovative **engagement mechanisms***



Endorse upscalable and desirable Nexus-based water governance practices and **institutional settings***



RETOUCH NEXUS



RETOUCH NEXUS

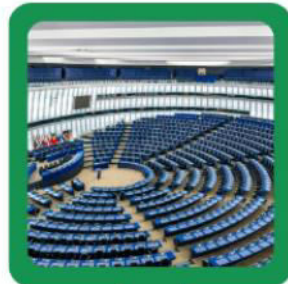
35
water governance metrics



Support global policy implementation



6
water governance schemes (min.)



Secure water through policies



Support coordination between instruments



Develop and test economic instruments



Link water to the economic and social sectors



Help society to implement measures for sustainable water



12
engagement mechanisms



Empower citizens to influence water governance decisions.



Conclusion



XIX WORLD WATER CONGRESS
International Water Resources Association (IWRA)
Marrakech, Morocco | 1-5 December 2025

It is not just about water: mainstreaming the WEFE nexus in river basin management planning supports comprehensive planning for water resilience.

This aligns also with the principles of Sustainable Development where increased consideration of the WEFE Nexus leads to the achievement of various SDG objectives under:

- SDG2 – Zero Hunger
- SDG6 – Clean water and sanitation
- SDG 7 – Affordable and Clean Energy
- SDG13 – Climate Action
- SDG15 – Life on Land

creating a truly comprehensive water management plan.



Under the High Patronage of His Majesty King Mohammed VI



XIX WORLD WATER CONGRESS
International Water Resources Association (IWRA)
Marrakech, Morocco | 1-5 December 2025

Thank you!

manuel.sapiano@gov.mt

✦ www.worldwatercongress.com ✦

