THE ENERGY & WATER AGENCY

ERA
Environment & Resources Authority

SIGNIFICANT WATER MANAGEMENT ISSUES

IN THE MALTA RIVER BASIN DISTRICT

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MINISTRY FOR THE ENVIRONMENT, CLIMATE CHANGE AND PLANNING

MINISTRY FOR ENERGY AND WATER MANAGEMENT

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Public consultation document in preparation for the 3rd River Basin Management Plan

01 Introduction

Malta's 2nd River Basin Management Plan, which concerns the qualitative and quantitative management of all coastal and inland waters, has led to the implementation of a number of important initiatives which are having a significant effect on the management and protection of water resources in the Maltese islands. These changes have been supported by significant investments through financial resources from the EU's Cohesion Funds, Regional Development and LIFE Programmes.

The provision of municipal water services is being transformed into one which entails minimal impact on the natural water environment. The Net Zero Impact Water Utility project will in fact see the national water utility contributing back an equivalent volume of water to the natural environment to that abstracted from the groundwater aquifer systems. This through intended and unintended artificial recharge, and the substitution of supply with reclaimed water through the New Water programme. In addition, this project has also invested heavily in energy efficiency at both water production and distribution levels, thereby ensuring that increased supplies of non-conventional water resources do not increase the energy footprint of water services provision.

This supply-side oriented project, is complemented by a suite of water demand management initiatives, including a three-year national water conservation campaign and intensive educational activities aimed at increasing the users' appreciation of the importance of using water efficiently. This campaign focuses on the significance of everybody's contribution, and encourages all citizens to 'be the change' in improving water management in the Maltese islands.

The implementation of the above measures and other measures outlined in the 2nd RBMP's Programme of Measures, contributes to an always reducing gap between the abstraction of natural water resources and the recharge to aquifer systems, hence ensuring the progressive achievement of good quantitative status in the main groundwater aquifer systems. However, the effects of climate change are becoming more pronounced with increased intense drought periods (resulting in increased water demands) and the concentration of rainfall in a smaller number of high intensity events (resulting in reduced natural recharge) adding to the pressures on our natural water resources. Therefore, efforts to ensure the sustainability of water use need to be continued during the coming years, to address the additional pressures placed on the natural water environment resulting from climate change.

To enable a better assessment of the status of the water environment, the 2nd RBMP is also seeing significant investment in the upgrading of a national hydrological monitoring infrastructure, enabling important data-gaps in Malta's water balance to be addressed. The development of a comprehensive catchment-based monitoring framework will enable impacts on water status to be qualitatively identified, and consequently better addressed through informed policy design.

The 2nd RBMP also includes measures for the protection of natural surface water environments, with specific focus on the protection of important water-dependent habitats and species. Synergies with biodiversity policy implementation have been strengthened, ensuring a holistic approach to conservation of water-dependent habitats and species. Improved regulation of emissions to water strengthened the environmental permitting process with the aim of achieving a reduction of pollution from priority substances and the phasing out of discharges and emissions of priority hazardous substances.

The 2nd RBMP, fully recognizing Malta's challenges to meet an increasing demand for water, introduced an action framework based on the conjunctive use of water demand management and supply augmentation measures to ensure that such demand is met in a cost-effective and sustainable manner which provides a high level of protection to the natural water environment.

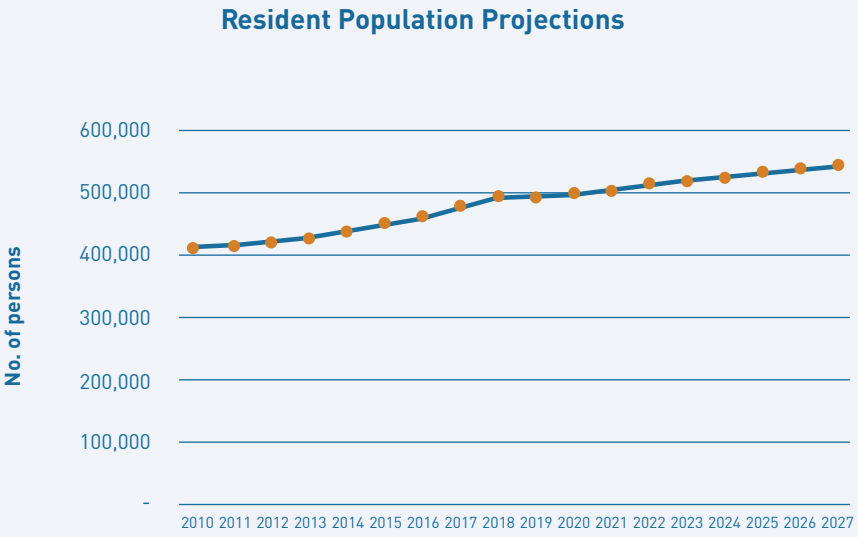
02

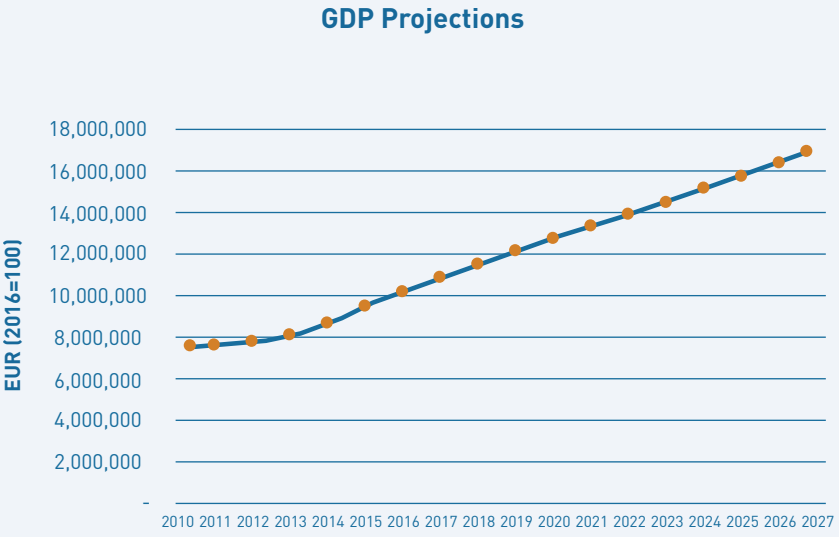
Key 'Change Drivers' for Water Management

The implementation period of Malta's 3rd River Basin Management Plan will span a seven-year period between 2021 and 2027.

Malta's water management direction will be shaped by the expected evolution of key drivers of water use and consumption, while also maintaining a long-term outlook that takes into account the projected intensification of climate change impacts.

In fact, studies by the UN's IPCC indicate that Climate Change in the Mediterranean region is expected to be characterised by an increase in the mean annual temperature, lengthened drought periods and increased variability in precipitation events. Such changes in the natural environment will result in increased water demands, whilst limiting the availability of natural freshwater supplies, particularly in combination with the evolution of key change drivers.





Malta – Projected trends in the resident population and the gross-domestic product

Demographic and economic projections for our country for the coming 7-year period indicate an increasing resident population, a rise in the number of visiting tourists as well as sustained economic growth. All these factors are considered as drivers for an increased water demand. That being said, increased availability of water efficient technologies in the market can give rise to an effective decoupling effect between these demographic and economic drivers, and water requirements. Quantitative issues are therefore expected to remain an important concern during the implementation period of the 3rd RBMP, requiring increased efforts for the development of additional alternative water resources to broaden the national water supply resource base, as well as for demand management measures to ensure a highly efficient use of water.

Producing additional water resources is a need and not a choice if we are to ensure that national water demands are met whilst sustaining and further improving the status of natural water resources. Specifically, we need to increasingly consider the environment as a user of natural freshwater resources, and that its needs are effectively safeguarded.

The increased probability of prolonged droughts and high intensity precipitation events will also require the development of an increasingly resilient water management framework. Water use practices will need to be adapted to the changing climate. This, combined with an increased uptake of upstream water management measures such, as nature-based solutions and water demand management measures, will enable the most effective use of limited natural water resources, whilst also contributing to the conservation of natural water dependent habitats.

From a qualitative perspective, the increased diffusion of potential contaminants in the environment, will become a heightened concern primarily due to an increasing spread of anthropogenic activities and reactions to the changing environment. Avoiding the direct and indirect discharge of such contaminants is an increasingly pressing concern, particularly when considering the long response times of the water environment, which would see such contaminants retained for longer periods in the environment.

This constitutes an important consideration for all water bodies – whether surface, ground, transitional or coastal. Reduced natural water availabilities will also impact the environment's capacity to mitigate against such discharges by reducing natural attenuation capacity from processes such as dilution with recharging waters.

Furthermore, the prevailing demographic and economic trends also point towards the potential increased use of inland surface freshwater and coastal marine water bodies, exacerbating the pressures which these water bodies need to sustain. The expected long-term rise in temperature will also be expected to contribute to the potential degradation effect on these water bodies, arising due to both natural and anthropogenic impacts.

The 3rd River Basin Management Plan's implementation period is therefore expected to be an extremely challenging time where national water management frameworks will need to adapt to changes in the surrounding natural and anthropogenic conditions. The 3rd RBMP should thus seek to continue to increase resilience in our national water management frameworks, thereby ensuring that the significant challenges faced in the water sector can be successfully addressed whilst ensuring a high level of protection to the natural water environment.

03

Significant Water Management Issues

The assessment of the key change drivers leads to the identification of a suite of key Significant Water Management Issues, which will be given specific importance in the formulation of the 3rd RBMP's Programme of Measures. This identification would facilitate the prioritisation of financial resources for the implementation of measures addressing these significant issues, during the coming seven-year period which will see the implementation of the 3rd RBMP.

The following have been identified as key **Significant Water Management Issues** for the 3rd River Basin Management Plan. It is important to note that non-inclusion of a particular management challenge does not preclude the incorporation of measures addressing these challenges in the 3rd RBMP's Programme of Measures. The 3rd RBMP will need to comprehensively address the water sector, with the aim of contributing to the progressive achievement of the Water Framework Directive's Environmental Objectives.

3.1
QUANTITATIVE ISSUES

1. ENERGY EFFICIENCY IN WATER SERVICES

Meeting an increasing water demand whilst ensuring the sustainable use of limited natural freshwater resources will undoubtedly require an increased dependence on Non-Conventional Water Resources such as desalinated seawater and reclaimed water. Producing water however, has an energy footprint and hence the need for the energy requirements for water production to be maintained at highly efficient levels in line with industry benchmarks. Continued investments in the optimisation of water production facilities will therefore be required to ensure the achievement of optimal operational levels.

Furthermore, lower specific power requirements for water production in seawater desalination increase the relative importance of energy savings in the water distribution and wastewater collection networks. Network maintenance will need to be prioritised to reduce leakages and maintain energy needed for water and wastewater transfer at highly efficient levels.

2. WASTEWATER TREATMENT AND CONVEYANCE INFRASTRUCTURE

An increasing resident and visiting population, apart from generating a higher water demand, also generates higher volumes of wastewater. Wastewater collection networks and treatment facilities need to be designed to cater for peak flows, which have a highly variable temporal distribution. Furthermore, changing spatial demographics will also give rise to wastewater generation hotspots where interventions to increase the capacity of the collection network will be required.

Significant investments will be required in the wastewater sector to ensure the development of sufficient collection and treatment capacity to address projected wastewater production volumes. Optimising the current wastewater infrastructure to the projected volumes may enable the increase and cost-effective reuse of this resource. In addition, the continued strengthening of wastewater discharge control capacity will be required to ensure a high level of protection to the resource value of wastewater in view of the national water reclamation programme (New Water).

3. WATER MANAGEMENT IN THE URBAN ENVIRONMENT

Denser urbanisation has increased the generation of rainwater runoff from urban cores. This water is being quickly lost from the urban environment hence increasing risks for urban flooding arising from uncontrolled surface water runoff. Whilst the National Flood Relief Project has significantly reduced hazards in the downstream areas of the principal catchment areas, increased focus is now required on upstream soft-measures which reduce the generation of runoff, diverting such water to beneficial use within the urban environment itself whilst also reducing pressures on natural water bodies.

Increased emphasis needs to be placed on green infrastructure within the urban environment, primarily through its integration in mainstream planning policies and the implementation of specific initiatives to enable the adoption of such an approach towards urban water management. The adoption of green infrastructure at the local level will enable rainwater runoff to be utilised for the embellishment of the urban environment, as well as its diversion for aquifer recharge purposes. This, whilst ensuring full consideration towards guaranteeing safety to users of these waters and the receiving environment.

4. GROUNDWATER MANAGEMENT

The development of the upgraded groundwater monitoring facilities being under aken as part of the 2nd RBMP will enable an improved understanding of the status of the aquifer systems even at regional level. Such information will facilitate the identification of 'status hotspots' where immediate attention is required to address regional negative trends in status and therefore ensure an effective protection to the groundwater environment.

Monitoring information, however, needs to be supplemented with additional tools which can enable the direct and indirect quantification of groundwater use. Tools based on remote sensing technology will increasingly be required to enable the estimation of groundwater abstraction, since such tools can provide an unbiased overview of water use. When used in addition to monitoring and metering data, these tools will generate the information base required to support advisory and enforcement actions to ensure the effective and efficient use of groundwater.

3.2 QUALITATIVE ISSUES

5. CONTAMINANTS OF EMERGING CONCERN

Our daily activities entail the use of a wide range of chemical compounds, ranging from personal care products, pharmaceuticals, plant protection products, microplastics and other industrial contaminants. Following their use, residues from these activities find their way in the surface and subsurface environment through a wide range of direct and diffuse pathways. Concerns on the impact of these contaminants on the environment, in particular when having bio-accumulating or endocrine disrupting properties are increasing.

The establishment of definite source-receptor pathways will be sought to increasingly enable the discharge of such contaminants to be addressed and limited at source. An action toolkit ranging from regulatory to awareness raising measures will be developed to reduce the entry of such contaminants in solid and liquid waste-streams, thus also protecting the resource value of waste in line with circular economy contexts.

6. EFFECTIVE USE OF FERTILISERS

Fertilisers are important and widely used inputs in the agricultural sector and make a significant contribution towards sustaining local food production. The over-use of fertilisers can however result in negative impacts on crop growth, as well as lead to nutrient pollution of the surface and sub-surface water environment. Apart from this, over-fertilisation also carries a financial strain which limits the profitability and competitiveness of the agricultural sector.

Opportunities for the development of techniques which improve the application and optimise the use of fertilizers in the fields will be sought, so as to assist the agricultural sector in better using available resources. Such techniques will also support the agricultural sector to limit operation costs through better fertilization planning and accounting. Comprehensively, this will enable the better management of diffuse pollution by nutrient, which is a major status-failing condition for the surface and sub-surface water environment.

7. SURFACE WATER STATUS

Monitoring is essential in providing the data on water parameters and aquatic ecosystems needed to assess the status of surface waters and establishing progress in achievement of good status for the purpose of management processes. The limited availability of long-term trend data for surface waters, particularly limitations in the understanding of links between the supporting physico-chemical, hydromorphological conditions and biological elements, limit the assessment of status to be partly dependent on expert judgement.

In this regard, standards should be developed on the basis of a better understanding of the links between supporting physico-chemical conditions, hydromorphological conditions and biological elements in surface waters. The standards may include inter alia hydromorphological standards, environmental quality standards for contaminants and other relevant limit boundaries to be set by bringing together research and technical experts. The availability of standards would strengthen the contribution of environmental assessment and the permitting processes to the achievement of good water status.

8. MARINE LITTER

The last half century has been characterised by the development and extensive use of plastics worldwide, in both industry and everyday life. The increasing production and use of plastics resulted in the accumulation of such material in the natural environment, including marine waters. Plastics degrade very slowly in the marine environment and can potentially also break up into microplastics that can be easily taken up by aquatic biota. This is resulting in the contamination of biota with plastics and associated chemical additives and contaminants.

In recent years marine litter, which is predominantly characterised by plastic, has gained increasing importance and is considered an issue of global concern that needs to be addressed as soon as possible. Concerted efforts involving awareness raising, waste management practices and other regulatory processes will be sought to effectively address this increasing pressure on coastal waters.

3.3
HORIZONTAL ISSUES

9. WATER'S CONTRIBUTION TO THE ECONOMY

Water provides important services to our economy and to our environment. The availability of clean bathing water, the sustainment of local flora and fauna, the management of our natural landscape and ensuring food security are a few of such important services which are key to the continued development of our country. However, the value of these services is seldom considered when water is costed. This primarily because of the difficulty of putting a value to services which cannot generally be acquired through monetary means.

A broad economic assessment needs to be undertaken, underpinned by a thorough stakeholder engagement exercise, to develop an estimate for the value of water in the national economic context. This information will be key to enabling the development of the necessary mechanisms to effectively support those activities which are positively contributing to the sustainability of the water environment, as well as developing the enforcement tools necessary to deter misuse of water resources – thereby enabling a fair and equitable application of the polluter pays principle which will have a re-balancing market effect on the consumption of this precious resource.

10. RESEARCH AND INNOVATION

Research and Innovation supports the development of new tools which can provide opportunities for broadening the water supply resource base and optimising water demand management. Local research is key to enabling the development of adapted solutions which are applicable to Malta's specific challenges in the water sector. Such solutions include technology adaptations, innovative business models, nature-based solutions and infrastructural modifications. This national research capacity is currently extremely limited.

Opportunities to support the development of national research capacity in fields of interest to Malta such as water efficiency, energy efficient desalination, resource recovery and greywater reuse will be sought through the application of national and EU financing resources. In addition, the promotion of local solutions in countries and regions facing similar water management challenges to Malta's will be supported in order to enable the development of Malta's water sector and further encourage investment in local research initiatives.

11. ALIGNMENT OF NATIONAL POLICIES

The management of water resources and expected increase in water demand is an extremely horizontal issue tackling several aspects of our daily lives, be it at home, work or leisure. Therefore it is not surprising that policy, regulatory and implementation functions which have a bearing on the management of the water sector fall within the competence of a number of different Ministries and entities within the public service.

Improved synergies will be sought through the Inter-Ministerial Committee on Water to ensure that sectoral policies are increasingly aligned to national objectives in the water sector, thereby encouraging wherever possible, investments in the management of water demand and the broadening of the water supply base even at a local level. This with a view of ensuring a high level of national water use efficiency and sustainability which contributes to the security of water supply and the protection of the natural water environment.

12. EXTREME EVENTS

Climate Change is expected to increase the probability of occurrence of extreme weather-related events, in particular prolonged droughts and urban floods.

Malta's semi-arid climatic conditions already entail a context of water unavailability, which is further exacerbated by the inter-annual variability in rainfall. Drought periods further accentuate such unavailability, increasing reliance on already stressed natural resources. Coordination of water demand management measures and the use of the water resource base are of the utmost importance to ensure that prolonged periods of water unavailability are managed in the most environmentally sustainable way possible. National resilience to such extreme events needs to be coordinated in particular due to the specific natural conditions prevailing in the Maltese islands.

Furthermore, the prevalence of high-intensity precipitation leads to localized flooding events, particularly in low lying urbanised areas. Notably, such flooding affects low-lying sections of dry-valley systems which however have throughout the years been included in the urban fabric. Whilst it is only natural that runoff water flows and accumulates in these low-lying areas, the extent of runoff has in recent decades been exacerbated by increased land sealing. Increased consideration of urban water management in national planning policies is therefore warranted.

04

Consultation

We would like to ask for your opinion to help us further develop and refine the list of identified Significant Water Management Issues. This document forms part of a broad consultation exercise which will be undertaken during the coming months, where your support will be requested to help ensure that Malta's 3rd River Basin Management Plan addresses your concerns and expectations for the national water sector.

Your feedback to the below questions would be greatly appreciated.

Question 1:

Which in your opinion is the main driver of change which will impact water resources management in the period 2021-2027?

Increasing Demands for Water	
Drought	
Climate Change	
Water Pollution	
Availability of New Technology	

Question 2:

Which in your opinion is the most important Significant Water Management Issue, from each category identified in this document?

(i) Quantitative Issues

Energy Efficiency in Water Services	
Wastewater Treatment and Conveyance Infrastructure	
Water Management in the Urban Environment	
Groundwater Management	

(ii) Qualitative Issues

Contaminants of Emerging Concern	
Effective Use of Fertilizers	
Surface Water Status	
Marine Litter	

(iii) Horizontal Issues

Valuing Water's Contribution to the Economy	
Research and Innovation	
Alignment of National Policies	
Extreme Weather Events (Floods and Droughts)	

Question 3:

Which sector in your opinion should have a priority for water supply in a period of prolonged drought, following the domestic sector (in the provision of drinking water)?

Agriculture	
Tourism	
Industrial Sector	
Leisure / Services Sector	
Natural Environment	

Question 4:

Which Climate Change effect will, in your opinion impact more profoundly water resources management in the Maltese islands between 2021 and 2027?

Sea-Level Rise	
Temperature Rise	
High Intensity Rain events/Floods	
Prolonged Droughts	

Question 5:

Are there any further water management issues, which in your opinion would qualify as Significant Water Management Issues for the period 2021-2027, and hence should be considered as priority issues for the financing of related measures.

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2. _____

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3. _____

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