PRIMA – SECTION 2

Thematic area 1: Sustainable water management for arid and semi-arid Mediterranean area

Topic 1.1.1: Water resources availability and quality within catchments and aquifers
Topic 1.1.2: Sustainable, integrated water management
Topic 1.1.3: Irrigation technologies and practices

Overall budget: € EUR 30 million **Among all three Thematic areas of this Section 2** **20 to 30 expected grants (all Thematic areas)**	**Submission deadline** **Stage 1: 27th March, 2018. 17:00h CET.** **Stage 2: 4th September, 2018. 17:00h CET**

01. List of countries, Consortium conditions, Guidelines for Applicants, Proposal template, etc.

EU Countries: Croatia, Cyprus, France, Germany, Greece, Italy, Luxembourg, Malta, Portugal, Spain, Slovenia.
Non EU Countries: Israel, Tunisia, Turkey, Algeria, Jordan, Egypt*, Lebanon* and Morocco.*
*These countries agreements with PRIMA Foundation did not enter into force yet. Although it is expected to do during the current year, it is advisable to fulfil the consortium admissibility requirements without these countries partners.

Consortium must present at least three eligible partners from three different countries, being at least one EU country and one non EU country.

Stage 1 proposal template:
http://prima-med.org/wp-content/uploads/2018/02/PRIMA-Pre-proposal-Template-Stage-1.docx

Guidelines for Applicants 2018: Very similar to ERA NET in terms of kind of actions, funding schemes, participant's eligibility, evaluation criteria, etc. Please check the official Guidelines for Applicants in the following link:
http://prima-med.org/wp-content/uploads/2018/02/PRIMA-Guidelines-for-Applicants-Section-2.pdf

Section 2 topics will be funded on the basis of each country regulation (kind of ERA-NET calls)
***The Spanish partners will be funded on the 'Marginal costs' scheme** (como los Planes Nacionales – Retos)

National regulations for PRIMA:
http://prima-med.org/wp-content/uploads/2018/02/PRIMA-National-Regulations.pdf

All countries National Contact Points:
http://prima-med.org/calls-for-proposals/ncps/

02. Funding per country

	Participating States															'to be' Participating States			
	PT	SI	CY	EL	FR	TN	ES	TR	DE	HR	IT	LU	MT	IL	DZ	EG	LB	JO	MA
Total commitment (K€)	750	100	200 to 400	2000	4000	1000	3000	1000	3300	285	7000	300	500	1000	2000	3000	500	1500	2000
Thematic area 1 Sustainable water management for arid and semi-arid med areas	250			750			1100	400		55			200		700	900		500	
TOPIC 1.1 Water resources availability and quality within catchments and aquifers	X		X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
TOPIC 1. 2 Sustainable, integrated water management	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
TOPIC 1.3 Irrigation technologies and practice	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X

Abbreviations of the table: PT: Portugal; SI: Slovenia; CY: Cyprus; EL: Greece; FR: France; TN: Tunisia; ES: Spain; TR: Turkey; DE: Germany; HR: Croatia; IT: Italy; LU: Luxembourg; MT: Malta; IL: Israel. DZ: Algeria; EG: Egypt; LB: Lebanon; JO: Jordania; MA: Morocco

TOPIC 1.1.1 WATER RESOURCES AVAILABILITY AND QUALITY WITHIN CATCHMENTS AND AQUIFERS

Challenge:

The challenges now faced by water planners require a new generation of water management models that addresses the broad impacts of global changes on hydrological and hydraulic balance at catchment and aquifer level. Innovative options and technologies are required to ensure availability of groundwater resources for future generations and in particular to deal with storage and overexploitation, ground water dependent ecosystems, seawater intrusion and salinization, anthropogenic and geogenic contamination of the whole water cycle, and long-term sustainability. On the other hand, surface water bodies in the Mediterranean regions are characterized by intermittent streams. The lack of surface water during long periods of time constitutes a challenge to characterize their hydrological regime and the geomorphological and ecological status.

Scope:

Quantitative analyses on ecosystem services require an in-depth understanding of their underlying processes. To meet this need, it is important not only to use adequate modelling methods, but also to apply effective monitoring tools and research on new methodologies to understand biogeochemical cycles. Particularly important is the development and demonstration of effective monitoring and modelling tools to gather appropriate data and provide forecasting capabilities across the freshwater to marine salinity gradients. Developing efficient simulation models is necessary to analyse future scenarios at the spatial scales to be used for natural resource planning and management, and to identify cost effective strategies and techniques for a rational use of water and protection of land and soil. There is a need for developing early-warning systems to detect potential pollution transport through the soils and deep vadose zone to groundwater. This research should provide the needed information to support decisions on remediation strategies.

For surface water studies, new methods should be developed to characterise the hydro-geomorphological and ecological status and degree of human affection on ephemeral rivers. The methodology will address the hydrological regime, water and sediment connectivity, geomorphological conditions of river channels and river

corridors, biogeochemical functions and the spatial structure of the plant and animal communities. In addition, in the semi-arid regions of the Mediterranean basins, floods are not only natural hazards but also renewable water resources.

There is a need to understand the hydrological processes for the assessment, management and use of floodwaters. Proposals within this topic should allow to quantify a) the processes controlling this recharge, b) long-term recharge quantities (decade to multi-decadal scales) that determine the sustainability of these water resources and c) to translate these results into specific management strategies for alluvial aquifers of ephemeral rivers in Mediterranean regions.

Expected impact:

A more efficient water management, linked to studies devoted to understand the hydrological processes mediating ephemeral river flows, flooding events and aquifer overexploitation, recharge and salinization should have direct impacts on surface water bodies systems by increasing water flows and improve the water quality and reduce the underground water exploitation and salinity levels. In this sense, the proposals to successfully meet the impact of the call should promote some of the following expected impacts:

- Designing new modelling routines for determining the basic components of the water cycle, including economic, social and technical aspects (e.g. groundwater accumulation storage and recharge) and for forecasting droughts
- Mitigating pollution processes by better assessing water management policies and the impact of anthropogenic activities.
- Improved hydrological monitoring in ephemeral rivers, hydrological regime, water and sediment connectivity, geo-morphological conditions of river channels and river corridors.
- A reduction in the risk of saline intrusion and improved management of salt accumulation in overexploited underground water bodies.

TOPIC 1.1.2: SUSTAINABLE, INTEGRATED WATER MANAGEMENT

Challenge:

Water sustainability in the Mediterranean region should be ensured by improved technical tools coupled with socio-economic studies able to improve the efficiency of water and energy use in certain key regions under present and future global change scenarios. In this sense, recognizing the water-energy-food synergies and balancing the potential trade-offs between water and energy use efficiency is required.

Scope:

A sustainable water management is crucial in the Mediterranean basin for ensuring efficient multiple water use in irrigation, animal production systems, drinking and industrial activities, as well as the preservation of natural ecosystems. This requires efficient governance at different levels: watersheds, districts, national. This call intends to improve water governance taking into consideration both the socioeconomic context and the meteo-climatic trends of the Mediterranean basin, since both of them are considered as important drivers of current and future water resources management. The development of innovative governance strategies, advanced planning methodologies, appropriate and sustainable treatment technologies and monitoring tools has to take into account the huge number of physical, technological and socio-economic variables in water management in order to address the ever-growing need for water and food. This implies the use of technologies and tools for

water accounting systems, including new remote sensing capacities coupled with governance allocation structures based on socioeconomic rules for setting the limits for water and energy consumption.

Expected impact:

The water systems in the Mediterranean regions will benefit from the developed measures at different spatial levels in order to alleviate the existing pressure on water resources. By better defining the limits of water use and standardizing the water accountings procedures and methodologies, it will be possible to improve the analysis of the water footprints. More specifically some of the impacts expected by this call should be:

- Development of innovative tools and decision support systems for planning and adaptation to global change, including public and private stakeholders' involvement;
- Improving evapotranspiration determinations by surface energy balance, in order to better assess the water and energy budgets, particularly in dry water basins.
- Implementation of monitoring and forecasting systems to support the water management under scarce conditions, taking into account any anthropogenic effect on the integrated water cycle;
- Development of innovative approaches for the proper management of water infrastructures, including small and multi-purpose reservoirs and water harvesting systems

TOPIC 1.1.3: IRRIGATION TECHNOLOGIES AND PRACTICES

Challenge:

In the Mediterranean basin, agriculture is by far the main user of water resources, and irrigation is a crucial field practice influencing crop productivity and product quality. In addition, irrigation is a major driver for solutes transport in arid and semi-arid environments, having an important role in the possible negative impacts of improper water management on soil salinization and aquifers pollution. Therefore, the challenge is to improve irrigation water productivity while minimizing the potential environmental risks associated with irrigation.

Scope:

Mediterranean countries have taken or are performing significant efforts to modernize irrigation infrastructures, particularly in terms of water uptake and delivery from the original source to the farm. However, more research and technology transfer is needed to improve water use efficiency at the farm and irrigation district level. This can be potentially appraised by introducing more efficient irrigation technologies aimed at reducing soil evaporation and water run-off while improving crop water use efficiency, for example by designing precision irrigation scheduling models using information and communication technologies. In some cases, the use of soil and plant sensors and irrigation scheduling models has already been shown useful. While most of the knowledge remains at a research level, there is now the need to boost exploitation of such knowledge by end-users, for instance by showcasing the promising technologies in demo studies in close collaboration with private companies, mainly SMEs. However, further research is still needed to develop new technologies to minimize losses and maximize efficiency of irrigation (also in view of the current search for climate-proof crops with reduced water requirements), to be associated with tools for estimating more precisely plant water and saline stress levels and their impact on productivity, in order to understand when and how to intervene with proper irrigation technologies. This is particularly important under the conditions of water scarcity faced by most of the Mediterranean irrigation districts, where the use of deficit irrigation practices is a possible, and sometime a unique solution to cope with water stress. Under these stressing situations, particular attention should be given to the salinization process and the use of reclaimed or high salinity water. The existing knowledge on precision irrigation and regulated deficit irrigation practices under good quality water needs to be adapted to the more water-quality limiting conditions existing in the Mediterranean agro-ecosystems.

Expected impact:

- Improving on-farm water use efficiency while maintaining crop productivity, quality and safety, and soil fertility
- Upscaling the on-farm water use efficiency gain to the irrigation district level
- To demonstrate irrigation scheduling models and tools to be developed in collaboration with private companies, manly SMEs.
- To determine irrigation protocols tailored to low-quality water availability and, particularly, high salinity water, and to new climate-proof crops with reduced water requirements
- To reduce contamination of aquifers, mainly by nitrates, thanks to the improved fertigation scheduling protocols