

MID-TERM EVALUATION CONSENSUS REPORT

Strategies for increasing the water use efficiency of semi-arid Mediterranean agrosilvopastoral systems under climate change (FLUXMED)

Name of Coordinator: Dr. Nicola Montaldo
 Project code: WaterWorks2017-FLUXMED
 Duration of project: 30 M
 Start date: 01/01/2020

End date: 30/06/2022

FOLLOW-UP GROUP

Please include the data of the FG members reviewing the report

Name	Organisation
Antonio Lo Porto	Istituto di Ricerca Sulle Acque IRSA-CNR (Water Research Institute)
Jessica Budds	University of East Anglia

I. Scientific and technological progress (Maximum 250 words)

Please describe the work performed and the results obtained during the lifetime of the project, and the conformity of work progress within the initial schedule. Take into account the following aspects:

- *Has progress been achieved towards reaching the project objectives according to the original description and milestones?*
- *Detailed update on methodology & results*
- *How has the progress of the project promoted a multi-disciplinary work?*
- *Dissemination of the results (publications, patents, other)*

The project aims at developing innovative methodologies for measuring and estimating evapotranspiration in typical heterogeneous Mediterranean agrosilvopastoral systems, at improving the eco-hydrologic monitoring in ephemeral rivers and at developing land cover change strategies for climate change scenarios that optimize the water uses and increase system resilience.

This project started in January 2020, implying that the project is in the initial stage and that it has potentially been more strongly affected by Covid-19.

The work done comprises some tasks in some case study sites for work packages 2-5, mostly consisting of study site identification, equipment purchase/design and installation, model design and validation/calibration, collection and analysis of historical data, and collection of field data. At the date of the report, deliverables D1.1, D1.2.1 and D7.1.1 have been completed, even though delayed a couple of months. Deliverables D7.1.2 and D7.2.1 have not yet been completed.

The report very clearly indicates exactly what has been done in each site, and in some cases what has been delayed, but it also seems clear that progress has been uneven across sites. Moreover, the report gives less indication of the implications of the various delays/changes, especially in terms of data integration and general findings if some case studies are far behind others.

Stakeholder engagement appears very limited, with little indication of communication with

stakeholders beyond those that are responsible for specific aspects of case study sites e.g. provision of data, access, equipment. So far, due to the COVID19-related delays, the multidisciplinary approach has not been concretely implemented.

Three journal manuscripts/papers and one chapter are listed as outputs; however, one paper was submitted months before the project start, so presumably derives from prior work.

2. Collaboration, coordination and mobility within the Consortium (Maximum 250 words)

Please evaluate the collaboration, coordination and mobility within the Consortium

Take into account the following aspects:

- *Efficiency on the coordination and organization of the projects*
- *Collaboration effective between the partners*
- *Mobility of the research between the consortia*
- *Does the project meet the transnational nature and its added value?*

The COVID19 pandemic has greatly impacted the collaboration between partners, the mobility of researchers and the transnational nature itself of the project.

The report does not specify the number and nature of meetings across the whole consortium and between partners, and how they have sought to main contact and momentum under the circumstances, and this is an aspect that merits clarification. The nature of the report gives the impression that each partner is proceeding individually to the best of its capacity.

There does not seem to be much communication across case study sites. Given that the Covid-19 situation may continue to persist for some time, the project partners have a real challenge to implement such activities in the remaining part of the project life, without taking the charge of planning and implementing mitigation measures.

3. Coordination with other international project funded by WaterWorks2017, or other instruments (Maximum 250 words)

Please evaluate the external collaboration of the Consortium

Take into account the following aspects:

- *Collaboration effective with other projects funded under the 2018 Joint Call:*
- *Collaboration effective with other projects or consortia.*

The report does not mention any contact with other funded projects on this programme.

4. Coverage of the themes and sub-themes of the call (Maximum 250 words)

Please evaluate relation within the project results and the themes and the sub-themes of the call.

Theme 1. Enabling sustainable management of water resources.

The overall aim for this theme is to develop new governance and knowledge management approaches.

- *Sub-theme 1.1. Promoting adaptive water management for global change:
The aim of sub-theme 1.1 is to increase knowledge and to develop evidence-based methodologies and technologies for monitoring the cumulative impacts of human activities and climate change on the water cycle, but also to develop management options on the water cycle (considering all cycle compartments) and water / ecosystem services. This knowledge must be applicable for the adaptive management of water resources on a*

regional scale, while enabling downscaling to address local or catchment situations.

- **Sub-theme 1.2. Integrative management by implementing Natural Water Retention Measures (NWRM) such as Managed Aquifer Recharge (MAR):**
The aim is to increase the knowledge and develop NWRMs such as MAR in a multidisciplinary way, to protect, prolong, sustain and augment freshwater supplies. Evidence of their effectiveness and on the multiple benefits they deliver should be demonstrated.
- **Sub-theme 1.3. Mitigating water stress in coastal zones and urbanized areas:**
The aim is to develop and demonstrate a comprehensive coastal zone management system based on monitoring and modelling to ensure the provision of freshwater security under a range of conditions including saline intrusion, sediment management, storms, floods and droughts, but also specific coastal water uses. Please, refer to H2020 calls on nature-based solutions to propose complementary actions.

Theme 2. Strengthening socio-economic approaches to water management.

The overall aim of this theme is envisaging education and communication initiatives to raise social awareness of consumption habits and water scarcity and to increase the levels of social acceptance and use of recycled water.

- **Sub-theme 2.1. Integrating economic and social analyses into decision-making processes:**
The aim is to increase the knowledge the effectiveness and efficiency of existing economic mechanisms and policy instruments related to water management, with a special emphasis on implementation of water policies (such as the EU Water Framework Directive) and development of a circular and green economy. The approach should aim to break boundaries between services valuation including more flexible pricing and charging mechanisms, management tools and institutions, and the employment of economic and social sciences to develop best practice management guidelines for efficient water uses, including under extreme events such as droughts and floods.
- **Sub-theme 2.2. The reuse of water:**
The aim is to develop integrative methods and cost-effective technologies for the implementation of acceptable and sustainable solutions on a large scale for different reuse cycles, spanning from irrigation, via livestock drinking water, to human consumption. Furthermore, goals include assessments of social acceptance for the use of recycled water and the development of integrated approaches combining technological solutions with social-psychological acceptability, economic viability and appropriate governance approaches. Research into the removal of emerging contaminants must consider the cost of the technology vs yield and realistic options for reuse of the recovered water. Please refer to projects funded under previous Water JPI Joint Calls (2013, 2015 and 2016) to avoid any duplication. See Joint Calls on Water JPI website.
- **Sub-theme 2.3. Connecting science to society:**
The aim is to increase understanding of the role of socio-economic approaches to water uses in hydrological cycles. Knowledge building should address stakeholders' and public awareness of water challenges and values, and how perception of policy measures and technological solutions are formed and how stakeholders can be steered towards desirable behaviour. Local and/or regional context (attitude, social norms, cultural context, etc.) should be taken into consideration. The value of improved water stewardship overall should be considered by developing sustainable business models.
- **Sub-theme 2.4. Promoting new governance and knowledge management approaches:**
The aim is to develop innovative water management tools and approaches suitable for decision-making based on an analysis of the limitations of current practices. These approaches should involve the broad participation of stakeholders (including public monitoring, communication and education), multidisciplinary research, and short and long-term water cycle scenarios to support decision-making and the integration of water policy into other policy fields. In effect, governance capacities for implementation of water policies at the local and regional levels should be enhanced.

Theme 3. Supporting tools for sustainable integrative management of water resources.

This theme aims to complement the actions developed under the European Strategy Forum for Research Infrastructures (ESFRI) and other European initiatives. Emphasis should be on establishing networks and information sharing among existing research facilities/field labs, analytical methods, monitoring tools and programmes, access to databases and platforms, exploring the use of big data solutions and establishing reliable hydrological standards. Across the globe, there is a large body of knowledge, methodology and data related to hydrology and the water cycle that has the potential of being beneficial for a wide range of the world's regions. The alignment of water-related research and sharing of data and results will serve to avoid duplication of research,

support progress based on previous finding, and thus facilitate the establishment of water management policies addressing rapid climatic changes.

Given the delays declared by the partnership, it is indeed difficult to evaluate how and how much the project results comply and fit with the themes and sub-themes of the call. For the time being, most of this assessment can be made mostly on the basis of the proposal, rather than on the actual activities. The project seems definitely related to the Sub-theme I.I Theme I (“Promoting adaptive water management for global change”).

Integration, and the pursuit of findings across the project as a whole must be a priority for the second half of the grant and for future evaluation, and mitigation measures to deal with the uneven stages that the case study work is at need to be in place with some urgency.

5. Stakeholder/industry engagement (Maximum 250 words)

Please evaluate the participation of stakeholders/industry on the project and the added value of this participation.

The activities carried out consist in few preliminary meetings with selected stakeholders. From the report, it seems that stakeholders have been consulted in quite a minimal way, again potentially due the effects of the pandemic, and mainly where their input has been necessary for an element of the work to proceed, such as in the case of access to sites or to data. If the project is to achieve impact, this is also an aspect that needs to be considerably strengthened from this point onwards, taking into account mitigation measures for the restrictions on field work and in-person events that could make this element more challenging.

The project does not seem to have engaged yet with any aspects of land use or governance, and this is a slight concern, especially as this aspect of the work seemed to be marginalised in the original proposal.

In the remainder of the project, the team could perhaps seek to engage with higher-level stakeholder and governance institutions related to water and climate issues.

6. Recommendations for improvements/amendments of the report (Please complete Table below)

Page	Modification	Rationale for change
25	What is the impact of the loss of the first field activities in the Flumendosa basin, and how will these be mitigated?	Not enough information.
27	What mitigation measures will be taken to address the auxiliary equipment not being installed?	Not enough information.
28	What data collection is ongoing in Egypt?	Not enough information.
29	Give more detail on RS data for Egypt.	Not enough information.
30	Give more detail on the results of the data from Cyprus that form the basis of the mentioned manuscript.	Not enough information.
31	Give more detail on the nature and frequency of project meetings at the consortium level as well as between partners. Show how contact and momentum is being maintained across and within the project under mainly online conditions.	Not enough information.

39	Clarify how publications submitted to journals/books either before the project start date or very shortly thereafter pertain to research conducted under this grant.	Apparent inconsistency.
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7. General Assessment Comments (Maximum 250 words)

Please include a summary of the key points of this evaluation.

Problems identified or specific risks to the projects. As well recommendations/feedback, which could be relevant to the Consortium.

For the time being, it is difficult to see a cooperative effort and a international added value. This can be due to the very early stage of activities (because of the pandemic-related delay).

The detail on work undertaken and progress made appears to be quite uneven across case study sites, and the fragmented nature of the report across tasks and cases - presumably collated from information given by partners - makes this difficult to properly judge. There is little sense at this stage and from this report how the general level integration and analysis is expected to proceed across cases developing at different paces, and this is something that the coordinator could usefully address, including by giving more detail on how communication is maintained across and between partners.

Stakeholder engagement appears to be very minimal thus far, and this is a high priority to be strengthened from this point forward.

Aspects of the project, in particular team and stakeholder meetings and planned mobility, have been disrupted by the Covid-19 situation, While these conditions are clearly outside the control of the researchers, the report could have contained a clearer idea and plan of how the impacts of the various changes, cancellations and delays will be mitigated as the project continues into its subsequent time, especially as the coming months continue to be uncertain in regard to the pandemic.