

## MID-TERM EVALUATION CONSENSUS REPORT

**An integrative information aqueduct to close the gaps between global satellite observation of water cycle and local sustainable management of water resources (iAQUEDUCT)**

Name of Coordinator: Dr. Zhongbo (Bob) Su  
 Project code: WaterWorks2017-iAQUEDUCT  
 Duration of project: 36 M  
 Start date: 11/06/2019

End date: 10/06/2022

**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) |
| Teppo Vehanen    | Natural Resources Institute Finland                                 |

### 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 partnership has done some advancement in the planned work, notably in running some joint field activity in one of the test sites (Alento) and applying a downscaling methodology to remotely sensed data. The MidTerm report does not allow in many points to understand if a certain piece of the job has been carried out during the project life or is “inherited” from other previous projects: as a matter of facts, despite the verbose description of achievements, none of the expected deliverables has been completed. In one case (D2.2) the Deliverable is reported to have been published as a paper which is anyway not listed in any other place in the document (and is not existing on WOS or Scopus). There is as well no reference to the meant-to-be-completed deliverables (as in the proposal) D0.1\_1, D0.1\_2, D0.1\_3, D0.1\_4, while for some other deliverables (D1.1, D2.1, D6.1) wrong or incomplete information is given.

The report includes a list of 10 published scientific papers which however in all the cases (but two) acknowledge several other funding programs, without any reference to Water JPI. In a couple of cases the referred published articles do not exist and in one case is surprisingly referring to some scientific activity done in Tibet... These issues allow to conclude that presumably many of the referred papers derive from prior work.

Dissemination activity includes the publication on the web of the demo of a tool. The job carried out so far show a good degree of multi-disciplinary.

The proposal includes six study sites but none of these (excluding the Alento site) is even

mentioned in the report.

The methodologies used are adequate, and the project seems to be capable to update and adapt according to the results.

The report is really verbose, includes too many descriptions of work to be done in the future and gives the impression of trying to impress the reader rather than to report the actual amount of work done

## 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 transnational added value is in the core of the project, how to downscale the earth global observations to local scale. Project clearly has met its transnational added value so far. Project coordination has been well taken care. The organization of the work into different WP's with responsible institutes/persons has worked efficiently. Some WP's are executed jointly and partners have been able to share the information and data between them, thus learning from each other's. Several project activities have been conducted jointly among the partners. Collaboration between partners has been in good level. Covid-19 situation causes problems for the mobility within the consortium, which, of course, is not projects fault.

## 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.*

Several project partners share the presence in other consortia (the Harmonious Cost Action or an Italian National Research project) on very similar topics so that they can conveniently save time and resources within the present project.

Most of the iAquaduct consortium meetings and fieldwork campaigns are supported by the COST Action and a PhD study is assigned for iAquaduct and HARMONIUS. This cooperation is well acknowledged.

No collaboration activity with other WaterWorks2017 projects has been referred nor mentioned in the Report.

## 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.

iAquaduct declares to be addressing Theme 3 (Supporting tools for sustainable integrative management of water resources) as well as Sub-theme 2.3 (Connecting science to society in order to develop approaches to influence stakeholders towards desirable behavior).

The first proposition (about Theme 3) is indeed very reasonable in principle. The second proposition (about Sub-theme 2.3) is at the moment well difficult to be assessed, since nothing has been done so far towards this goal.

## 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 project aims to produce an end-to-end system to translate scientific data and knowledge and include stakeholders into the process of sustainable water management. This part has suffered from the COVID-19, involving stakeholders in the project has been on hold and contacts to stakeholders limited and took place in the web.

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

| Page             | Modification   | Rationale for change  |
|------------------|--|---|
| 3                | Expected results & impacts   | Could you describe here better, what kind of tools will be developed for end product, who will be using the (farmer, authorities...), and for what kind of decisions. |
| 4                | a satisfactory relation between in situ observations and the estimated SM values w | What is meant by "satisfactory relation" here   |
| 22               | involving stakeholders in the project has been on hold.                            | Could you describe the impact of this to the project goals, and a plan how to deal with this problem  |
| All              | Shorten not useful repetitions   |   |
| 22 and following | Delete publications not developed within the project                               |   |
| All              | Clarify the part of the job that has been actually done within the funded project  |   |

## 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.*

The concerns for the future work regards how successful is the linking satellite data to point measurements that supports the development of downscaling procedures. This is essential for the "end-to-end system", translating scientific data and knowledge into water productivity

information. More detailed information are needed on the tool box to be created, who are the end users utilizing it (farmers, managers, scientists..). And finally, the stakeholder engagement is important now that the COVID has kept the contacts in minimum level.