

Dissemination and exploitation plan

SINTEF, Maria Barrio

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Achieving wider uptake of water-smart solutions

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ABSTRACT

The dissemination and exploitation plan summarizes the consortium’s strategy and the concrete actions that should be made in order to disseminate, exploit the results generated by the project. Dissemination activities are going to be performed during the whole project lifetime and are not going to be an after-thought. The dissemination and exploitation plan will be updated at month 18, and month 36.

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SINTEF

AUTHOR(S)

Maria Barrio (SINTEF)

REVIEWED BY

Giorgio Mannina (UNIPA)

Herman Helness (SINTEF)



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1 Executive summary

The dissemination and exploitation plan describes measures for the dissemination and exploitation of WIDER UPTAKE's results, and KPIs for measuring the activity.

The WIDER UPTAKE project aims to have an impact in the water and wastewater sector. The expected impact will rely on new industrial symbioses based on water-smart solutions that will link water and wastewater treatment, resource extraction, energy supply and product development for the agriculture, building & manufacturing materials industries and energy supply. It is expected that the results of WIDER UPTAKE project will provide measures to overcome the existing barriers (social, economic, political) hampering the application of circular economy concepts to the water and wastewater sector. Five demonstration cases will demonstrate explicitly how it is possible to achieve the recovery of resources from water and wastewater in symbiotic circular economy relationships between utilities and industries.

The outputs of WIDER UPTAKE project will consist of a roadmap with recommendations and of a set of measures to be applied for the achievement of optimized water-smart systems. Moreover, another output of the project will consist in the realization of policy briefs enhancing the barriers overcome. The outputs of the project will be made available through a series of standard and advanced dissemination methods. In particular, seminars and training activities will be held during the project and a final conference will summarize the main outcomes/achievements of the project, the acquired knowledge, the policy implications and recommendations; scientific papers will be published in open access or peer review journals, with the aim to disseminate and make available the ongoing results of the project. Scheduled events and workshops will be organized in order to deliver the project outcomes fostering them to provide their feedback. Printed and on-line material will be produced in order to inform public and stakeholders, whilst the construction of WIDER UPTAKE social media and website will keep all the interested actors updated for all implemented and planned future activities and outcomes of the project. Deliverables produced as documents will be archived in the WIDER UPTAKE website with open access for interested persons and organizations.

Many stakeholders such as government people, water plants designers and operators, market stakeholders, academic, professionals, society, etc. will potentially use the project results. Young professionals and students are also an important target for the dissemination activities in the project as they represent the future of the water sector.

Particular attention will be also paid on the exploitation, that will specifically be designed in order to multiply the impact of the proposed solutions and prepare the transition towards industrial and commercial uptake in order to fully achieve the expected impact.

2 Introduction

WIDER UPTAKE is a H2020 project that aims to facilitate industrial symbiosis as a mean to increase resource efficiency, limit emissions and develop sustainable business based on water-smart solutions. The project's hypothesis is that the barriers for wider uptake of water-smart solutions are not only technological but also of organizational, regulatory, social, and economic character.

WIDER UPTAKE will identify and demonstrate common measures to overcome barriers related to:

1. 'Monitoring and control of health and quality risks'
2. 'Circular-economy and efficiency potential'
3. 'Governance and business models for industrial symbiosis'
4. 'Measuring water smartness and progress towards SDG'.

The project includes demonstrations at five different locations/countries/settings of:

- Wastewater reuse for agriculture and urban greening
- Phosphorus recycling, biogas and biochar utilisation
- Production of biocomposites for manufacturing materials with resources recovered from the whole water cycle.

The partnership in WIDER UPTAKE includes 11 water utilities and industries and 7 research institutes or universities, distributed across 5 countries (Norway, Netherlands, Czech Republic, Italy and Ghana).

The WIDER UPTAKE project aims to have an impact in the water and wastewater sector. The expected impact will rely on new industrial symbioses based on water-smart solutions that will link water and wastewater treatment, resource extraction, energy supply and product development for the agriculture, building & manufacturing materials industries and energy supply. It is expected that the results of WIDER UPTAKE project will provide measures to overcome the existing barriers (social, economic, political) hampering the application of circular economy concepts to the water and wastewater sector. Five demonstration cases will demonstrate explicitly how it is possible to achieve the recovery of resources from water and wastewater in symbiotic circular economy relationships between utilities and industries.

The dissemination and exploitation plan of WIDER UPTAKE summarizes the consortium's strategy and the concrete actions that should be made in order to disseminate, exploit and protect the results generated by the project. Dissemination activities are going to be performed during the whole project lifetime and are not going to be an after-thought. The dissemination and exploitation plan will be updated at month 18, and month 36.

3 Outcome of WIDER UPTAKE

3.1 Results

The WIDER UPTAKE project will have two types of results: i. direct results; ii. indirect results.

Direct results will be:

- The improved understanding in terms of processes operation acquired by means laboratory and on-site (within the real plants) experimental tests;
- Mathematical models able to describe each part of the plants under study and to support their optimal operation in view of reducing the energy and resources employment according to a CE concept;
- Papers which summarize the results of the project published in the most relevant international journals that will be made available to the scientific community;
- Creation of a new market between Ghana and Sicily where products or sub-products of the project will be shared;
- A roadmap towards a water-smart society and related manual that includes all the mathematical models, set-up and calibrated, and all the knowledge acquired (social, economic, technical, and experimental) during the project.

Indirect results will be:

- Materials (nutrients) recovery, sludge and water reuse from wastewater treatment plants;
- Reduced energy usage from wastewater treatment plants;
- Reduction of bio solids production in wastewater treatment plants;
- Improvement of the stakeholders' awareness on the economic, environmental and social convenience in commercializing the products of the project (such as materials).

The roadmap creation represents the key and novel direct result of the project since it summarizes all the direct and indirect results in a pathway towards the achievement of a water smartness and a shift to circular economy.

3.2 Innovations

The innovations in WIDER UPTAKE can be grouped in two groups. The first is existing innovations that already have been, and are developed, by the industry and partly utility partners in the case studies, e.g. new biocomposite material, 3D printed raingarden boxes, novel biofilm process for EBPR, novel adsorbents for nutrient recovery, biochar fuel products to replace charcoal or wood as fuel. These innovations are at different levels of maturity and the further development of the innovations themselves and the business plans, IPR-management and other measures required for exploitation will be performed by the industry partners of the Consortium, e.g. Hias How20, HØST, NPSP, Storm Aqua, etc. in collaboration with the utilities.

These exploitation measures will be supported by WIDER UPTAKE activities but are not solely dependent on the project as such because the companies and utilities would anyhow be developing these measures as part of their already defined business model. The support activities in WIDER UPTAKE will be organised as part of the Communities of Practice. Business model development will be addressed specifically through WP4, task T4.2.2, which will explore innovative CE business models and test their applicability in the different demonstration cases. The aim is to facilitate further development of symbiotic solutions and to co-develop strategies for widespread implementation of these, thereby furthering market uptake of the technical innovations.



D6.1 – Dissemination and exploitation plan

The other group of innovations in WIDER UPTAKE are the tools related to the methodologies for overcoming the barriers for wider uptake of water-smart solutions that are developed in the project. Exploitation of these tools in the project will be done as part of the activities in the respective WPs for the tools and in the case studies. Wider exploitation of the tools by external users and after the project end should be addressed by the exploitation and dissemination plan. These tools will have open access and the measures to secure exploitation of these will therefore be focused on informing the various potential users about the tools and providing means of access to the tools that will be effective also after the end of the project. The exploitation and dissemination plan of WIDER UPTAKE reflects the characteristics of the two groups of innovations and is focused on supporting the sharing of non-proprietary information – in the consortium and externally – and disseminating the results to a wide group of recipients.



4 Dissemination and exploitation of results

The outputs of WIDER UPTAKE project will consist of a roadmap with recommendations and of a set of measures to be applied for the achievement of optimized water-smart systems. Moreover, another output of the project will consist in the realization of policy briefs enhancing the barriers overcome. The outputs of the project will be made available through a series of standard and advanced dissemination methods. In particular, seminars and training activities will be held during the project and a final conference will summarize the main outcomes/achievements of the project, the acquired knowledge, the policy implications and recommendations; scientific papers will be published in open access or peer review journals, with the aim to disseminate and make available the ongoing results of the project. Scheduled events and workshops will be organized in order to deliver the project outcomes fostering them to provide their feedback. Printed and on-line material will be produced in order to inform public and stakeholders, whilst the construction of WIDER UPTAKE social media and website will keep all the interested actors updated for all implemented and planned future activities and outcomes of the project. Deliverables produced as documents will be archived in the WIDER UPTAKE website with open access for interested persons and organizations. Many stakeholders such as government people, water plants designers and operators, market stakeholders, academic, professionals, society, etc. will potentially use the project results.

All the potential users interested to the project results will be contacted by a series of e-newsletters written also in non-technical language for informing the general public about the contribution of the project towards current issues and practical applications related to circular economy in the wastewater sector. In this way it will be possible to interact with stakeholders, providing incentives for possible further investigation and interaction. Moreover, press releases will be scheduled to inform about the project progress, when an invitation or a particular announcement should be issued, or when a project's event is about to be organized. Particular attention will be also paid on the exploitation, that will specifically be designed in order to multiply the impact of the proposed solutions and prepare the transition towards industrial and commercial uptake in order to fully achieve the expected impact.

4.1 Open access and data management

A very important aspect is to guarantee the open access of the achieved results and data management. Indeed, all projects receiving Horizon 2020 funding are required to make sure that any peer-reviewed journal article they publish is openly accessible, free of charge (article 29.2. Model Grant Agreement). Specific measures to provide open access including for instance the Gold open access will be carried out by imposing a portion of the budget devoted to open access publication. Moreover, the Green open access (or self-archiving) will be implemented, by imposing that the final published paper or the final revised manuscript will be archived by the researcher in an online repository, before, alongside or after its publication.

WIDER UPTAKE will use the Zenodo repository¹ as the main tool to make our research data findable in accordance with the H2020 Open Access Mandate. A *WIDER UPTAKE* community has been established in the Zenodo repository, and the project will upload all our public datasets and deliverables as well as scientific publications to this community. Additional information regarding FAIR data management and Open Access for results from WIDER UPTAKE is included in *D7.2 Data management plan_draft*.

The Data Management Plan includes instruction regarding data sharing and accessibility in Open Access. Moreover, a description of the procedures to be adopted for the preservation of data in the short and long term is provided there.

¹ <http://help.zenodo.org/> (DOI versioning)

4.2 Involvement of potential end-users and stakeholders in WIDER UPTAKE

The WIDER UPTAKE project cases studies are characterized by symbiotic relations between utilities and industries. There will in addition be other stakeholders (e.g. public agencies, user groups) that together with the project partners will be crucial for the exploitation of the innovations. The close connection between project partners and stakeholders involved in the cases will be of huge importance for the developing the project roadmap that will aid in achieving improvement of the market uptake. With a strict commitment from the early stage of the project, end-users and stakeholders will help the project partners to guide the work towards applications.

The engagement of stakeholders and end-users (industries, professionals, public administration, academic, etc.) will be beneficial not only for achieving success in the project, but to stakeholders themselves. Interconnections will be created by sharing industrial, marketing and commercial protocols according the novel vision of “circular economy” market in the wastewater sector towards wider uptake of water-smart solutions.

4.3 Barriers to implementation of results from this project

Several barriers exist during the creation of innovative circular economy solutions involving water utilities and private businesses from industry sectors. These barriers represent the obstacles that the project aims to overcome. Among these barriers the most relevant are:

- Regulatory and institutional barriers which prevent the wide application of developed innovative solutions;
- Skills shortages within the wastewater treatment plants according to the circular economy concept;
- Traditional value chains that are less keen to innovate;
- Mismatch between market needs and the solution.

During the WIDER UPTAKE project, the awareness of the existing barriers will be spread among all the involved partners and stakeholders. Further, economics, business, marketing and public administrations will be involved during the project as supporters for selecting the best actions to take in view of overcoming these barriers. For example, the public administrations will support the breaking down of the regulatory and institutional barriers in view of opening to the adoption of innovative solutions for using the recovered materials (nutrients, sludge) and water in agriculture. In this regard, several actions will be carried out: organization of discussing tables among the stakeholders (universities, project partners, municipalities, administrations, technical politics), workshops. The involvement of economics and business managers will allow the formation of the market stockholders on the advantages of commercializing the project products and sub-products.

Developing countries may presents peculiar challenges in dissemination and exploitation of results that may be addressed by innovative approaches. WIDER UPTAKE will use the case in Ghana to employ a novel dissemination approach specifically suited for the context in a developing country. Four critical actors will be prioritised to cover the entire chain of stakeholders required and in a set of dedicated events (seminars, workshops, demonstrations, field visits, participation in fairs and exhibitions, etc.).

4.4 Implementation of results beyond project completion

The results obtained from WIDER UPTAKE will be implemented beyond the project completion by sharing the roadmap and all the knowledge acquired during the project. This will be achieved by establishing a Virtual Learning and Sharing Centre for Water-Smart Solutions (VLSC). The VLSC will be part of the project website and built as a community portal for networking and sharing data, tools, case studies and publications.

Specifically, an accurate database will be available online in the VLSC containing all the best solutions (according the circular economy concept) obtained during the roadmap application in the case studies considered during the project. These data will guide the potential future users on the actions to implement in their systems towards water smartness and sustainable conditions.

Further, all the documents produced during the project (papers, roadmap user manual, mathematical models and user manual) will be available online in the VLSC and shared with the scientific community and market potential stakeholders.

However, the VLSC will be more than the collection of documents and data from the project activities. It will be designed to provide virtual showcases of the symbiotic solutions in the project and provide users with the opportunity to develop their own symbiotic solution in a virtual space. In the process the users will be able to follow the roadmap in an interactive manner and access the relevant tools and guidance along the way. The VLSC will be a key measure for sharing of information and exploitation of results WIDER UPTAKE.

4.5 Education of young professionals and researchers

An important opportunity, in particular for the academic partners in WIDER UPTAKE, is to utilise all the dimensions in the project to promote the education of the next generation of stakeholders in the water sector and to prepare them for the transition into water smart solutions: young researchers and professionals and students at all levels: master, PhD's and PostDoc.

The high interdisciplinarity in the project and the possibility to compare similar technical solutions in different geographical, economic and social contexts has an enormous educational value, to be taken advantage of.

The academic partners in WIDER UPTAKE will make use of this opportunity by establishing a network among the PhD students in the project across institutions and also open for master students to link their master projects to the topics and cases in WIDER UPTAKE. In addition, the international Water Association, in particular their dedicated network *IWA Young Water Professionals*, will be used as a channel for dissemination.

Finally, creating awareness around WIDER UPTAKE and a related identity among young professionals will contribute to create the necessary critical mass for the transition into industrial symbiosis for water smart solutions.

4.6 Overview of planned dissemination and exploitation activities

The planned dissemination and exploitation activities are summarized in Table 1 and Table 2. As the project evolves and more results and innovations are available, more activities will be described in detail in the coming updates of the dissemination and exploitation plan will be updated in month 18, and month 36.

Table 1: Summary of WIDER UPTAKE dissemination activities

Measure or activity	Description	KPI for the measure or activity
Website	<p>The project website will be all public and will contain a description of the project, news and relevant events. It will also be updated with relevant links to external documents and projects.</p> <p>Deliverables produced as documents will be accessible from the WIDER UPTAKE website with open access for interested persons and organizations.</p> <p>Local websites in local languages will also be created, with specific information about the local demonstration cases and country specific information.</p>	<p>No. of visits to the website</p> <p>No. of downloads of documents</p> <p>No. of tweets</p>
Publications	<p>Scientific papers will be published in open access or peer review journals.</p> <p>Printed and on-line material will be produced to inform public and stakeholders.</p>	No. of publications in the different categories
Conferences	<p>Major dissemination events.</p> <p>Final conference.</p>	No. of participants
Workshops	Seminars and training activities as physical or digital events.	No. of participants
Policy briefs	Prepare prioritized recommendations for responsible actors at local, regional, EU and international scale.	<p>No. of policy briefs</p> <p>No. of scales addressed.</p>

In addition to the above activities, WIDER UPTAKE has received an invitation to publish a book by Elsevier publishing. The tentative title is *Smart solutions for wastewater: Roadmapping the transition to circular economy*. The intention of this publication is to provide students and professionals with a knowledge base around the topics covered in WIDER UPTAKE. Access to this knowledge base can represent an inspiration for practitioners, students and young professionals to actively contribute to the transition to a circular economy with water smart solutions.

The coronavirus outbreak during 2020 has posed some limitations to the dissemination activities of the project. Some of the activities, like the Kick-off meeting for WIDER UPTAKE and initial meetings of the Communities of Practice (CoP), have been conducted as digital events with high participation and satisfactory exchange of information. However, the positive value of physical meetings like spontaneous unforeseen dialogues cannot be compensated in all cases. Because of the pandemic, the planning of larger events will need to be flexible and adapt to the quickly changing situation.

Table 2: Summary of WIDER UPTAKE exploitation activities

Measure or activity	Description	KPI for the measure or activity
Supporting companies in the further development of their business plans	<p>WIDER UPTAKE will set up and execute a plan for industrial network development, closely linked with the demonstration cases.</p> <ul style="list-style-type: none"> ○ A triple-layered business model canvas for dialogue-based assessment and identification of specific symbiosis models for the demonstration cases will be applied. ○ Important aspects in an industrial symbiosis will be addressed in workshops for each demonstration case, coordinated with WP1. <p>For the case studies in the project this will be part of WP4 and WP1.</p>	No. of new/improved business plans for the participating industries
Improve symbiotic solutions	<p>WIDER UPTAKE will use the tools developed in the project to analyse the symbiotic solutions according to:</p> <ul style="list-style-type: none"> ○ Health and safety management tool ○ Optimisation of resource efficiency and value chains ○ Governance assessment ○ Holistic assessment of sustainability <p>For the case studies in the project this will be part of WP2-5 and WP1.</p>	<p>Change in the indicators defined for the respective tools.</p> <p>Progress towards SDGs as measured by WP5 tool</p>
Supporting the sharing of non-proprietary information	<p>Virtual Learning and Sharing Centre.</p> <p>Roadmap with recommendations and of a set of measures.</p> <p>Deliverables produced (as documents) will be archived in the WIDER UPTAKE website with open access for interested persons and organizations.</p>	
Stakeholder interaction	<p>Communities of Practice (CoP) at different dimensions: around demonstration case, across countries (at project level) or across projects.</p> <p>e-newsletters written also in non-technical language.</p> <p>Dedicated meetings with political stakeholders to discuss legislative barriers at national level (example: Anci-Sicily).</p> <p>Case specific meetings and workshops.</p>	<p>No. of participants at CoP events and meetings</p> <p>No. of recipients of newsletters</p>