



SUWANU EUROPE

Deliverable 3.3

List of potential institutions with SuWaNu results in their Curricula

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1 Executive Summary

This deliverable consists of a list of potential institutions (universities and training schools) that can insert SuWaNu results in their curricula in order to promote project results among their trainees/students. This activity would aim at obtaining an effective knowledge transfer towards the new generation of researchers and technicians.

The aforementioned goal has been achieved through the combined effort of UNITO, AUP, TTZ, UCO, AUTH and UCY, which collected a database of a total amount of 888 potentially interested target subjects (i.e. university professors and lecturers working on water&hydraulic topics dealing with the “reclaimed water reuse” different areas), that have been informed and sensitized. In particular, each targeted person was individually contacted with a tailored newsletter campaign aimed to:

1. promote the dissemination of project results in form of high quality free didactic material (i.e. tailored info-packages);
2. conduct a survey to understand the characteristics of the reached audience.

This document describes how the activities have been carried out and analyzes the results that have been achieved.

This deliverable is closely related to WP3 “Knowledge exchange”, and in particular to D3.1 “Practice-oriented info-packages”, which represent the core of the didactic material provided to the contacted institutions.

For the sake of clarity, due to the timing imposed by the activities progress, the current task was based on the dissemination of the info-packages (English version only).

Further project results, such as the e-learning courses translated in different languages, as well as the translated info packages and the policy briefs, became available during the ongoing activities and are now fully accessible through the SUWANU website as additional didactic material.

2 Introduction

As a general objective, the SuWaNu project aims to: *“The promotion and the effective exchange of knowledge, experience and skills between practitioners and relevant actors of water reuse in agriculture, so that direct applicable technological and organizational solutions are widely and balanced disseminated all around Europe resulting in a more resilient agricultural sector to cope with water scarcity and climate change effects”*.

Considering the general project’s objective, the “knowledge exchange” can be considered a fundamental topic to effectively promote the uptake of innovative solutions identified during the project. To achieve this goal, WP 3 is focused on developing informative materials and training courses for practitioners and stakeholders of the water management sector.

In particular Task 3.3 is focused on including the contents and results developed during the project into the curricula of university courses, PhDs seminars, technical conferences, etc. and thereby ensure that the future young professionals working in agriculture know the benefits of water reuse. A synoptic table of the activities carried out during task 3.3 is presented in Table 1.

Table 1 Subdivision of the activities carried out during Task 3.3.

Task activity	Involved partners
3.3.1. Define type of information to collect in a database.	UNITO with review from UCO, TTZ, AUTH, AU, and UCY
3.3.2. Collect information from all partners about potential contacts affiliated to institutions related to water reuse (i.e. agriculture and water management) following a bottom-up approach*.	All partners provide information
3.3.3. Prepare material to present the initiative to the institutions potentially interested, such as universities and project partners.	UNITO with help of UCO, TTZ, AUTH, AU, and UCY
3.3.4. Delivery of the didactic material to collected contacts by means of a tailored dissemination protocol (newsletter).	UNITO with help of UCO, TTZ, AUTH, AU, and UCY
3.3.5. Data analysis and writing of the deliverable	UNITO, contribution from UCO, TTZ, AUTH, AU, and UCY

* instead of contacting selected institutions and letting them distribute the material among their staff (top-down), in order to achieve a more direct knowledge transfer we decided to address directly the selected contacts.

3 Curriculum adaptation strategy – Methodology

3.1 Definition of information to collect

The information gathered during the development of the Activities of Tasks 3.3, have been inserted into a database structured as described in the following table.

Table 2 Database structure.

Field_name	Size/reference	Field descriptor
Partner_responsible	<taxonomy_partners>	The partner who upload the information, this field will not be visible on the webpage – all partners of SuWaNu
Organisation	<text>	Acronym and name of the affiliated organization
Country	<taxonomy>	Indicate the country of the organization, select from the list
Email	<text>	Contact's email address
Website	<link>	Provide a link to the main website page of the curricula/course
Date_visited	<calendar>	Provide the data of the last visit to the main page of the Organisation/ curricula/course/project/best practice

3.2 Identification of academic/educational stakeholders

In this activity each partner has collected a list of potentially interested institutions in their own target region belonging to the following categories:

- Universities;
- Research bodies
- Irrigation districts;
- Policy makers (regional and national water sector);
- Municipal agencies for water management;

3.3 Educational material

To facilitate the use of scientific, technic and dissemination material developed within the SuWaNu project, a dedicated section on project website, has been created.

By accessing the web address: <https://suwanu-europe.eu/water-treatment-training-courses/> it is possible to easily browse the fact sheets, organized through 6 different info-packages (IP), each of them oriented to satisfy the knowledge needs of the different target groups of actors identified in SUWANU EUROPE project, namely farmers, agricultural advisory groups, water reclamation operators, water engineers, authorities, consumers and general public.

These fact-sheets (FS) consists of a short summary of findings and insights from practical solutions, research projects and success stories focused on reclaimed water in agriculture (Table 3). They are intended to facilitate their use as training material (but also in conferences and workshops). The contents enable the user to further search on the topics described. Further readings recommendations and references are provided in each fact sheet with that purpose.

Table 3 List of the Info Packages (IP) and Fact Sheets (FS) published as part of the SUWANU educational material.

Info Package	Leader	Fact Sheets
IP1- Farmers/irrigators	FENAREG	FS 1.1: Implications of using reclaimed water to obtain labels such as global gap. FS 1.2: Effects reclaimed water on crop quality and yield. FS 1.3: Irrigation equipment adapted to the use of reclaimed water (e.g. drippers). FS 1.4: Decision support systems to monitor irrigation patterns and fertilization needs when using reclaimed water. FS 1.5: Using reclaimed water in organic farming.
IP2- Agricultural advisory services	ECOFILAE	FS 2.1: Cost-benefit analysis and feasibility of using reclaimed water. FS 2.2: Irrigation schemes when using reclaimed water. FS 2.3: Water and fertilizer savings when using reclaimed water. FS 2.4: Potential of reclaimed water for greenhouse farming. FS 2.5: Water reuse initiatives in agriculture in Europe.
IP3- Water reclamation operators	CER	FS 3.1: <i>Reclaimed Water quality requirements.</i> FS 3.2: <i>Contaminants of emerging concern (policies, technologies to remove them, efficiency, impacts in agricultural crops).</i> FS 3.3: <i>Potential Antibiotic resistance and health impacts linked to irrigation with reclaimed water.</i> FS 3.4: <i>Key for success in Israel (and Cyprus?).</i> FS 3.5: <i>Phosphorus recovery in water reuse.</i>
IP4- Water engineering companies	BIOAZUL	FS 4.1: <i>Filtration membranes and new filter materials.</i> FS 4.2: <i>Sensors and other innovative tools for monitoring reclaimed water quality.</i> FS 4.3: <i>Light-driven technologies for producing reclaimed water.</i> FS 4.4: <i>Nature based options for water reclamation processes.</i> FS 4.5: <i>Other technologies for water reclamation.</i>
IP5- Consumers and general public	CECU	FS 5.1: Environmental benefits of irrigation with reclaimed water. FS 5.2: Organoleptic studies of agricultural products irrigated with reclaimed water. FS 5.3: Public perception and consumer acceptance of agricultural products irrigated with reclaimed water.

		FS 5.4: AKIS & Stakeholders analysis: Improving knowledge transfer channels to foster innovation in agricultural irrigation with reclaimed water FS 5.5: Communicating the use of reclaimed water for agricultural irrigation E.g. how to transfer a positive image of using reclaimed water.
IP6- Authorities and policy makers	BIOAZUL	FS 6.1: <i>New EU Regulation on reclaimed water for agricultural irrigation</i> FS 6.2: <i>Water Reuse Risk Management Plans.</i> FS 6.3: <i>Water resources governance (e.g. how to incorporate reclaimed water into integrated water resources management).</i> FS 6.4: <i>Strategic planning for the use of reclaimed water in agricultural irrigation (the planning process to develop SUWANU EUROPE action plans</i> FS 6.5: <i>Confronting barriers for agricultural irrigation with reclaimed water and promoting synergies in geographical clusters.</i>

3.4 Contact protocol

Each of the potential selected contacts have been targeted individually following a communication protocol consisting of:

- a set of standard emails (see Annex 1);
- a short questionnaire (Table 4) to be filled to access a link to download the didactic material;

The target contacts (collected among consortium partners) have been inserted into a mailing list and targeted with a tailored newsletter (Mailchimp). **The newsletter has been rolled out four times at a few weeks' interval.**

Thanks to Mailchimp's capabilities, it was possible to monitor the interactions of each contact with the newsletter, keeping track of those who actually opened the email and/or clicked on the link redirecting to the survey (and download link).

This allowed, from the second campaign onwards, to send the newsletter only to the contacts that did not interact with the previous ones.

Table 4 List of questions composing the SUWANU questionnaire.

Question	Answer
First name	text
Last name	text
Country	text
Affiliation	text
Select the main sector(s) your courses belong to	Select one (or more) from the following options: ▪ Water resources management ▪ Sustainable development ▪ Irrigation science ▪ Wastewater treatment ▪ Civil / hydraulic engineering ▪ Climate change ▪ Agronomy ▪ Horticulture

	Other
What is your motivation for accessing the SUWANU water reuse teaching material?	Select one from the following options: - I already cover the topic in my lectures and I am interested in improving my material. - I am interested in introducing this topic in my lectures. - Personal interest (e.g. water reuse is out of topic with respect to my current lectures).

4 Curriculum adaptation strategy – Results

4.1 Potential institutions in each partner region

UNITO, AUP, TTZ, UCO, AUTH and UCY contributed to collect an extensive list of potentially interest contacts (professors, researchers, PhD students, etc.) for a **total amount of 888 contacts**.

Figure 1 shows the percentage of contacts provided by each consortium member. UNITO and TTZ gathered a large part (92%) of total potential contacts

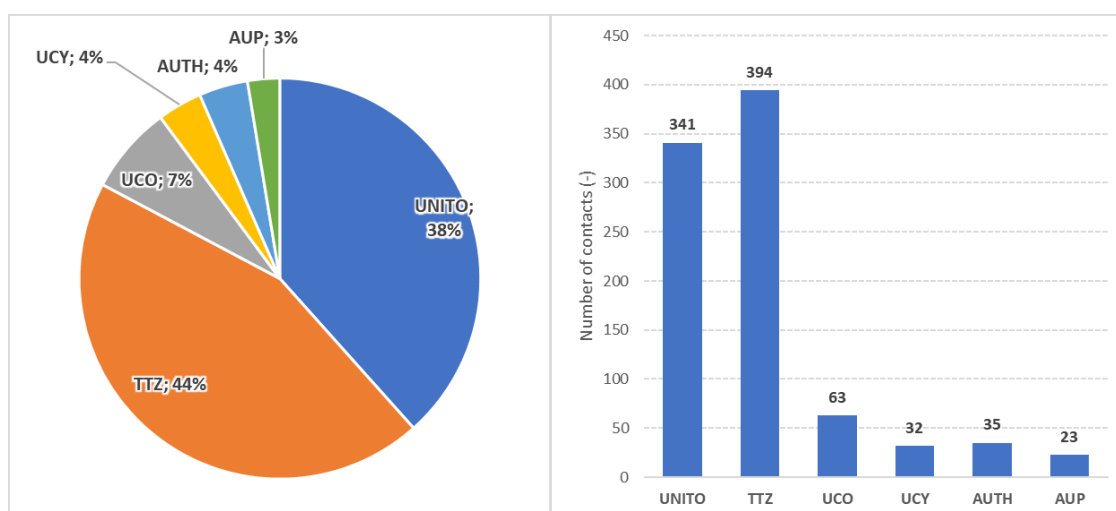


Figure 1 Percentage of collected contacts by each involved partner (left); number of contacts collected by each involved partner (right).

5 Key performance indicators

5.1 Newsletter open and click rates

The success of the newsletter campaign has been measured by analyzing the interactions with the delivered emails in terms of:

- a) open rates;
- b) click rates.

As shown in Figure 2, the reached audience responded quite positively, but with noticeable differences between the group of contacts of each contributing partner.

By averaging the results of the contact lists provided by each partner, it is possible to obtain a clearer analysis of the interest in water reuse from geographical areas, as shown in Figure 3.

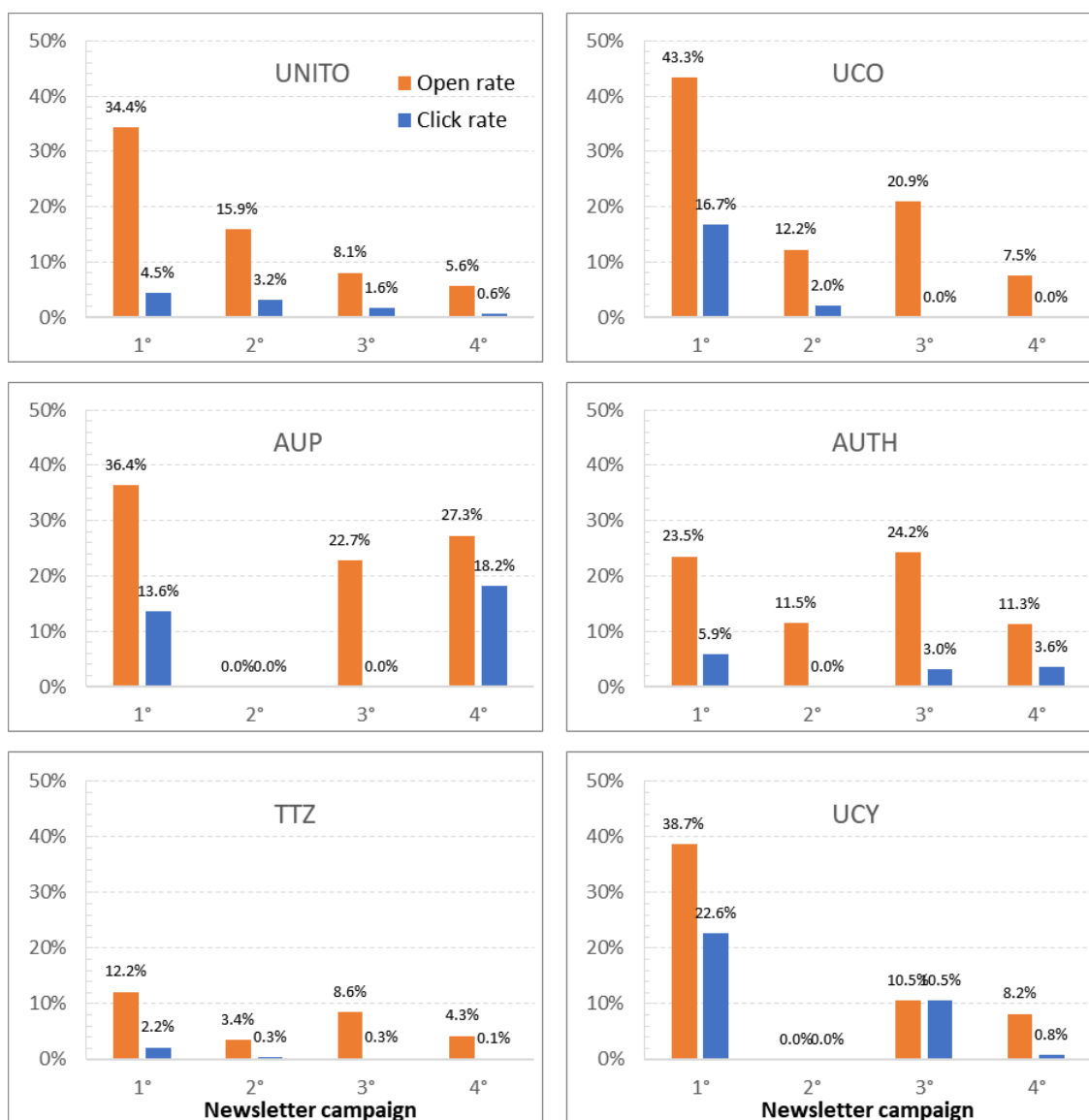


Figure 2 Open and click rates obtained during the four newsletter campaigns.

Even if the following assertions cannot be considered statistically robust, as they are derived from groups of different sample sizes and characteristics, some interesting information can be obtained.

Contacts belonging to Mediterranean countries (Spain, Cyprus, Italy and Greece) scored similar results, while German contacts showed to be the least interested (in terms of open and click rates). Interestingly, even if is not a Mediterranean country by definition, contacts from Bulgaria (AUP) show a high degree of interaction.

Averaging the results of the contact lists provided by each partner, (Figure 4) with the exception of TTZ, all groups have very similar open rates, while click rates show a clear prevalence of interactions from Cyprus (UCY) and Bulgaria (AUP), followed by Spain (UCO) and Greece (AUTH)

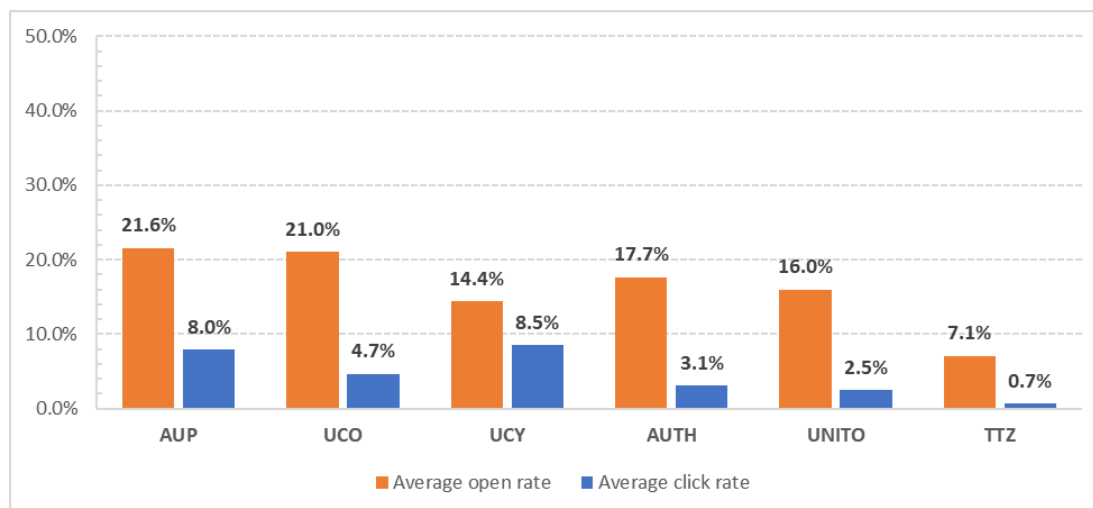


Figure 3 Average open and click rates scored by the contact list of each contributing partner.

Finally, aggregating the results for each of the four newsletter campaigns, a broader picture of the overall performance of the newsletter over time can be provided (Figure 4). The first campaign, scored a remarkable 31.4% opening rate and a 10.9% click rate, proving that the target audience was highly interested to the topic of water reuse. As expected, after the first campaign the number of interactions with the newsletter decreased, in particular during the second campaign, but they kept a certain degree of open/click rate, that never reached zero.

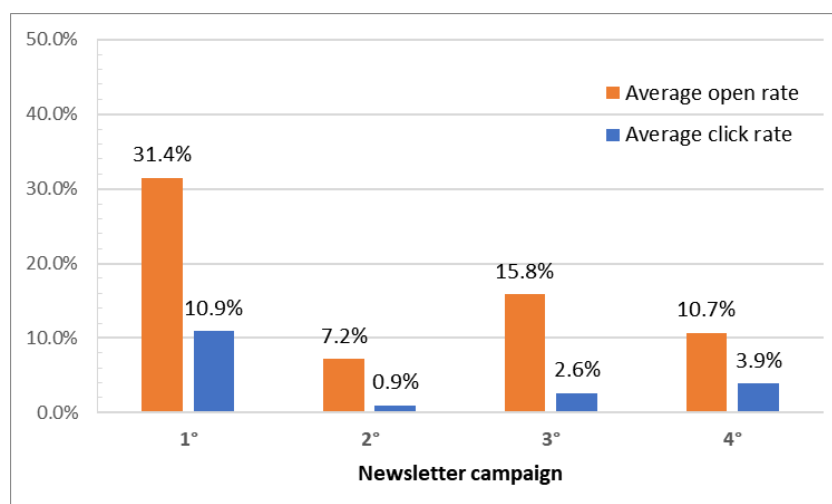


Figure 4 Average open and click rates of the four deliveries of the SUWANU newsletters.

5.2 Questionnaire results

The four newsletter campaigns obtained a **total of 67 unique clicks on the link and 44 answers (and downloads), with a conversion rate of 66%.**

Moreover, comparing the email addresses collected alongside the questionnaire, we have noticed that some of them were not present into the initial mailing list, showing that the newsletter was forwarded by the recipients to other contacts.

The following sections show the results of the submitted questionnaire, excluding sensitive data (names, emails) for privacy reasons.

5.2.1 Country of origin

Analyzing the country of origin of the contacts, 75% of them belong to Mediterranean countries, with a prevalence of Italy and Spain which alone score 59% of the total. Between non-Mediterranean countries, Bulgarian contacts shows a remarkable degree of interest towards water reuse, especially considering that they represent only 3% of the collected contacts.

The complete list of the institutions where the SUWANU didactic material has been downloaded are listed in Table 5, while Figure 8 shows their locations across Europe.

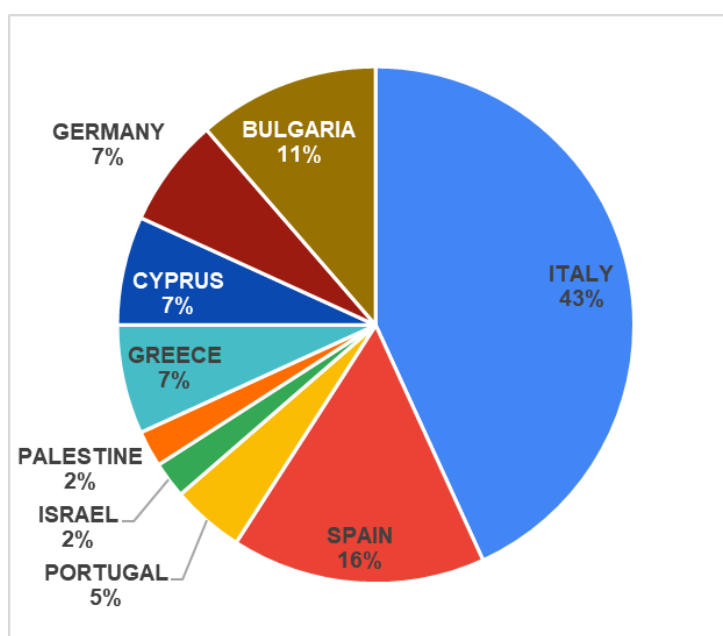


Figure 5 Country of origin of the contacts that filled the questionnaire.

5.2.2 Affiliated institutions

The SUWANU didactic material was downloaded by a total of 36 different universities and research institutions. Figure 6 shows the geographical distribution, and Table 5 contains the full list of the reached institutions, which are mostly distributed in proximity of coastal areas. The location within each member state is well scattered along different cities/regions indicating that the SUWANU results have reached a broad distribution across a wide range of different areas.

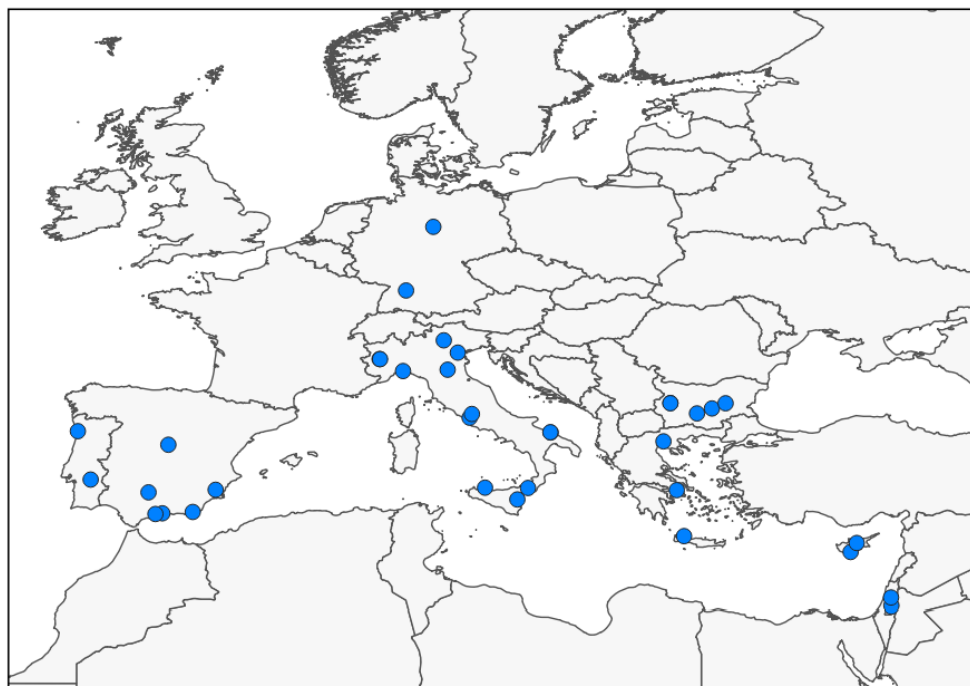


Figure 6 Geographical distribution of the Universities and research institutions affiliated to the contacts that downloaded the didactic material.

Table 5 Affiliations of the contacts that downloaded the didactic material.

Country	Institution/organization name
Italy	Polytechnic University of Bari
Italy	University of Trento
Italy	Sapienza University of Rome
Italy	Water Research Institute (IRSA-CNR)
Italy	University of Turin - DIST
Italy	University of Palermo
Italy	Università degli Studi di Bari Aldo Moro
Italy	Università Mediterranea di Reggio Calabria Italy
Italy	University of Padova
Cyprus	Cyprus University of Technology
Israel	Hebrew University
Portugal	Faculty of Engineering University of Porto
Cyprus	University of Cyprus
Bulgaria	Agricultural University - Plovdiv
Italy	Politecnico di Torino
Italy	University of Catania
Italy	DICAM - Università di Bologna
Greece	Technical University of Crete
Greece	Aristotle University of Thessaloniki
Italy	Università di Bologna
Germany	Ostfalia University of Applied Science
Italy	University of Genoa
Portugal	Renewable Energies Chair - University of Évora
Spain	Universidad de Córdoba
Spain	Universidad Politécnica de Madrid
Spain	CEBAS-CSIC
Spain	IHSM-La Mayora, CSIC
Palestine	An-Najah National University
Spain	University Of Almeria (Spain)-Catedra Del Agua En Agricultura, Regadio y Agroalimentacion
Spain	University of Malaga
Germany	ISWA
Greece	Un. West Attica
Spain	UNESCO Chair of sustainability
Bulgaria	Trakia University
Bulgaria	Climate, Atmosphere and Water Research Institute at Bulgarian Academy of Sciences
Bulgaria	University of Architecture, Civil Engineering and Geodesy-Sofia

5.2.3 Sectors

Contacts answers regarding the technical/scientific sector in which they work shows a prevalence of water resources management (32), followed by sustainable development (20) and irrigation science (20), as shown in Figure 6.

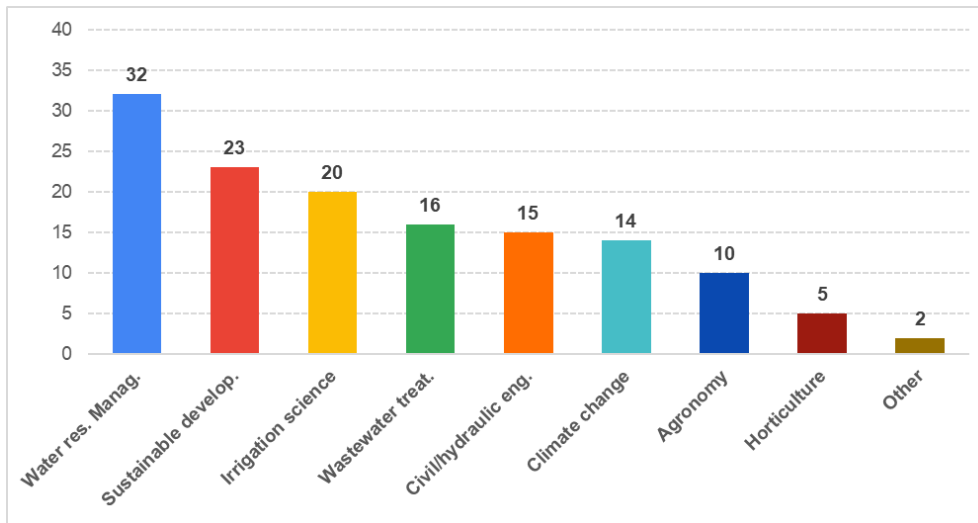


Figure 7 Technical sectors of the contacts that filled the questionnaire.

Other technical fields directly connected with water reuse (i.e. wastewater treatment and civil engineering) show similar results (15-16 answers). Climate change scored more answers than agronomy and horticulture, showing that water reuse is a topic of high interest for the future challenges of global warming.

5.2.4 Motivation

The motivation expressed by more than 60% of the contacts for downloading the SUWANU didactic material is for teaching purposes.

The most frequent answer (38.78%) is for improving the lectures of courses that already cover water reuse, and another 25.53% declare that they are interested in introducing these topics in their teaching programs.

Lastly, it is interesting to note that about one third (34.69%) of the contacts, are moved only by personal interest, even if they do not cover such topics in their lessons. Showing a growing interest in water reuse within the academic community.

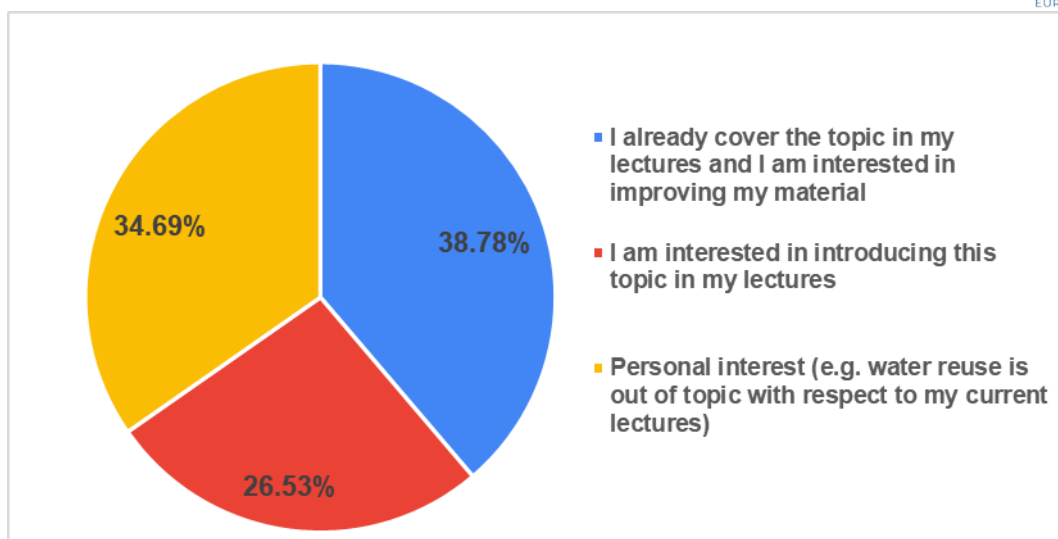


Figure 8 Motivation for downloading the didactic material.

6 Conclusions

The results of the activities carried out during Task 3.3 have led to a broad dissemination of project results among the scientific community.

The newsletter campaign created to reach the audience of the contacts collected by project partners (UNITO, AUP, TTZ, UCO, AUTH and UCY), obtained a good response from the audience. **From a total of 888 contacts, we obtained a total of 44 download of the didactic material from 36 institutions located in 9 different European countries.**

Concerning the technical/research sectors of the contacts, mostly belong to areas strictly connected with water reuse, but we observed a significative number of contacts (14) working with climate change, indicating how it is recognized a topic of high interest for adapting to the effects of climate change.

The answers collected by the questionnaire on the motivation of downloading the SUWANU didactic material, show that **more than 60% of the contacts expressed that they are willingly to use it for teaching purposes** (both improving existing lectures and/or to introduce water reuse).

For the sake of clarity, due to the timing imposed by the activities progress, the current task was based on the dissemination of the info-packages (English version only).

Further project results, such as the e-learning courses translated in different languages, as well as the translated info packages and the policy briefs, became available during the ongoing activities and are now fully accessible through the SUWANU website as additional didactic material.

ANNEX1 – contact newsletter

[view this email in your browser](#)



Dear Prof. <<Last Name>>,

The purpose of this message is to share with you relevant materials related to the use of reclaimed water in agriculture that we developed in the frame of **SUWANU EUROPE** project.

Reclaimed water is an underdeveloped resource, with a strong potential to:

- complement conventional water resources;
- fight the global challenges of water scarcity;
- sustain the climate change adaptation.

In this context, the **SUWANU EUROPE** project is addressing the challenge of improving the use of reclaimed water for irrigation purposes in agriculture. One of our main goals is **i) to promote the use of this sustainable practice through the dissemination of project results**, and **ii) to support the empowerment of the next generation of young professionals working on water/ agriculture/ environment/ engineering/ architecture**.

As a representative of the SUWANU project, we are now giving the opportunity to selected university professors working in the water resources sector to access some useful didactic material.

To help us in disseminating the benefits/possibilities offered by reclaimed water, we would appreciate if you can consider to include some of the available contents on water reuse within your courses, workshop and seminars.

If you are interested, we are glad to invite you to **click on the link below to access our dataroom containing a selection of the most relevant project results, in form of high quality, free, and ready-to-use didactic content** to enrich your lectures.

Click me!

The topics covered by the material include: water treatment technologies, effects on crop yield, crop quality, environmental impacts and health effects, water use optimization, innovative irrigation techniques, costs-benefits analysis, risk assessments and much more.

To help us to reach a broader audience, feel free to forward this email to any colleague that may be interested in the topic.

If you would like to know more about the project, please visit the [SUWANU web page](#), and our social media pages (icon links here below).

For any request, please feel free to contact our team at: info@suwanu-europe.eu

Thank you very much!

Sincerely,
The SUWANU Project Team

