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Development of Regional Action Plans for the fast implementation of water reuse to the 8 pilot Regions of the SUWANU EUROPE project:

Steps for the implementation of the Local Action Plan for Andalusia, Spain

Contents

1.1 Legal framework

Result 1.1: National legislation complies with the European legislation regarding wastewater treatment and reuse of reclaimed water

Step 1.1.1: Harmonise National legislation to European legislation

With the recent approval of Regulation (EU) 2020/741 of the European Parliament and of the Council of 25 May 2020 on minimum requirements for water reuse, there is a common European legal framework for all member states with provisions to use reclaimed water in agriculture. The regulation contains strict requirements for the quality of reclaimed water and its monitoring. However, although this Regulation will be directly applied in each national context, there are a variety of existing regulations in the Spanish and Andalusian context that should be updated.

It is therefore needed a revision of current national regulation on water reuse (i.e. RD 1620/2007) in order to be adapted to the provisions of EU 2020/741 regulation. Likewise, the procedures for granting licenses to users of reclaimed water shall be also adapted to the new situation by the regional government of Andalusia and water basin authorities which have the competence for licensing. A revision of the existing legal framework shall be conducted by national and regional actors. Thus, it is proposed to create multidisciplinary working groups responsible for adapting national and regional legislation to the provisions of the EU 2020/741 regulation. These working groups shall also develop guidelines to support users of reclaimed water (mainly farmers) to adopt the provisions and meet the standards required by the new legal framework.

Step 1.1.2: Set goals to guarantee EU legislation compliance

It is necessary to identify the goals established in the European framework to analyse the actual application in the Andalusian context. New regulation updates must include those goals that are not achieved yet, i.e. comply with the treatment of the whole wastewater.

Step 1.1.3: Creation of a realistic compliance schedule

Once the National legislation is updated, the actions to achieve compliance have to be organised through a feasible schedule, that takes into consideration both time and budget limitations.

Result 1.2: National legislation unifies regional policies, avoiding fragmentation.

Step 1.2.1: Harmonise National and Andalusian legislation

Spain is a decentralised country, where both the national and regional administrations promote their own regulatory framework in the promotion of reclaimed water for agricultural irrigation. In regions like Murcia and Valencia, this promotion is implemented, while in Andalusia is yet on process.

The elaboration of new policies like “Plan DSEAR” (national) or the “Pacto Andaluz por el Agua” (regional) should be coordinated. It is useless to promote new regulations that would not be used in a region nor another because the regional administration has the competencies over water uses.

Step 1.2.2: Drive the coordination between national and regional administrations

Besides the differences between the National and Andalusian governments, there are other institutions managing water concessions like the water basin management authorities. Although

the competencies over these management authorities belong to the National Government, coordination should be fostered among them to unify the criteria of water reuse in the regions where they coexist.

Result 1.3: The legislation allows the use of reclaimed water throughout the year for agricultural irrigation

Step 1.3.1: Normalize Reclaimed water concessions

In Spain, the use of reclaimed water is allowed through concessions. Concessions include the amount of water allowed to be use and the crops that can be irrigated with it. However, in Andalusia, Guadalquivir hydrographical confederation just allowed the use of 20hm^3 in 2019. These concessions were validated for the Guadalquivir hydrographical region, while in the rest of the hydrographical region (depending on the regional government) there were no concessions for irrigating crops with reclaimed water.

Reclaimed water licenses should be normalized, following common criteria in the whole region with specific characteristics depending on the hydrographical region.

Result 1.4: European and National organizations have strict regulations regarding reclaimed water quality standards

Step 1.4.1: Implementing adequate risk management systems

The new EU Regulation includes the implementation of water risk management systems. Requirements demanded are high for farmers and enough for food chain actors. The reason is that farmers considered these requirements to make the use of reclaimed water expensive, while food chain actors considered they are useful to create trust among final consumers.

Step 1.4.2: Foster a Transparency Portal

In order to provide final consumers with information about the reclamation process, the water quality, and how the regulation is being complied. A public database is a proper tool to provide transparency and build public trust. The data base shall provide access to the quality standards achieved in the reclamation plants proving the completion with the legal requirements and building trust among consumers.

Result 1.5: The legal framework facilitates the procedures required for agricultural irrigation with reclaimed water

Step 1.5.1: Develop a regional policy for water infrastructures sustainability

Promote a regional policy to guarantee the sustainability of water infrastructures and the construction of those pending. It is necessary to list the infrastructures constructed, the conservation requirements, and include the infrastructures pending, e.g. WWTP.

This regional policy should include all the key actors involved and have a feasible budget and schedule to achieve the objectives established.

Step 1.5.2: Establish sustainable cost sharing systems

One of the main problems identified in SUWANU Europe previous work is the relevance of reclaimed water cost distribution. Reclaimed water is more expensive than fresh water, and there are more actors involved in its production chains (cities, industries, farmers, etc.).

Whether the success of irrigating crops with reclaimed water is sought, it is key to establish a sustainable cost sharing that allows water reuse without compromise their financial balance.

Result 1.6: Stakeholders participate in legislation discussion at the EU level

Step 1.6.1: Reorganised participatory bodies

Andalusia includes different participatory bodies where stakeholders are involved to participate. However, more of these participatory bodies are useless or did not have met the stakeholder for years. Consequently, stakeholders do not have the opportunity to participate in water legislation or policies development.

It is also necessary to establish how relevant and binding are the decisions taken by stakeholders participating in this participatory bodies.

1.2 Administrative procedures

Result 2.1: The administrative requirements have harmonized standards around the country

Step 2.1.1: Establish clear property rights definitions

The administrative procedures should have clear definitions regarding water property rights and it's consequently responsibilities. Thus, every agent involved in the reclamation process and its distribution can be aware of their specific role. The definition of property rights is the first step towards harmonized standards.

Step 2.1.1: Define return flows

How the public administration defines the return flows by users. The extension of irrigated areas could increase water consumption in the respective basin. Consequently, these issues should be standardised in the whole basin with the independence of the region they belong to.

Result 2.2: The bureaucratic procedures to acquire the license for reuse in agriculture are brief and inexpensive

Step 2.2.1: Foster the creation of general irrigators' communities

Due to the variety of farmers and users that can be interested in the use of reclaimed water and the high cost for farmers, the creation of general irrigators communities can help to manage water resources more efficiently.

1.3 Public and private incentives

Result 3.1: Public administration invests in infrastructure for the treatment and distribution of reclaimed water.

Step 3.1.1: Investments to improve secondary and tertiary treatment plants.

Tertiary infrastructures are fundamental in most of the reclaimed water facilities, as they are key to achieve the required parameters imposed by the new EU Regulation for water reuse. However not all WWTPs have these infrastructures, thus investment is required as they should be modernized adapting their current infrastructures to the water reclamation process.

The Public Administration should, therefore, check WWTPs, deciding which ones are more suitable to produce reclaimed water for agriculture. Then, they should invest in these facilities assuring that they include tertiary infrastructures, thus guaranteeing compliance with the current regulations.

Step 3.1.2: Assuring the connection between water reclamation facilities and irrigable areas.

Sometimes, an investment for water reuse in a reclamation facility is completed but reclaimed water is still not available for irrigation as there are no pipes or a pumping system connecting the water from the reclamation facility to the irrigation network.

Although this problem may seem surreal, it has already happened in other parts of Spain when the desalination plants were built. After making millionaire investments constructing the plants, many of them never worked as they were not connected to the irrigation network.

Therefore, the building process should not finish in the construction of the water facility. The required infrastructures to connect the reclamation facilities with the irrigation networks should also be promoted by the public administration.

Step 3.1.3: Building of reclaimed water storage infrastructures (irrigation pools).

Irrigation ponds are used to store water throughout the year to use it during the irrigation season. They have been built either on Irrigation Community or on municipality properties.

Although reclaimed water is produced throughout the year, its demand increases in the summer during the irrigation season. It is therefore important to have a great infrastructure of irrigation ponds to assure the availability of water when needed.

Step 3.1.4: Implementing efficient equipment to remove emerging and other pollutants from reclaimed water.

Emerging pollutants are causing increasing problems in water treatment processes. It is necessary to offer equipment that provides water quality not only in relation to biological parameters but also in physical and chemical ones.

Result 3.2: Public and private stakeholders agree to reduce the energy cost for reclaimed water production

Step 3.2.1: Capitalizing biogas generation in reclamation facilities for self-consumption or commercialization.

The production of renewable energies is a priority in all communitarian and national strategies (Circular Economy, Horizon 2030, 50% reduction in fossil fuels, etc.). During the wastewater treatment process, the biogas generated can be stored and used by the equipment that requires electrical energy, promoting the self-consumption. The surplus can be sold.

Step 3.2.2: Implementing photovoltaic generators to produce renewable energy in reclamation facilities.

The installation of photovoltaic generators in reclamation facilities is a very good solution to reduce the costs of electrical energy. Currently, photovoltaic technology is the cheapest way to produce electricity. Furthermore, its implementation contributes to the achievement of the SDGs, making the economies greener. Public authorities should, therefore, promote the installation of PV facilities through public funding initiatives, like providing financial aids, reducing or eliminating taxes, etc.

Step 3.2.3: Carrying out energy audits in reclamation facilities.

It is essential to know how all the elements that demand energy in any system are working, analysing the deficiencies of any machine or pump. Measuring procedures can be implemented to improve their saving energy costs.

Step 3.2.4: Upgrading the water pumping equipment to increase efficiency.

Once an energy audit has been carried out, the equipment consuming more energy should be replaced by more efficient ones.

Consequently, a schedule to update old equipment has to be established.

Step 3.2.5: Pumping reclaimed water from the facility to storage in the water pool during off-peak hours.

The process of pumping water from the reclamation facility to water ponds should take into consideration the cheaper hours, both in terms of power (fixed part) and energy saving (variable-consumption-related part). This action would be directly related to number 3, which would allow optimal use of the entire facility.

Result 3.3: Public administration provides economic incentives to farmers that use reclaimed water for irrigation.

Step 3.3.1: Generating links between regional and local aids for infrastructure modernization directed to Irrigation or Farmers Communities that exchange their water license (surface or underground) for a reclaimed water concession.

If an Irrigation or a farmer Community gives up its water license from an urban source or a river basin, they should be rewarded with a new water license from a reclamation facility, and also with financial aids to help them to modernize their irrigation facilities (pipes, pumping, filtering, and water pools storage). This step is related to step 2.2.2 about the links between the water resources included in the license.

Step 3.3.2: Developing awareness campaigns to promote agricultural products irrigated with reclaimed water, contributing to the EU strategy "Farm to Fork" at the local and regional levels.

Public administrations should develop awareness campaigns in mass media (TV, radio, internet, Social Networks, etc.) assuring the public awareness about the safety of consuming products irrigated with reclaimed water. In addition, the reclamation process will be presented as a crucial step on a Circular Economy scheme, and its relevance on the quality food production will be enhanced through the Farm to Fork strategy.

Step 3.3.3: Creating a set of National, regional, and/or local taxes bonification/exemptions.

The use of reclaimed should be promoted with the implementation of benefits and reductions in different taxes to the farmers and irrigator communities that start using reclaimed water: The farmers or Irrigation Communities that start to irrigate with reclaimed water should be subsidized with a property/real estate tax exemption of 70% for 3 years.

Social Security fees. Social security quota from farmers, agricultural employees, and employees of the Irrigation Community that use reclaimed water will be rewarded with 10%.

Reduction in income tax modules of farmers whose farms are irrigated with reclaimed water. A correction rate of 0.95 in tax declaration could be used. If a farmer or an irrigator community was already irrigating with reclaimed water, they should benefit 50% of these aids.

Implementing these tax benefits and exemptions would be especially beneficial to small farmers and irrigator communities that usually have less economic resources.

Step 3.3.4: Developing preferential financing options for reclamation infrastructure.

Both the State and regional governments should sign agreements with banks and financial entities to establish lower interest rates on financing the construction of reclaimed water infrastructures. These agreements could be linked to the Euribor index or discount part of the bank interest.

1.4 Investments

Result 4.1: Public and private stakeholders invest in research and technology to improve and expand the use of reclaimed water in agriculture

Step 4.1.1: Foster Public Procurement of Innovative solutions in water reuse

Public Procurement of Innovative solutions (PPI) facilitates wide diffusion of innovative solutions on the market. To include water reuse on PPI, we need to convince the regional administration about the potential of reclaimed water to alleviate water scarcity. This can be firstly tackled in SUWANU EUROPE training workshops in task 3.2 that will be held in South Spain. Moreover, specific provisions to promote PPI are encouraged by the EC. SUWANU EUROPE will facilitate knowledge and experiences related to PPI (e.g. by finding speakers on PPI for the workshops or developing project materials). Activities of the Regional Working Groups shall continue with this promotion once the project ends by including PPI in the contents of future events.

Step 4.1.2: Support to start-ups and early stage innovators

To promote the uptake of innovative solutions, it is important to facilitate the contact of start-ups and early stage innovators with investors. Several activities can be organized such as innovation contests where promising start-ups can present their solutions to a panel of experts (e.g. Dragon Den approach). This activity can only be effective (which means it is translated into a contract and/or sales) if the start-ups are qualified to present a convincing plan to investors and potential clients. It is, therefore, necessary to increase the capabilities of start-ups to pitch, define a convincing business plan, and get to know the opportunities and instruments to raise funds. With this purpose, regional authorities will be proposed to organize (or support) training and mentoring activities for innovators of the water sectors with a focus on water reuse in agriculture.

Step 4.1.3: Lay down a roadmap for wastewater treatment and reclamation

At this stage, seven municipalities in Andalusia (out of nine in Spain)[1] have failed to comply with the Urban Wastewater Treatment Directive (Council Directive 91/271/EEC). This situation leads regional authorities to focus on the most urgent priorities (e.g. building new WWTPs to comply with discharge standards of directive 91/271/EEC) rather than considering water reuse approaches and increase the production of reclaimed water. Funding needed to adapt existing infrastructure to the requirements of the new EU regulation on water reuse makes this objective even more challenging. Adequate funding schemes to promote water reuse require a clear plan to specify priorities in funding, tariffs, and clear distribution of responsibilities between the different public administrations (e.g. to determine who funds operation and maintenance of existing WWTPs). The proposal of a road map is based on Murcia's case whose regional government defined a "Plan Director" in 2001 leading this region to have the highest rates of water reuse in Spain. In this sense, more intense cooperation between the two regional administrations of Andalusia and Murcia shall be encouraged. This dialogue already started during the first participatory workshop held in Cordoba during September 2019. The objective is to promote this dialogue and enable an exchange of lessons learnt to support the definition of an effective road map for the Andalusia region. Moreover, other activities of this action plan

[1] The seven municipalities are: Matalascañas (Huelva), Alhaurín el Grande (Málaga), Isla Cristina (Huelva), Tarifa (Cádiz), Coín (Málaga), Nerja (Málaga), Barbate (Cádiz). Source: https://elpais.com/sociedad/2020/02/14/actualidad/1581683996_535412.html

such as the creation of a consultancy body and the round tables (see below), shall be aligned with the roadmap building the framework for a participatory process.

Result 4.2: A supervisory board, with representatives of all the stakeholders, has been established to expand and monitor the evolution of know - how and the technology for reclaimed water.

Step 4.2.1: Create a consultancy body

Work with the RWG in Andalusia shall crystallize in a consultancy body that supports the regional government of Andalusia with the road map for wastewater treatment and reuse. This body shall include members of SUWANU EUROPE consortium in Spain as well as a core group of experts within the RWG that includes a wide range of actors (farmers, authorities, private companies, agricultural advisory groups, etc.). The objective is that these experts and key actors are fully aware of the potential benefits of water reuse and can, therefore, influence the adoption of adequate policies in the region. This consultancy body shall also promote the alignment of different initiatives such as the "*Pacto Andaluz por el Agua"* and Plan DSEAR ensuring water reuse is encouraged. Besides, members of SUWANU EUROPE are participating in the development of the "Pacto Andaluz por el Agua", a regional government's project to achieve a consensus about water use in general around Andalusia and about reclaimed water especially. The consultancy body will disseminate (and facilitate access to) project results which might be of interest for the different actors, in particular fact-sheets and e-learning courses developed under the project which may be useful to increase capacities and knowledge about water reuse. The consultancy body will also be responsible for updating this material and if needed extend it with further and new knowledge. In particular, it will be ensured that the consultancy body counts with relevant actors of the R&D community (e.g. researchers, start-ups, SMEs, etc.) so that further research and innovations projects can be built on SUWANU EUROPE results.

Step 4.2.2: Facilitate round tables between regional and national actors

SUWANU EUROPE community will facilitate contacts between different actors during and after the project. In particular, the context of plan DSEAR (driven by the Spanish Ministry of Environment, MITECO) intended to align water basin plans in Spain offers an opportunity of collaboration since water reuse is one of the main pillars of DSEAR. Initial contacts between the SUWANU EUROPE community and MITECO will continue during and after the project. In this context, it is proposed here to extend the contacts among different actors through the creation of multi-actor round tables that enable dialogue and sharing of views and experiences which might be taken into account in the definition of strategies at the national level.

Result 4.3: Farmers are informed and advised about the new water treatment technologies and their application in agriculture.

Step 4.3.1: Participation in workshops and water reuse related events.

SUWANU EUROPE community in Andalusia shall be a driver of knowledge transfer in the region with a focus on practical knowledge for farmers and agricultural advisory group. Good practices and technologies gathered in SUWANU EUROPE (e.g. in the data base) shall be spread in the organization of water reuse events. The community will disseminate SUWANU EUROPE results through the participation of events (e.g. workshops) that might be held in the frame of further R&D projects. With this purpose, it is essential that SUWANU EUROPE ensures contact with

emerging projects which might continue and extend our project results. Furthermore, the consultancy body will be aware of the activities developed with start-ups and innovators so that they present their solutions in events organized by the network of contacts resulted from the project.

Step 4.3.2: Support farmers' development of water reuse risk management plans

The adaptation of the recently approved EU regulation on minimum requirements for water reuse (The final act was signed on 25 May 2020)[2] shall be on focus in the knowledge transfer strategy in particular the requirements of Risk Management Plans included in this new regulation. The preparation of such novel Plans will require guidance and knowledge exchange also between regions. As this specific knowledge is included in SUWANU EUROPE fact-sheets and e-learning courses, the consultancy body will enable an effective knowledge transfer throughout and after the SUWANU EUROPE project. This topic shall be therefore included in workshops and other events. It is also proposed that fact-sheets are further developed as guidelines by the Regional Government of Andalusia. Specific training sessions for farmers and wastewater treatment operators shall be also coordinated by the Regional Government of Andalusia.

Step 4.3.3: Upload online courses

The e-learning platform hosting water reuse online courses will be maintained at least one year after the project. SUWANU EUROPE consortium will seek funding opportunities to maintain, extend, and improve the e-learning platform with more topics adapted to the regional context of Andalusia. It will be also necessary an effort to update the platform with the most innovative solutions and technologies. Public and private entities will be sought to provide financial support and make the e-learning platform a reference in water reuse training and knowledge transfer.

[2] https://www.europarl.europa.eu/news/en/press-room/20200512IPR78921/parliament-approves-increased-water-reuse#:~:text=To%20prevent%20water%20shortages%20in,approved%20the%20Water%20Reuse%20Regulation.&text=%E2%80%9CWe%20could%20potentially%20reuse%206.6,billion%20cubic%20metres%20per%20year.

1.5 European network

Result 5.1: European countries promote international exchange and dialogue to expand the use of reclaimed water.

Step 5.1.1: Participation in international networks

SUWANU EUROPE consortium is present in several international networks such as Water Europe, Water Reuse, EIT Food, or EUVRIN. The objective is to take advantage of such participation in different ways. First of all, as a source of information between relevant actors at the international level, especially at the European level. It is important to have a continuous communication channel to understand how other regions in Europe are adapting to the new EU regulation on minimum requirements. It is also important to have contacts with potential innovators from other countries that may increase the competitiveness of our water sector by bringing recent innovations to cope with the main challenges of the water reuse sector (e.g. removal of micropollutants, efficient and affordable water reclamation facilities, etc.). In this sense, the participation of BIOAZUL in the INNOWISE project conducted by EIT Food is very relevant. In this project, start-ups from the water sectors will participate in an innovation contest in three EU countries, Spain, Greece, and Italy. BIOAZUL will make sure that innovations related to water reuse can be known in the SUWANU EUROPE regions, for instance, inviting the innovators to include their solutions in SUWANU EUROPE data base of initiatives. Similarly, other consortium and RWG members will be invited to extend our area of mutual influence and bring the expertise gained from their participation in other networks.

Result 5.2: European-based scientists and private companies have a specific network to share and exchange results and practices.

Step 5.2.1: Join existing platforms for knowledge exchange at EU level

The creation of a new network is very costly and would imply not to exploit the values of other existing networks. There are network platforms for scientists and water experts that exchange knowledge and opportunities. Some actors already joined the HIVE platform launched by EIT Food. In this sense, HIVE platform has created a group related to water scarcity where water reuse solutions are on focus. SUWANU EUROPE community will also seek participation in other networks.

Result 5.3: Farmers' organizations across Europe communicate and compare their experience with the implementation of reclaimed water for irrigation.

Step 5.3.1: Strengthen RWG communication with other EU regions

Joint efforts of the farmer's representatives in the consortium CONFAGRI, FENACORE, FENAREG, and ACC will help to extend the exchange of information of the farming European sector in terms of water reuse. It will be encouraged by these organizations that water reuse is specifically tackled in conferences, courses, and communications.

1.6 Social acceptance

Result 6.1: The general public is aware of the benefits regarding the use of reclaimed water in agriculture

Step 6.1.1: Carry out a communication campaign with a positive narrative about the use of reclaimed water in agriculture

Key actors: public authorities.

The main object of this campaign is to establish a positive image of reclaimed water on the community since the disgust (the yuck factor) is one of the most difficult issues to overcome in water reclamation projects.

Public administration should identify the key agents in the reclaimed water chain and involve them in the development and dissemination of the campaign.

Step 6.1.2: Disseminate the stories of successful water reclamation projects for irrigation.

Key actors: public authorities.

In order to increase the credibility of reclaimed water and reduce risk concerns. The case of Murcia is a good example of Andalusia, being a close and very successful example.

Publishing information about how the implementation of reclaimed water in Murcia's successes can help increase its public acceptance in Andalusia, moreover within the food chain actors.

Step 6.1.3: Carry out a communication campaign that presents the water reclamation process for irrigation in Andalusia.

Key actors: public authorities, schools, and universities, farmer organizations, water operators, civil society organizations.

Elaborate a simple, direct, and understandable campaign to present the general public the origin, treatment, characteristics, benefits and challenges of water reclamation. The potential users have the right to know all the aspects of the process, the actors involved, the benefits, and challenges of this non-conventional source.

Result 6.2: The general public trusts the public authorities managing the water reclamation process for agriculture

Step 6.2.1: Create a participatory Committee with representatives of all key actors involved in the use of reclaimed water on agriculture

Key actors: public authorities, research institutions, water operators, farmer organizations, water and agriculture enterprises, civil society representatives (consumer associations, neighbours' organizations, etc.).

This Committee will allow a multi-stakeholder participatory environment to discuss water reclamation projects and ensure transparency in their management and implementation. Communities respond better when they are considered and able to assess the development of the project.

Step 6.2.2: Make a website portal to guarantee open access to all the information about water reclamation projects

Key actors: public authorities

Open access to a project's information is a key factor to assure transparency and build trust in public management. This website will provide information and links to other reclamation projects at the national level, such as those in Murcia, to European and international experiences.

Also, the web would include relevant information regarding the water cycle, such as the quality of underground water, etc., to provide the community with trustworthy and understandable contents.

Including this information in a bigger database with information about the quality of underground water, etc.

Step 6.2.3: Conduct water quality and safety studies on the use of reclaimed water for irrigation with socially known and respected academic and research institutions

Key actors: Universities of Andalucía (UCO, UGR, US, UMA).

This step will provide reliable information linked to regional institutions that are trustworthy and are not directly involved in the management of reclaimed water. These studies make available a strong tool against scare campaigns, public health concerns, and fake myths regarding reclaimed water risk concerns.

Step 6.2.4: Disseminate the studies' results in universities, schools, and civil society organizations

Key actors: Universities of Andalucía (UCO, UGR, US, UMA), civil society organizations, farmer organizations, water operators, public authorities.

Publish in local media and social media, the scientific results obtained, in a clear and understandable format for the general public. The knowledge transfer in educational institutions is essential to build trust between the community and water authorities and public administrations, through showing the technical and environmental aspects of the reclamation process, the relevance of water resources conservation in the Andalusian context and the legal requirements for the use of this non-conventional source.

Result 6.3: The general public trusts the public authorities managing the water reclamation process for agriculture

Step 6.3.1: Elaborate a communication campaign that promotes the link between reclaimed water and water scarcity issues

Key actors: public authorities, water authorities, environmental organizations.

Raise awareness about the impact of water scarcity in the region and the importance of increasing the non-conventional water sources in order to lessen the pressure on the groundwater resources.

The campaign should consider and target the demographic diversity of the community, adapting the message and the means of communication to each of them. For example, the younger population might be more receptive to short and eye-catching audio-visual contents

disseminated through social media, where the link between water reclamation and climate change is clearly established. Instead, parents with young children might be more concerned about the food safety of agricultural products irrigated with reclaimed water and have a good acceptance of conventional media as well as social media.

Step 6.3.2: Develop an educational campaign in schools and universities Key actors: public authorities

Key actors: public authorities, universities, schools.

Introduce in the classrooms the discussion about water scarcity, climate change, and non-conventional water sources as an alternative to reduce the water footprint. Discuss with the students the situation of Andalusia, its agricultural sector and the pressure of its water sources and compare with similar regions where reclaimed water has been implemented, such as Murcia and Valencia in Spain, Cyprus or Israel.

Introduce the topic as a key element in the transition to a circular economy, analysing the current European and National Action Plans and the measures that involve water reclamation.

Step 6.3.3: Organize tour visits to water reclamation facilities and crops irrigated with reclaimed water, for the community

Key actors: public authorities, water reclamation facilities, farmer organizations.

Experiential education has proved to be more successful than conventional education and communication campaigns to improve the public acceptance of water reclamation projects. Thus, promoting events such as visits to WWTPs, reclamation facilities, farms irrigated with reclaimed water; local fairs with public authorities, water reclamation facilities, water engineering companies, farmer organizations, consumer and civil society organizations; visits to laboratories to see water quality tests and/or food safety are a great way of transferring knowledge, raising awareness and eliminating misconceptions about the use of reclaimed water in agriculture.

1.7 Conclusions

The design of the Regional Action Plan aims to make visible the potentialities and challenges faced by the Autonomous Community of Andalusia to promote the use of reclaimed water in agriculture, being a region whose water pressure and agricultural exploitation make it an ideal setting for the exploration of alternative sources of water and circular schemes for the exploitation of resources.

First, the approval of the European Regulation 2020/741 provides a common framework for the implementation of reclaimed water but implies a series of pending tasks for the region. Among the most relevant are the need to adapt national legislation to regulations and the standardization of procedures for the granting of licenses for the use of reclaimed water. Likewise, the need to coordinate water policies at the national and regional levels is recognized, as well as to promote transparency in water quality controls.

In the area of public-private incentives, a central element is investment in adequate infrastructure, which includes tertiary treatment plants, distribution schemes and reservoirs for water storage, so as to guarantee the success of regeneration projects for agricultural irrigation. Another key point is the development of energy saving systems in water treatment, such as the self-consumption of biogas or the implementation of photovoltaic energy. Finally, due to the cost of reclaimed water, it is useful to offer incentives for the use of reclaimed water, either through tax credits or preferential financing.

While in the area of investment in innovation and exchange of good practices, the possibility of taking advantage of existing spaces stands out. For example, the Andalusia Pact for Water or national and European projects that work on the subject to disseminate innovation techniques, encourage participation and generate consensus among all the actors involved. Likewise, the possibility of organizing workshops, round tables and other types of knowledge exchange and meeting spaces between investors, innovation companies, public administrations and farmers is proposed.

Finally, the importance of social acceptance for the success of regeneration projects in agriculture became evident, so the dissemination of regeneration must be reinforced, from a positive narrative, which eliminates the susceptibilities and displeasure that afflict this unconventional source. Along with this, it is recommended to promote the participation of civil society organizations in regeneration projects and organize dissemination campaigns that combine traditional communication with experiential learning, so that the community draws closer to the project and builds relationships of trust and transparency with the authorities and technicians who implement it.

One of the problems in the development of this document is that none of the SUWANU members is responsible for the formulation of public policies in Andalusia, therefore this strategic planning exercise has to be understood as a proposal.