



SUWANU EUROPE

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 Plovdiv, Bulgaria

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The RAP bases their specific actions on the SO and results set by the GAP. The SO and elaborated strategy of the GAP, form the basis for the specific steps/actions to the realisation of the GAP strategy.

Irrigation is one of the factors to increase productivity. According to statistics, the yields from irrigated crops in the country exceed the yields from non-irrigated crops by 10-50% depending on the crop (Annual report, 2019). The so-called supplementary irrigation or deficient irrigation is widely practiced in the country, which aims to preserve and maintain the plantations and to provide the critical needs for water, rather than to maximize the potential yield from the plants.

Climate risks have increased in recent years, and the insurance market does not offer insurance against adverse climatic events, drought, and the only way to overcome drought losses is a secure, well-functioning hydro-ameliorative infrastructure and efficient irrigation facilities on farms. The projected increase in droughts in large parts of southern Europe would increase competition between different water users, such as agriculture, industry, tourism and households.

1.1 Methodological Framework

The development of the Regional Action Plan is one of the most important scientific parts of the *SuWaNu Europe* project. It crowns the efforts of the whole cluster after the development of the regional analysis of the possibilities for water reuse in agriculture, SWOT and PEST analyses, AKIS analysis, the structuring of the Regional Working Group from the key players in the field of reclaimed water, etc.

The Regional Action Plan for the Plovdiv region is based on the specific objectives developed in the General action plan in D2.3, the specific features of the region, the identified statements in the analyses developed so far and the views of stakeholders given during the Participatory workshop held in Plovdiv. The first version of RAP developed in this way was sent to the members of RWG to receive their corrections, improvements, and suggestions for new activities in it. After summarizing the feedback received from RWG and structuring the revised plan, a second version was formed, which was sent to external experts for SuWaNu Europe for cross-check: 2 experts from the University of Architecture, Civil Engineering and Geodesy, 1 expert from the Agricultural University – Plovdiv, 1 expert from Water and sewerage holding EAD. Their comments were very useful for finding the main highlights in RAP. Finally, an RWG face-to-face meeting was held regardless of the problematic period due to COVID-19, but in compliance with all mandatory requirements. During the meeting was presented the latest version of RAP and the next steps in the implementation of the SuWaNu Europe project. The responsibilities of each member for the implementation of the RAP were also discussed.

The development of a good and functional RAP is an important condition for the success of the goal of the SuWaNu Europe project, but it is also very important to disseminate this RAP among key players in the field, stakeholders and general public. Therefore, we plan to spread the RAP itself widely among the above categories. Dissemination and implementation will begin immediately after the final approval of Deliverable 2.6, and we will strive to meet some of the indicators until the completion of the project, and the rest will continue to implement them in the following months.

1.2 Legal framework

The European and national legal framework must promote the use of reclaimed water in agriculture.

The need to implement adopted rules for re-use for irrigation of agricultural land with treated urban wastewater is becoming more demanded.

In times of crisis, ensuring the sustainability of the food chain is especially important, according to the institution. Water reuse can guarantee farmers access to a more predictable source of clean water and help them adapt to climate change. “Thanks to water reuse regulations, not only will farmers be able to rely on more predictable water resources, but technology providers will also have new investment opportunities. This is a great example of how the circular economy works in practice and works for everyone”, said Commissioner for Environment, Oceans and Fisheries Virginijus Sinkevičius.

Result 6.2.1: National legislation is in line with the European legislation on wastewater treatment and reuse of reclaimed water.

Currently, the Bulgarian legislation in the field of water is harmonized with that of the EU, but for the introduction of the new Regulation on the Minimum Requirements for Water Reuse it is necessary to prepare coordinated changes in various laws and regulations, authorization of the "Competent Authority" etc., preparation of competent opinions and reports concerning Article 2, par. 2 and 3, etc.

Activity: 6.2.1.1: Consultations by state authorities with local organizations related to agriculture and water, including the irrigation association.

Key players: Public administrations, Regional Working Group

Harmonization of the Bulgarian legislation with that of the EU in the field of water reuse in agriculture should be done in parallel with consultations with the parties involved to preserve the public interest to the reclaimed water. The regional working group raises the topic of the fragmentation of water regulations and their unification on the issue of reuse in agriculture.

Action 6.2.1.2: Consultations with stakeholders to clarify the need for authorization or not of a single body when issuing permits and control of water reuse in agriculture, as well as a one-stop shop.

Key players: Regional Working Group

The legal framework should facilitate all procedures necessary for the application of irrigation of crops with reclaimed water. That is why simplified procedures, clear rules of work, competent and working administration are needed.

Result 6.2.2: Strict regulations are applied among European and national legislative frameworks regarding the quality standards of reclaimed water.

Action 6.2.2.1: Transposition of mandatory requirements for risk planning, emission limits, frequency of monitoring in order to protect environmental components from pollution.

Key players: Public Administrations, Plovdiv Regional Working Group

Ensuring the implementation of preventive, current and follow-up control by the state administration, which is possible only if there are a sufficient number of qualified specialists working in the unit responsible for the reuse of water for irrigation purposes. Making the right decisions is crucial; this is why it is necessary to train these specialists.

Result 6.2.3: Improved water management practices in connection with the implementation of the National Strategy for Adaptation to Climate Change until 2030.

Action 6.2.3.1: Dissemination of management practices in Plovdiv region known in *SuWaNu Europe* to ensure efficient use of water, incl. reducing water losses, improving irrigation practices and efficiencies, and water regeneration or storage.

Key players: Agricultural University-Plovdiv; Regional working group

Action 6.2.3.2: Assistance in the implementation of the National Strategy for Adaptation to Climate Change, through collective action by i) the public sector (competent structures in the MAFF system); (ii) farmers and their branch organizations; (iii) academia and research institutes.

Key players: Agricultural university-Plovdiv; Regional working group

As one of the most important strategic document, the National Strategy for Adaptation to Climate Change may be partially realised by implementation of first steps of water reuse in Bulgaria (Ministry of environment and waters, 2020).

1.3 Administrative procedures

This current specific objective must ensure adequate administrative procedures for the use of reclaimed water for irrigation in agriculture. This will be realized by performing the following tasks:

Result 6.3.1: The issuance of a permit for the reclaimed water generation is carried out by fast, clear and cheap procedures protecting the interests of farmers, but also ensuring the protection of the environment from pollution.

Action 6.3.1.1: Explanatory campaigns among wastewater generators and end-users of reclaimed water on administrative procedures.

Key players: Regional Working Group Plovdiv

End-users of reclaimed water must be able to obtain their water re-use permit easily and without significant effort to encourage the use of such water. All stakeholders must be provided in advance with clear explanations of the administrative steps needed to implement irrigation with reclaimed water in agriculture.

Action 6.3.1.2: Active participation in the development, discussion, and adoption of the Procedure of the competent authority for irrigation with reclaimed waters.

Key players: Plovdiv Regional Working Group, public administrations.

The measure is very important for giving impetus and promotion of the irrigation with reclaimed water from the very beginning of the harmonized legislation and the establishment (empowerment) of the respective competent authority. The expected result is the presence of interest from stakeholders in the chain of production and the use of reclaimed water.

Action 6.3.1.3: Training of the administration through the on-line courses for awareness of the issues and acquaintance with the latest scientific achievements in irrigation with reclaimed waters.

Key players: Plovdiv Regional Working Group, public administrations.

The purpose of this measure is to objectively take active action to ensure the administrative capacity of the employees of the regional administration to understand, interpret, and work on the topic of water reuse in agriculture. This will include the full range of on-line courses and project materials, but also face-to-face education (Ministry of agriculture, food and forestry, 2020a).

Result 6.3.2: Increased interest in administrative services related to reclaimed water by farmers.

Action 6.3.2.1: Providing technical assistance to facilitate the documentary work of farmers who implement a project for irrigation with reclaimed water, incl. construction of irrigation infrastructure.

Key players: Department of Agriculture – Plovdiv Regional office, Municipal services of Agriculture, NAAS.

Facilitating the work of farmers or irrigation associations due to possible ignorance of the new procedures arising from the transposed Regulation.

Action 6.3.2.2: Providing consultations to producers on water reuse and alternative forms of irrigation other than traditional

Key players: Department of Agriculture – Plovdiv Regional office, Municipal services of Agriculture, NAAS, (Regional Working Group Plovdiv).

Thanks to the competent work of the MAFF divisions, which provide settlement to the regional and municipal services "Agriculture" and "National Agricultural Advisory Service", farmers have timely information and comprehensive support to improve the method of irrigation. All consultations offered by NAAS are free of charge for farmers who help to effectively use knowledge and innovation in the branch, like the target groups that can offer activities with mainly small and medium farms, start-up and young farmers, new productions (organic production, environmental and regional), growers' organizations and groups (Ministry of agriculture, food and forestry, 2020e).

Action 6.3.2.3: Promotion of the so-called "Unified use", without change of ownership.

Key players: Department of Agriculture – Plovdiv Regional office, NAAS.

In Bulgaria, the agricultural property is fragmented, with an average size of 0.55 ha per owner, and makes land use inefficient in real terms. It is this fragmented structure of agriculture in Bulgaria that unconditionally determines the need for consolidation in massifs. In this regard,

the Law on the Ownership and Use of Agricultural Land prescribes a procedure for unified use of agricultural land through one-year agreements, without changing the right of ownership (Ministry of agriculture, food and forestry, 2020d).

All farmers with the respective land use rights according to the concluded contracts participate in these agreements. Owners and users who wish to engage in agriculture are given the opportunity to cultivate the land in a given land in unison, by forming economically efficient agricultural areas.

An expected effect is an increase in the need for irrigation water, which will encourage farmers to seek secure access to water, such as reclaimed water.

1.4 Public and private incentives

This specific objective should ensure that financial incentives are available through public and private policy measures to support the reuse of irrigation water.

Result 6.4.1: The state invests in infrastructure for irrigation and additional water regeneration.

Action 6.4.1.1: Active participation of stakeholders in sub-measure 4.3 “Support for infrastructure investments related to the development, modernization or adaptation of agriculture and forestry” of the Rural Development Program 2014-2020 (RDP).

Key players: MAFF (Irrigation Systems Branch "Maritsa"), Plovdiv Regional Working Group.

Agriculture is a traditional industry in our country and many crops are grown on an irrigated basis. The irrigation network in Bulgaria has been significantly destroyed. This is a serious obstacle to both conventional and reclaimed water irrigation. This fact was commented in detail during the Seminar for the Plovdiv region held on 30.10.2019 and is laid down in the SWOT and PEST analyses. In addition, nearly BGN 100 million will be invested in the rehabilitation of the irrigation infrastructure in the country through this sub-measure (Ministry of agriculture, food and forestry, 2020f). The aim is for the irrigation facilities to be reconstructed and modernized. Eligible candidates are Irrigation Systems and Irrigation Associations. The total amount of financial assistance under this procedure is EUR 45,419,274.

Action 6.4.1.2: Preparation of an opinion on the need for targeted funding of reclaimed water facilities from the operational programs of the Republic of Bulgaria 2021 – 2027 and sending it to the Minister of Environment and Water with a copy to the Managing Authority of OPE, as and to the Minister of Agriculture, Food and Forestry with a copy to the Managing Authority of the Rural Development Program.

Key players: Plovdiv Regional Working Group.

This is a very important measure to lay a scientific basis for the application of water reuse in agriculture. Our view is that the construction of infrastructural potential for reuse of wastewater can be done after a detailed assessment of the existing situation at the treatment plants for domestic wastewater in the country and particularly in the region of Plovdiv. A feasibility study needs to be carried out, initially assessing for each municipal Wastewater treatment plant (WWTP) what its current potential is for the direct use of its waters in agriculture. This should

be done by assessing the own monitoring and the control monitoring of the wastewater carried out by the respective Basin Directorates and RIEW. Subsequently, to suggest where it is most appropriate to invest in additional treatment facilities closed to agricultural land suitable for irrigation, the availability of irrigation infrastructure, the specifics of crops, etc., in accordance with economic efficiency and effectiveness. In addition, this study may also cover an assessment of the need and location of reclaimed water storage facilities.

Result 6.4.2: The various competent authorities, water operators and the administration provide direct economic incentives to farmers who use reclaimed water for irrigation.

Action 6.4.2.1: Study of the attitudes of the decision-making bodies (politicians, EWRC, ministers) regarding the possibility of subsidizing (applying preferential prices) the electricity for the additional water treatment facilities.

Key players: Plovdiv Regional Working Group

Action 6.4.2.2: Preparation of a set of proposals to the relevant competent authorities (MOEW, MAFF, Ministry of Regional Development and Public Works, etc.) on direct economic incentives for farmers when irrigated with reclaimed water.

Responsible: Regional Working Group

Incentives may include (i) subsidizing the price of electricity used for additional wastewater treatment (reclaimed water); (ii) fast track (fast procedure with shortened deadlines for companies with a good history in terms of environmental legislation); (iii) reduced administrative fees for companies without deviations from the norms of the quality of the reclaimed water; (iv) additional subsidies from Rural Development Program 2021-2027 for production, irrigated with reclaimed water; v) support from Water Supply and Sewage Holding; (vi) a reduced water abstraction fee if it processes reclaimed water; (vii) free provision of reclaimed water; (viii) reduced fees for review of project documents (granting additional points when applying to OPE), if the project of the respective WWTP provides for an option for irrigation of nearby agricultural land (detailed development); ix) state funding for monitoring during the first year of implementation with a minimum of three years of irrigation in reclaimed water (the analysis should be performed by the Regional laboratory to the Executive environmental agency (MOEW) or by those of the MAFF, but to receive real funding); x) free preparation (or financing) of the application documents; etc. (Ministry of agriculture, food and forestry, 2020c).

Incentives for the owner of the reclaimed water facility, and especially farmers, must be so significant as to provide guarantees for the use of the reclaimed water throughout the irrigation season, on the one hand, but also guarantees of personal interest in irrigation water quality (according to requirements of Annexes I and II of the Regulation). Subsidizing the costs of water reuse must be a high priority in order to make water reuse the best option for farmers (i.e. BGN/ha irrigated with reclaimed water). It is necessary for this subsidy to be separate from the other subsidies for produced agricultural products (on area, for organic production, etc.), which will lead to a possible reduction of the price of the produced production. This will also make it more competitive in the market. In addition, this type of economic incentive benefits both farmers and public or private authorities, as there is a greater demand for reclaimed water produced and alternative, more expensive water sources remain protected. The free provision

of reclaimed water to farmers is quite possible, especially for small settlements, where treatment plants still meet the requirements of the Regulation. This will reduce the fees that urban wastewater treatment plants pay for discharges to a surface water body.

Result 6.4.3: Increasing the reuse of irrigation water in rose production and the industrial crops.

The climate and soil characteristics, the cultivation traditions and the scientific capacity of the Thracian region in rose production are a prerequisite for believing that the sector has significant potential for the application of reclaimed water. The data show that at the moment in our country about 4 500 ha are sown with roses, but another 1000-1,200 ha belong to small producers who do not fall under any regulations. In January this year, the National Assembly adopted the Oil Rose Act, which aims to create a register of rose growers and roses' processors (National Assembly of Republic of Bulgaria, 2020). There is political support and a national strategy to support rose growers. In addition, industrial and energy crops are very suitable for irrigation with reclaimed water, as they are either not used for consumption at all or the product is extracted after processing.

Action 6.4.3.1: Information campaign to explain the benefits and feasibility of irrigating with reclaimed water in these crops.

Key actors: MAFF structures, Associations for rose production, rose processing, etc., Regional Working Group Plovdiv.

Targeted information campaigns in Plovdiv region and South Bulgaria on the use of reclaimed water for irrigation in agriculture is an important tool to convince farmers of the benefits and need for investment (own or external) in the sector. This new role and utilization of the water resource will lead to additional revenues and cost reductions in the medium and long term. Using the experience available in the EU, the good examples collected and prepared for dissemination, as well as the knowledge gained regarding the reuse of water in agriculture are important tools to convince of the need and high efficiency of the use of such water.

1.5 Investments

The investment goal is related to the opportunity for public and private stakeholders to invest in research and technology to improve and expand the use of reclaimed water in agriculture. This specific objective can be achieved through the following results:

Result 6.5.1: The public and private sectors invest in research to improve the quality of agricultural production and water, the distribution and overall use of reclaimed water.

Action 6.5.1.1: Preparation of proposals to the Ministry of Education and Science, the Ministry of Agriculture and Food and the Ministry of Economy for the establishment of programs to support research in the field of the use of reclaimed water for irrigated purposes.

Key actors: Regional working group, universities, RTD.

This action has a real chance to find support from the structures of the three ministries. The Ministry of Education and Science, through the Research Fund and the annual research

competitions, should have a research session for the purpose of the circular economy, and in particular the impact of reclaimed water irrigation on the quantity and quality of agricultural products. The MAFF and the Ministry of Economy could also invest in research either through the RDP 2021-2027 or through the Competitiveness Operational Program.

Result 6.5.2: Farmers and owners of reclaimed water facilities are informed and consulted about new water treatment technologies and their application in agriculture.

Plovdiv District is an industrial and agricultural region with well-developed various sectors of the economy. The soil resources in the district are suitable for the development of agriculture. It grows over 100 types of crops - cereals, technical, energy, fruit, vegetables, tobacco, vines and more (Council of Ministers of Bulgaria, 2020). Due to the unequal distribution of water resources, there is a risk of water scarcity and water crises in some parts.

Action 6.5.2.1: The NAAS and technology development companies carry out awareness campaigns, advise, consult and train farmers and treatment plant operators on the quality of reclaimed water, new technologies in the field of treatment and their benefits.

Key players: NAAS, RTD

This measure will increase the awareness of farmers about the importance of water quality resulting from treatment and for the quality of agricultural products. In addition, operators of reclaimed water treatment plants will be informed of new developments in this type of treatment.

Action 6.5.2.2: Creating an appropriate working environment (incubator) for cooperation and sharing information on water reuse in agriculture in Plovdiv district.

Key players: NAAS, RTD, Plovdiv Regional Working Group

The appropriate working environment and the presence of a connecting link between the owner of reclaimed water and the end user (agricultural association, irrigation association or farmer) is an important moment in creating a working economically viable project for water reuse in Plovdiv. The Industrial Symbiosis model brings significant environmental and economic benefits to participants.

Action 6.5.2.3: Support the formation of "short chain" organizations, which are united around purified irrigation water as a product of mutual interest (Ministry of agriculture, food and forestry, 2019). This will expand the access of consumers of irrigation water to more sources of wastewater (a source of reclaimed water).

Key players: Agricultural Associations in Plovdiv District, Chamber of Commerce and Industry in Plovdiv, NAAS, Plovdiv Regional Working Group.

1.6 European network

Result 6.6.1: Promotion of international exchange and dialog to expand the flow of existing results and best practice of reclaimed water use.

Action 6.6.1.1: Creating a website, database or sub-menu in a public portal in order to collect, summarize and disseminate available information in the field of reclaimed water.

Key actors: Regional working group.

This measure is intended to facilitate the stakeholders' access to information regarding the water re-use. This database will assist and be included in European networks for the exchange of information on reclaimed water, product quality and everything related to it. The action will be implemented when finding funding to build such a site or database.

Action 6.6.1.2: Participation in the creation of new or in existing European and national reclaimed water networks.

Key actors: Regional working group

In connection with RAP, the Agricultural University – Plovdiv plans to continue with the strategy for dissemination of information and knowledge transfer, as well as promotion of the *Suwanu Europe* project in national and European networks in which it participates – National Research Program "Healthy Foods for Strong Bioeconomy and quality of life" (<http://www.nnp-food.au-plovdiv.bg/en/>), European federation of biotechnology, etc.

Action 6.6.1.3: Participation in European research projects that will support networking and achieve scientific results from irrigation with reclaimed water in agriculture.

Key actors: Regional working group

1.7 Social acceptance

This specific objective intends to convince the communities to adopt agricultural products irrigated with reclaimed water.

Result 6.7.1: The general public is informed and aware of the benefits of irrigation with reclaimed water in agriculture

Action 6.7.1.1: Conducting information and awareness-raising campaigns showing the benefits of reused water, as well as information events, dissemination of new and existing information materials on reclaimed water, etc.

Key actors: Regional working group

In this action we will strive to build a positive image of the use of reclaimed water for irrigation, its importance for adaptation to climate change, clarification of the process of water regeneration and more. Part of the information campaigns will be the information about the necessary precautions that must be taken when working with regenerated water.

Action 6.7.1.2: Dissemination of successful examples (lighthouse) from Bulgaria, from project partners and EU, as well as world practice concerning the water reuse.

Key actors: Regional working group

Dissemination of successful examples is an important moment in building trust with the general public. Representatives of RWG will present the project, the knowledge gained during its implementation, successful examples and more at various events organized with stakeholders.

Result 6.7.2: Public opinion is aware of the benefits of water reuse to combat water scarcity and help protect the environment.

Action 6.7.2.1: Conducting information and awareness-raising campaigns showing the benefits of reuse of reclaimed water, as well as information events, dissemination of new and existing information materials on reclaimed water.

Key actors: Regional working group

These campaigns are extremely important for achieving an informed positive attitude among the general public regarding the benefits of using reclaimed water to adapt to shortages, but also for obtaining quality agricultural products through the utilization of nutrients. An important part of these campaigns will be not only adults but also children and adolescents.

Action 6.7.2.2: Inclusion of information on water reuse in agriculture in lectures given at the Agricultural University – Plovdiv and other universities. Conducting special training modules designed to transfer knowledge on the topic.

Key actors: Agricultural University – Plovdiv.

1.8 Conclusions

The development of RAP coincided with the force majeure circumstances around COVID-19, which further hindered communication and prevented face-to-face meetings and discussions about its development. However, thanks to digital means, we were able to coordinate the various versions of the document with RWG members, other key experts and stakeholders. These experts were further concerned about the pandemic's impact on their specific work. Although the Plovdiv region has its own specifics, needs, different characteristics compared to the rest of Bulgaria, the legislation (laws, regulations and rules) that govern water reuse and agriculture in general are national and there is no significant local regulations affecting the sector.

In compiling the RAP, we sought to emphasize the specific objectives developed in GAP, the transfer of knowledge about the water reuse, extracted and adapted during WPs 1, 2 & 3. Special attention was paid to the dissemination of knowledge and the project results, because we think that these are the key pillars of the successful project. In addition, stakeholders, and in particular farmers and farmers' organizations, were actively involved in the development of the plan. Therefore, and in connection with their suggestions, the RAP is directed to disseminating knowledge, adapting it to the specific needs of stakeholders and the problems they see at this stage of development of water reuse in agriculture in the Plovdiv region. We believe that the availability of free assistance in conducting administrative procedures, their simplification and specification, the creation of incentives from various state and municipal structures, as well as support from science, will create the necessary basis for more serious progress in the use of regenerated water.

Thanks to the efforts of the AUP team to develop an “Analysis of the influence of agriculture on the state of the environment and climate change”, in the Project of Identified Needs and the SWOT analysis for the New Common Agricultural Policy (CAP) 2021-2027 in Bulgaria, for the first time, targeted funding for the modernization of irrigation facilities in order to stop water losses

and compliance with the Regulation of the EP and the Council on minimum requirements for water reuse is mentioned (Vision CAP, 2020).

We believe that farmers should be encouraged to apply sustainable, environmentally friendly farming practices. They must have information on the alternatives to irrigation. In this sense, the role of National agricultural advisory services is crucial to provide practical and professional information about reclaimed water use in agriculture in Plovdiv region and in Bulgaria, as a whole.

This Regional Action Plan, as well as other project results, have the potential to make our government consider offering benefits to farmers who use sustainable irrigation methods with water reuse and agricultural practices that save water and protect the environment from pollution.