

D.T4.4.2

CEU PROGRAM AREA STRATEGY

Revised CEU Program Area Strategy after being brought under the view of stakeholders and opinion leaders

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1. INTRODUCTION

The purpose of this deliverable is to provide a refined version of the REEF 2W Central European Union (CEU) Program Area Strategy. It presents clear goals and actions to encourage and speed up activities for a broader implementation of renewable energy generation and energy-efficiency measures in the wastewater sector.

The refinement is based on the draft version of the CEU Strategy (DT4.4.1). As described in the application form, this draft version was brought under review of concerned stakeholders and opinion leaders in order to collect their feedback on and their recommendations for possible improvements.

The contents of the draft version of the CEU strategy were put up for discussion in two ways: (1) during the final web conference of project held on 26th June, 2020, where the draft version was presented, and (2) afterwards, when it was sent to (certain) stakeholders and opinion leaders concerned by the REEF 2W approach for the collection of (additional) feedback.

All received feedback was used to provide the final version of the REEF 2W CEU Program Area Strategy presented in this deliverable (D.T4.4.2.). One has to mention, that the feedback collected during the final conference and the subsequent mailing was rather modest. However, to a certain degree this was expected as the draft version of the strategy included the key outcomes of the project's task 2 (position paper, regional strategies) and thus also the views and perceptions of different (regional) stakeholders.

2. CEU PROGRAM AREA STRATEGY

2.1. Basis and Structure

The supposed CEU Program Area Strategy is based on the five regional strategies from Germany, Austria, Czech Republic, Italy and Croatia elaborated in Deliverable D.T2.5.1 and on the position paper on legislation barriers prepared in Deliverable D.T2.5.3. It is considered a recommendation paper, that highlights opportunities and impacts of REEF 2W at CEU level. Hereby, the strategy consists of four parts/thematic fields: A (1) legislative, an (2) operational, a (3) financial and a (4) connection part. Each part comprises its specific actions. The overall vision of the CEU Area Strategy is to form a set of actions to foster the use of energy from wastewater and the application of the REEF 2W approach in a broader context.

2.2. Legislative Part

The first part of the strategy is about legislation. In order to foster the use of renewable energy from wastewater, legal and policy frameworks have to be adjusted in order to link energy, wastewater and solid waste sectors and respective policy fields with the intention to maximise synergies and remove barriers for implementing joint renewable energy sources solutions. The required actions are as follows:

Action 1.1. Regulatory pressure

Policy makers, high-level officials and other appropriate stakeholders on EU and national level should introduce a certain regulatory pressure in regard to apply renewable energy solutions also considering energy from wastewater and its use and adjacent areas (beyond the premises of a wastewater treatment plant). Regulatory pressure is expected to speed up all processes. This could mean to make a certain energy performance mandatory for WWTPs and comply with specific criteria and indicators.

Action 1.2. Adaption of legal frameworks and boundary conditions

Wastewater as renewable source of energy must be integrated in (national, regional, municipal) legal frameworks as well as in energy and climate planning and spatial planning frameworks. For wastewater based renewable energy sources, implementation (including sludge treatment) all legal and policy boundary conditions must be set. Overall, the aim of this actions is to remove all barriers that are preventing renewable energy implementation in the wastewater sector and beyond. The barrier analysis revealed that there are various barriers impeding the uptake of wastewater-to-energy solutions currently. Dismantling them is a complex process and may take many years (e.g. because of various conflicts regarding sectoral objectives with respect to wastewater).



2.3. Operational Part

The second part of Strategy is about operation. It concerns the adjustment of operational models of utilities running wastewater treatment plants in order to improve their business cases. Implementation of these actions allows wastewater treatment plants to also perform as a sort of energy provider. The required actions are as follows:

Action 2.1. Integration into existing supply systems

The purpose of this action is to adjust existing but possibly inhibitory regulations on national levels so that utilities running wastewater treatment plants can better invest in energy from wastewater solutions. In order to fully activate available renewable energy potentials, wastewater treatment plants must be recognised as energy producers and providers for their municipalities and communities. Operational preconditions for enabling the integration of electricity, gas and heat to local energy supply systems is imperative.

Action 2.2. Practical application of energy from wastewater

The practical implementation of energy generation from wastewater can be fostered by applying REEF 2W concepts and methodologies. A clear presentation of the benefits (e. g. support for the domestic economy, decrease of dependency on energy imports and increase of innovation and research, and flexibilisation of energy markets) related to the site-specific context as well as its technical and energetic characteristics will be supportive.

Action 2.3. Including biowaste in sewage sludge digestion

If available, municipal liquid and solid waste can be added to the anaerobic digestion of sewage sludge in a wastewater treatment plant to improve its energetic, economic, and possibly also ecological performance. Municipalities and cities should support separation of biowaste which then could be made available for co-fermentation in wastewater treatment plants.

Action 2.4. Sludge disposal scenarios

There is also a need to offer a holistic approach for sludge disposal. The different disposal scenarios, objectives, and obstacles (soil improver, incineration etc.) should be integrated into energy from wastewater considerations to allow comprehensive solutions.

2.4. Financial Part

The third part of the strategy is about finance. The application of energetic use of wastewater and the REEF 2W approach requires sufficient, predictable and long-term financial models also tailored to best use synergies between the energy, wastewater and waste sectors. The required action is as follows:



Action 3.1. Establishing financial models

To increase investments in wastewater based renewable energy sources a coordination of EU and national/regional governmental levels must be ensured for establishing clear subsidies, co-financing and other suitable financial models. Established models should include public-private investment models such as PPP (public-private partnership), EPC (energy performing contract) and various community energy investment models. There is also a need for financing research projects that advance the market readiness of technologies through demonstration cases.

2.5. Connection Part

The fourth part of the strategy is about connection. This concerns the connection of stakeholders from e. g. the energy, the wastewater and the waste sector through national platforms, increase information, communication, education and capacity building measures. The required actions are as follows:

Action 4.1. National/transnational platform

A national platform should be established to inform and coordinate all relevant and interested stakeholders of the different institutions (public and private) and sectors (energy, wastewater and waste). Furthermore, the mission of the national platform shall encourage, promote and proactively support the broader implementation of the energetic use of wastewater and the REEF 2W approach. Although the presented strategy is elaborated in the scope of the CEU area it can be further expanded towards additional transnational cooperation, to share knowledge and experience in only one transnational platform (representing all national ones). For all stated actions there is a need for a combined approach, i.e. synchronized across sectoral legislations and policies at different political-administrative levels (national, regional, municipal). Hereby, a key aspect is to identify all relevant stakeholders on the different levels and involved them closely, thereby gaining their buy-in- and support.

Action 4.2. Raising awareness by education and communication

For establishing energy from wastewater and the REEF 2W approach on as broader scale targeted communication, promotion and education is crucial. Related activities could be coordinated and organised by the before mentioned national platform as well as through local and regional authorities and possibly also non-profit organisations.

Action 4.3. “Buddy system”

Experience from REEF 2W project shows that there are substantial differences in knowledge and experience concerning the energetic use of wastewater at wastewater treatment plants and the adjacent settlement structures among the different countries and regions involved in the project. To close related gaps the strategy proposes establishing a “buddy system” by matching unexperienced utilities/stakeholders with experienced ones. In this way transfer of good practice and direct education with an even bigger impact is expected.



Action 4.4. Renewable energy community model

Aligned with the Directive (EU) 2018/2001 and the European Green Deal wastewater treatment plants can be introduced into renewable energy community models where citizens, who are aware of energy sustainability, participate. Because of their spatial location and specific function WWTPs are often perceived as isolated assets and not included in the community's (supply) infrastructure, that perception should be changed in the future.



3. CHALLENGES AND CONCLUSION

3.1. Challenges

The main challenges public and private operators of wastewater treatment plants are likely to face when implementing (some of the) suggested strategic actions can be summarised as follows:

- Inadequate support from municipal/regional/national level of the government;
- Insufficient support from local community;
- Inadequate legislative, policy and operational framework;
- Poor system of incentives and finance models in general.

The suggested CEU program area strategy is structured and written in a way to deal with and to overcome those challenges. It is kept broadly. Not all the recommendations may suit the local context in the EU Member States.

3.2. Conclusion

The calculations on the available energy potential presented in DT4.4.1 clearly show that there is a large amount of energy available at CEU's wastewater treatment plants. Activating this today still widely unexploited potential can support the energy transition towards more climate-friendly systems and thus support the aims and goals of the European Green Deal and other policies related to climate mitigation and the energy transition. Furthermore, there are various advantages for the wastewater utilities themselves, for example by reducing costs as they increase energy efficiency. Projects to improve the energy performance of wastewater treatment plants beyond their very own premises are yet largely driven by the "good will" and the personal initiative of operators rather than through conducive framework conditions.

Additional proactive efforts and actions are needed from all involved institutions, sectors and stakeholders to better harness this great potential of renewable energy sources related to wastewater treatment plants. In this context, it is crucial to link energy, wastewater and (solid) waste sectors in their specific spatial context (compare figure 4 below). This will maximise synergies from the implementation of joint renewable energy solutions to obtain a cleaner, healthier and more sustainable environment and society.

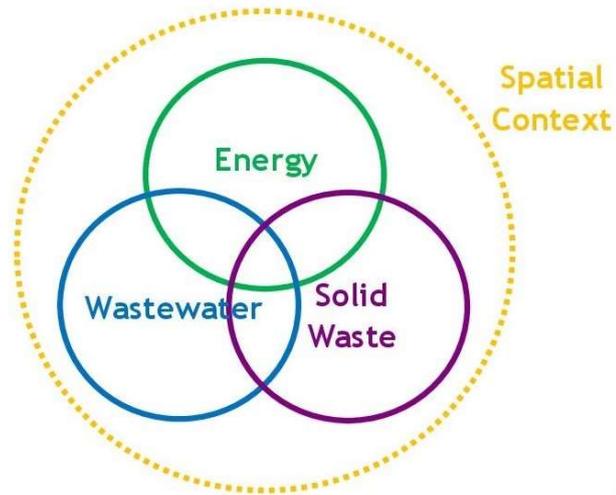


Figure 4: Energy, wastewater and (solid) waste sectors in a subordinate spatial context