D.T2.1.1 REASONS/CONDITIONS LEADING TO THE CHOICE OF THE 5

Italy

16/07/2018

1. Objective of the task:

In DT2.3.1, the pilot locations were selected. The main objective of this deliverable (D.T.2.1.1) is to identify the leading reasons for selecting the pilot locations, in this case the WWTP in Prague.

The deliverable draws on four deliverables finalised in Work Package 1.

- D.T1.2.1: Base line analysis of the current situation in the targeted utility companies/ territories
- D.T1.2.2: Relevant models highlighting integration and combination of technologies
- D.T1.2.3: Guiding document to demonstrate the benefits of implementation of REEF 2W plants
- D.T1.4.1: Detailed description of the methodology and criteria for location suitability

The deliverable is divided into three parts. First, an overview is provided about the initial situation at Central Prague WWTP (PCWTP), including the technological setup and its suitability. This is followed by an overview of the planned technological upgrade in the context of Reef2 W and the benefits accruing from it. The last part analyses the leading conditions including socio-economic and institutional aspects that qualified the WWTP for selection in Reef2W.

2. Initial Situation at the pilot site

The High Valmarecchia, crossed by the river of the same name, is enclosed between Tuscany, the Marche, the Republic of San Marino and Emilia-Romagna of which it is part.

The valley goes from the central Apennine to Rimini, in the heart of the Romagna Riviera, ranging from soft clay hills to sandstone and limestone spikes that rise here and there. It has always been a disputed territory and has a monumental and art heritage among the most singular in Italy, rich in some of the most beautiful fortresses, of boroughs with walls and towers, beautiful churches, small and great stories, linked to fights that saw the big families of Montefeltro and Malatesta antagonistic.

The High Valmarecchia is the ancient heart of Montefeltro: meta and stay since ancient times of famous men, from Dante to San Francesco, from Cagliostro to Ezra Pound; has recently reinforced its tourist attractiveness.

High Valmarecchia offers varied natural landscapes, dense woods, habitat of a rich and characteristic fauna, all enriched by sudden panoramic balconies, where the gaze is lost on the horizon, until you can see the sea. The Natural Park of Sasso Simone and Simoncello, of 4847 hectares, is located in the provinces of Rimini-Pesaro and Urbino, representing the 50% of Pennabilli's municipal territory.

By law no. 117 of August 3, 2009 the municipalities of Casteldelci, Maiolo, Novafeltria, Pennabilli, San Leo, Sant'Agata Feltria and Talamello from the Marche Region were

aggregated to the Emilia-Romagna Region, within the province of Rimini, pursuant to Article 132, second paragraph, of the Italian Constitution.

In this environmental framework is located and works the treatment platform of Montefeltro. During the last years due to some change in the regional management of waste streams some relevant change was happen at the site level.

Due to the orographic configuration all the mentioned localities have their own wastewater treatment plant that recently change the management utility. Actually Montefeltro Servizi is no more managing them. One more change is that the treatment plant in Novafeltria will be closed in the next years, while wastewater of the municipality will be readdressed to a bigger treatment plant.

Due to this new and unexpected situation Montefeltro servizi is trying to modify its platform and consequently also the actions that where planned in the framework of the Project.

In this moment the Utility is just evaluating the possible available biomass collected from the territory, starting from the organic waste collection document

The starting point of this evaluation is the already collected material as shown in the table below:

Year	Municipal Organic Fraction Solid Waste Kg	Pruning Kg	Total Kg
2011	150019	1452	151471
2012	193179	2307	195486
2013	231610	15960	247570
2014	258119	94370	352489
2015	253407	133080	386487
2016	312292	195001	507293

As it is possible to see there is a large increase of available solid biomass. In the meantime there is the possibility to increase it collecting the sludge deriving from the local wastewater treatments, that could be evaluated in 2500 Mg/y.

To these materials it is possible collect also some other agricultural and industrial organic waste production that in this moment are still under estimation.

3. Technological Upgrade

Due to the previous considerations and the possible biomasses available it is almost impossible to follow the indication previously identified, and for this reason a new technological upgrade was defined.

Considering the large amount of dry wastes available and in the meantime the not large quantities collected probably a process of anaerobic digestion is quite difficult to implement. For this reason the next evaluations will be focussed in the possibility to utilize these biomasses in some combustion system and in particular in gasification and pyrolysis processes.

These kind of processes are in this moment more interesting that other because they can produce energy (heat or electricity) the can be easily used in the neighbourhood areas.

The dimensions of these devices can be easily adapted at the size of the user and final products fumes and biochar are easily manged. In particular biochar can be easily distributed in the field because their good content on nutrients and carbon.

4. Expected Benefits

The main benefits that it is possible evaluate from the proposed technologies is to shorten the waste cycle and prevent the environmental and economic costs of transport of in different specialized treatment platforms.

The other advantage is that the energy could be easily used directly in the treatment platform to treat the other non-organic wastes or distributed in the net.

With this approach could be the development of a market for the biochar that will be possible recovery.

Also the reduction of waste transport vehicles that should transport those wastes for more than 50 km is another big advantage that it is possible to mention for the implementation of this new approach.

5. Key Selection Criteria

Technological setup:

The choice of the future technology to implement will be defined when the evaluation of the available biomasses will be better defined. Although the process has been identified in a gasification process there are several factors that are still under evaluation and for this a complete and clear vision of the technology to adopt is not yet fully defined.

Location: For several reason, that are the already existing treatment platform, the central position of it respect at the other municipalities involved and the easiest way to reach

Suitable scale and substrate: considering the size of the area and the number of inhabitants served the possibility to implement a small scale gasifier could be a good example for other similar small municipalities, without a too large impact.