

# Assessment of the policy and legislative framework, on urban biowaste valorisation and bio-based products, at the EU, and at national, regional, and local level for Greece, Czech Republic, Italy, Spain, and UK

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The current paper is dedicated to the assessment of the policy and legislative framework regarding urban biowaste valorisation, as well as bio-based products, at the European Union (EU) but also at national, regional, and local level. The research was performed in the framework of the WaysTUP! Horizon 2020 Project, and was focused in the countries where its project's pilots take place, namely Czech Republic, Greece, Italy, Spain, and United Kingdom.

A three-step methodological approach was followed, including mainly secondary research. In particular, the first step was to study the current policy status at EU level regarding biowaste, and bio-based products. The second step was to review the country-specific policy framework in accordance with the overarching policy framework studied at EU level, including both the update on waste management, but also the bio-based products in the PILOT countries. Finally, the third step included the analysis and assessment of the policy and legislation, and the formulation of recommendations for relevant stakeholders.

## Biowaste

The policy baseline analysis for the PILOT countries was built upon and around of overarching EU environmental policy as well as selected EU legislation on waste, and waste management.

Regarding the relevant policy assessment, a key conclusion of the research was that the targets which are set at a national level are not adequately streamed at regional and local level, leading to decreased efficiency in waste management. The analysis showed that the vast majority of the responsibilities on waste management are allocated to local and regional authorities, which are free to implement their own plans and activities. In most of the cases, apart from the obligation to meet specific numerical targets set out by a national law, the competent authorities do follow different waste management approaches. In the end, this results in a varying progress among the regions towards implementing and achieving policy objectives.

Another issue, directly linked to the previous one, is that although the transposition status of EU Directives is more than satisfactory among the PILOT countries, yet they lack to translate these guidelines into their official strategies and plans. It seems like a gap is present between the legislative framework of the countries and their strategic approach towards waste management. The existence of such a gap is further highlighted by the fact that as the administrative boundaries get narrower, the number of established waste management related official strategies gets smaller. On the one hand, one could see the paradox that although authorities are assigned with the responsibility, they appear to have limited plans in place (however it is not in the scope of this research to examine why this is happening). On the other hand, it was observed that most of the regions do have interest and are active in adopting approaches and implementing actions towards Circular Economy and Bioeconomy establishment even without formulating official strategies.

More specifically, there is already in place a substantial supportive legislative framework at a European level that regulates biowaste management (ex. Waste Framework Directive as amended), and also addressing the reduction of biodegradable waste which is driven to landfilling (Landfill Directive) that is in the right direction.

However, as recognised by ROOTS initiative, *“Despite separate collection of biowaste being mandatory from January 2024, there is no specific recycling target for biowaste at EU level. There is no reward mechanism for the collection and recycling of materials that could be treated in bio-refineries and fully valorised.”*

Towards the same direction, for a greater utilisation of biowaste, there are also a number of European plans and strategies guiding developments towards set targets. Namely, some of the most important and relevant key documents are the new Bioeconomy Strategy, the new Circular Economy Plan, the Green Deal, as well as the Farm to Fork Strategy where part of its six priorities axes is to reduce food loss and waste (priority axe 5). On the

other hand, the lack of a list of specific types of bio-waste that could be classified as by-products is a limitation to the better utilization of bio-waste. In particular, as also commended by the ROOTS initiative, *“There are overlaps and inconsistencies in the definitions of “by-products” and “waste” in the current legislation, specifically (Directive 2008/98/CE as amended and Regulation 1069/2009).”*

### **Bio-based products**

Regarding bio-based products, the following products were looked into, during the preparation of this analysis. Namely, the production of Food & Feed ingredients, Coffee Oil, Insect Protein, Bioplastics, Biowaste Biosolvents, Bioethanol, and Biochar from Sludge.

From the research and analysis, it was evident that at EU level, the legal framework for bio-products from biowaste is mature only for biofuels. In this field, significant legislation has been produced to promote renewable energy sources. At the same time, biowaste utilization for the production of third generation biofuels is supported by the EU legislation. Further on, regarding the use of biowaste and food waste, as substrates for insect growth for use in animal feed, it seems that is an area to be explored, although until today insect production using biowaste at European level is prohibited by the law. Regarding biochar, which is also another very promising product that can be generated through pyrolysis of biowaste, it seems that a holistic and coherent horizontal policy approach is missing. The wider European and national legislation are not yet matured to regulate both its production and application, and this has been the main barrier to its widespread diffusion. A main reason for the delay is that the concept of using carbonized biomass in the agricultural sectors for soil improvement and climate change mitigation is relatively new. In the same spirit regarding bioplastics there is currently no comprehensive EU law in place applying to bio-based, biodegradable, and compostable plastics. ‘Bioplastics’ or ‘bio-based plastics’ are subject to the provisions applying to the existing categories of waste, depending on which type of waste each bio-based plastic corresponds to (ex. packaging or household waste). A policy framework on the use of biodegradable plastics is expected to be developed.

Considering the above, efforts should be given to set a more concrete legislative framework at EU level to support the promotion of biobased products coming from biowaste allowing for multiple and safe re-use, aligned with the principles of the Circular Economy. It is therefore evident that initiatives and projects that are relevant to policy development in the area (ex. the ROOTS initiative, EU funded related projects, etc.), should be strengthened and further supported, facilitating the exchange of information and interaction, in order to help lift the barriers for the uptake of the bioeconomy and Circular Economy.

### **Country-specific policy framework**

Regarding the review of country-specific policy framework for the WaysTUP! PILOT countries (namely the Czech Republic, Greece, Italy, Spain, and the United Kingdom), it was confirmed that for biowaste and biofuels the national legislative framework is either quite advanced, or is significantly improving through the years. Nevertheless, the legislative framework for bio-based products is still, in most cases, quite immature. This was also observed in the assessment of the relevant framework at the EU level. From the analysis made, in most of the PILOT countries the transposition status of EU relevant legislation is in a very good track, although some countries are doing better than others. Another issue is that although the transposition status of EU Directives is more than satisfactory among the PILOT countries, yet they lack to translate these guidelines into their official strategies and plans. There seems to be a great variation in the number and content of established strategies both at national and regional level. At the same time, the absence of dedicated plans, for example for bio-waste valorization, for bioeconomy and or circular economy, appears quite dominant when it comes to the regional and local level. Such plans, although not obligatory from the legislation, are considered very useful in order to provide an effective strategy for the successful management of biowaste, and utilisation of bio-based products at a local level, and in the long run, at national level.