VALUE - EXCHANGE AND TECHNOLOGICAL TRANSFER ON THE RECOVERY OF WASTES FROM VEGETABLE PROCESSING INDUSTRY ON *SUDOE*

J. CARVALHO[1,2*], A. RIBEIRO[1], J. ARAÚJO[1], M. BATISTA[1], C. VILARINHO[2] and F. CASTRO[2]

[1]CVR – Centre for Waste Valorisation, Guimarães, Portugal.

[2]CT2M – Centre for Mechanical and Materials Technologies, Mechanical Engineering Department, University of Minho, Guimarães, Portugal.

*Corresponding author: jcarvalho@cvresiduos.pt, +351 253510025, +351 253510029.

Keywords: INTERREG IVB SUDOE; vegetable processing residues; valorisation.

Abstract

One of the problems associated with the vegetable processing industry on SUDOE space (South-western Europe region, which includes Spain, Portugal and the South of France), relates the management and recovery of waste and currently for many, still an unsolved problem. Among the weaknesses listed in the SWOT analysis of SUDOE program, the low level of waste treatment with respect to other European countries appears to be distressing. In this context, the Project VALUE aims to transform this weakness in an opportunity, promoting the development and technological transfer and methodology exchange for waste recovery. In recent years much has been achieved in the development of waste technologies. Nevertheless, these technologies are not sufficiently widespread and/or validated among SMEs in the food industry and, particularly, that of vegetables processing. It constitutes the project main goal, throughout technology transfer and waste recovery methodologies, the collection and application of compounds of interest for technological improvement of processing industry, also evaluating the possible energy generation from the resulting wastes, which will, ultimately, increase the competitiveness of SMEs in the sector.

1- INTRODUCTION

One of the problems of SME (Small and Medium Enterprises) of SUDOE (Territorial Cooperation Programme for Southwest Europe) sector in vegetable processing industry, is the waste management and valorisation, which is being for many years an unsolved problem. Among some of the weaknesses identified in SWOT analysis on SUDOE program comes the low level of waste treatment when compared with others European countries. Although there are appointed measures, sometimes waste valorisation technologies are not well-known by SME which does not possess sufficient critical mass to utilise this technologies or does not consider this issues as critical factors for the enterprise development. In this perspective VALUE project aims to turn this weakness into an opportunity by fostering the development of waste valorisation methodologies and increase the technology transfer.

Recently, considerable efforts and progress has been made in developing technologies for waste valorisation. However these technologies are not sufficiently well-known or, even, validated among SME in agro-food sector and more specifically in vegetable processing industries. In this context, VALUE project aims to ensure the achievement and utilisation of interest compounds for technological improvement of processed food, through technology transfer and by developing methodologies for waste valorisation. This project intends also to evaluate the utilisation of vegetable waste in energy production which can result in increasing competitiveness in SME sector.

Eco-innovation is an emerging sector in EU (European Union) and a political priority for R&D. In this sense it is necessary that agents and SUDOE regions has an important role in developing this new sector. For that it is necessary to facilitate the development of new technologies and be able to transfer these technologies to SMEs of SUDOE sector.

VALUE project began in January 2011 and has been co-financed by ERDF under the INTERREG IV B SUDOE Programme.

It is defined as a primary objective of project VALUE:

- Identify, test, validate and disseminate technologies for treatment and valorisation of vegetable wastes to be applied in vegetables processing industries in SUDOE sector.

To achieve this main objective it was foreseen the following secondary objectives:

1. Compile available information concerning the production, treatment and valorisation of wastes from the vegetables processing industries in the territories of project participants and in whole SUDOE space.
2. Identify the best available technologies (BAT`s) for treatment and valorisation of wastes and apply strategies for implementing interest compounds in vegetable industries and for energy production.

3. Develop pilot experiments to characterize the wastes and implement the most appropriated technologies.
4. Simplify the diffusion of waste valorisation technologies and awareness of SME in food and vegetable processing sector.
5. Contribute to the development of eco-innovation sector in SUDOE regions for the creation of a European pole in this area.

Consortium

The Consortium created to develop the project is composed by entities from Portugal, Spain and France.

- Asociación para la Investigación, el Desarrollo y la Innovación Alimentaria de La Rioja (AIDIA) (Spain)
- Federación Española de Industrias de Alimentación y Beverages (FIAB) (Spain)
- CENER-CIEMAT Foundación (Spain)
- Unidad de Investigación Alimentaria (AZTI) (Spain)
- SSA-pour l 'Environnement el la Securite en Aquitaine (France)
- Centre d'Application et de Transfert des Agroressources (CRT QATAR-CRITT) (France)
- Centro para a Valorização de Resíduos (CVR) (Portugal)

Project VALUE is composed by different work stages properly connected allowing the achievement of a perfect interaction between each partner of the project and the specific features of each country under consideration. Figures 1 shows the work stages of VALUE project.

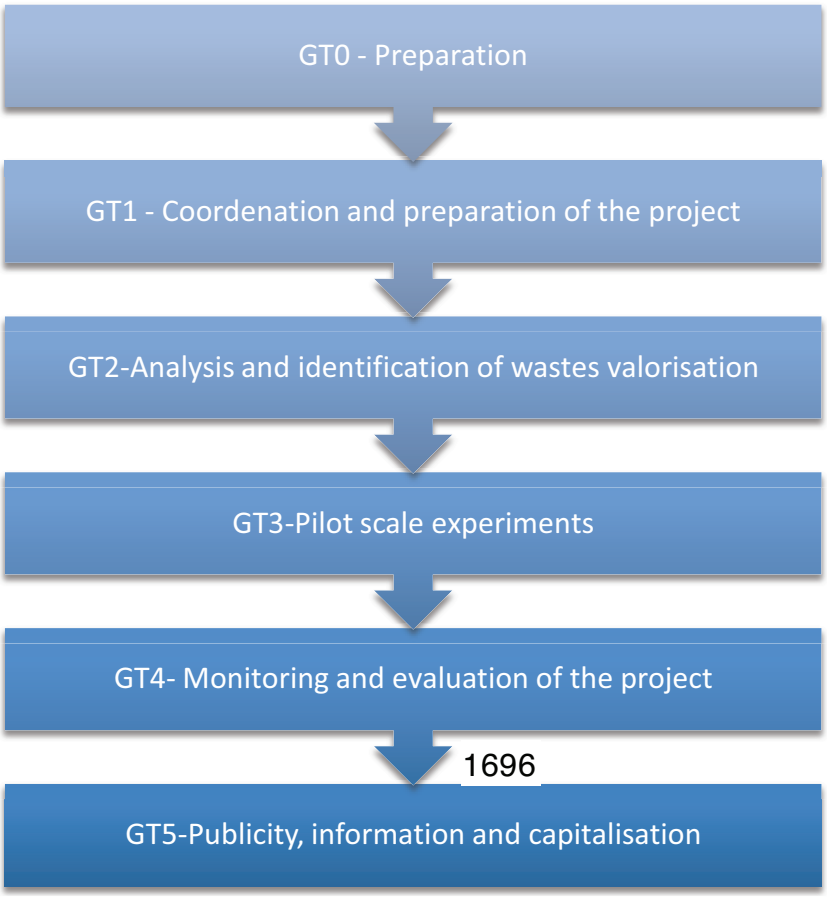

Figure 1 – Work stages of VALUE project

Being the only Portuguese partner of VALUE project, CVR was responsible for the analysis and identification of waste valorisation technologies in Portugal. In this evaluation it was realised a diagnosis of waste production in vegetable processing industries in Portugal. The first stage of the work was focused on the quantification of wastes produced and also the identification of alternative waste valorisation technologies in Portugal. Nevertheless, it was analysed, not only the production of wastes from vegetables processing industries, but also from other food processing industries. Among the agro-industrial sectors that are the most representative of wastes production in Portugal, it were analysed the following industries:

- Olive processing industries;
- Winemaking industries;
- Brewery industries;
- Rice industries;
- Fruits and vegetable industries;

Among the subsectors of Portuguese fruit and vegetable processing industries are the following sectors:

- Preparation and conservation of fruits and vegetables: this sector is the most significant in Portugal due to the inclusion of preparedness and canned tomatoes;
- Preparation and conservation of potatoes;
- Production of fruit juices and vegetables: includes the production of fruit juices, nectars and tomato pulp;
- Freezing of fruit and vegetable;
- Shelling and processing of dried fruits;
- Production of preserves jams and jellies.

4- CONCLUSIONS

The actions realized in VALUE project so far aimed to:

- The joint effort in compiling the information available regarding the production, treatment and valorisation of wastes from vegetable processing industries in the SUDOE territory.
- The perseverance in the work of identifying the best available technologies for wastes treatment and valorisation in the areas of attainment and implementation of interest compounds for industries and energy recovery.

Acknowledgement: The authors acknowledge to ERDF under the INTERREG IV B SUDOE Programme for the financial support granted.

REFERENCES

[1] INE – Instituto Nacional de Estatística. Estatísticas Agro-Industriais 1999-2001. Ed. 2003. ISSN 1645-3050.

[2] Food for thought – using the unusable, European Commission, Research Industrial technologies,http://ec.europa.eu/research/industrial_technologies/articles/article_733_en.html (2008)

[3] Project Value website: http://www.proyectovalue.eu