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MòRe MARKET OF OLIVE RESIDUES FOR ENERGY

Policy Recommendations

(Recommendations for the necessary changes in national legislation and current mechanisms supporting RES&RUE towards better exploitation of olive residue for energy)

Project: M.O.R.E. – Market of Oliver Residues for Energy

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CONTENTS

1. Introduction

Olive oil production is an important agri-food industry in Europe. The European Union is the biggest olive oil producer in the world (80%) with approximately 12,000 oil mills, most of which being small and medium-sized enterprises. Olive cultivation is largely concentrated in the Mediterranean where it constitutes the main income in agriculture; it is also important for the preservation of local heritage and the main source of employment in many regions of EU member states. Worldwide consumption of olive oil is increasing due to the changed dietary habits and its healing power, but so is the amount of olive residue, which is subject to different definitions under various national legislations. Similarly, the production of olive oil in Slovenia is rising from year to year, causing greater pollution by olive residue from the oil extraction process, which is usually deposited into landfills and sometimes returned to agricultural areas.

One of the objectives of the international M.O.R.E. project (http://www.moreintelligentenergy.eu/SLO_index.asp), which is being carried out within the framework of the Intelligent Energy Europe program (http://ec.europa.eu/energy/intelligent), is to draw up the document “Policy Recommendations”. In this document the project partners will, on the basis of the established use of olive residues as well as the current problems and obstacles to the establishment of olive residue market and the realization of specific projects, offer concrete recommendations, proposals and solutions to change the current legislation and policies that will help create a more orderly olive-growing sector and facilitate the use of olive residue as a by-product for various purposes (energy, agriculture, industry).

Project activities are coordinated by a regional steering committee established in Slovenian Istria and composed of olive growers, oil millers, researchers of the Institute for the Mediterranean Agriculture and Olive Growing of the UP SRC Koper, representatives of local communities and other interested parties. With their aid, problems, obstacles and possible solutions to the formulation of a micro market of olive residue have been identified and a few proposals prepared to amend relevant legislation and national policies as well as programs to ensure greater support for the use of olive residue as biomass for energy purposes.

2. Analysis of olive orchard condition and olive growing

In comparison with other olive oil producing countries in the EU, Slovenia produces a relatively low quantity of olive oil, which however is of a very high quality. The annual production of olives ranges from 1,800 to 2,500 tons, which yield from 400 to 450 tons of olive oil. It is estimated that olive orchards (largely located in the region of Slovene Istria) cover up to 1,700 ha.

Owing to potential additional land (largely overgrown) that could be used for olive growing, whose surface area totals 1,400 ha, it would be possible to increase the olive growing area in Slovene Istria to a total of 2,600 ha. In addition, olive orchards could be established in the (north) western regions of the Brda Hills and Gorica district. At the time being, the orchards are usually small (0.46 ha) and fragmented, with only 10% of them covering more than 3 ha. Recently, the region has witnessed not only an increase in the olive growing area, but also a big change in the processing method – the shift from conventional production to integrated and ecological production. Given the fact that a number of young olive orchards will soon reach full maturity, it is expected that the region will see a considerable increase in the production of olives, olive oil and by-products.

3. Analysis in the field of olive processing technology

The major part of Slovene olives is used for olive oil production and only less than 1% for table olive production. The olive production ranges from 2,700 kg to 4,000 kg/ha. When the total olive growing area increases to 2,600 ha and the orchards reach full maturity, Slovene Istria is expected to produce from 6,930 to 10,400 tons of olive, of which the production of by-products (olive pomace, pits, vegetable water) will amount to around 6,000–9,000 tons.

In 2009, there were 13 registered olive oil mills operating in Slovenia, of which 4 used the traditional process (pressing), and all the rest the continuous olive oil production system (2 or 2.5 phase).

Traditional processing generates three products: olive oil, dried pomace and vegetable water. With no water added during the process, vegetable water is generated only in small quantities. Dried pomace can be used as stove fuel.

The continuous system generates two by-products: vegetable water and more or less wet pomace with pits.

4. Current legislation in the field of olive processing

Despite constant endeavours of olive oil millers and experts in the field of olive growing, Slovene legislation regarded the by-products of olive growing as waste up to 2009. It was only in 2009 that the competent offices of the Environmental Agency operating within the Ministry of the Environment and Spatial Planning of the Republic of Slovenia (RS) introduced the procedure for determining whether a certain substance can be treated as waste or a by-product.

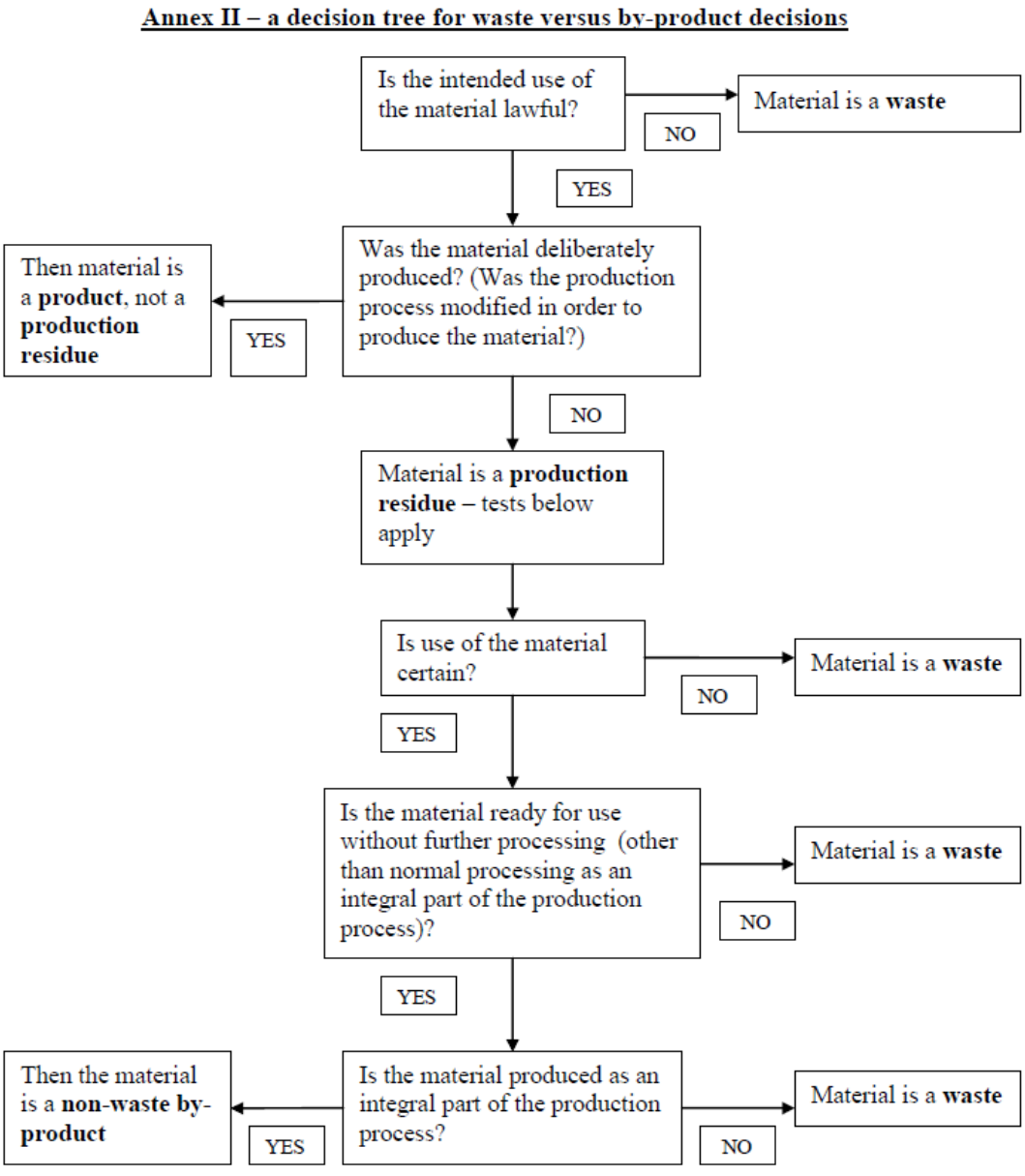
If olive pomace is treated as waste, then one has to act in accordance with the Environmental Protection Act (Official Journal of the RS, No. 39/06-ZVO-1-UPB1, 49/06-ZMetD, 66/06-OdlUS, 33/07-ZP Načrt 57/08-ZFO-1A and 70/80), the statutory regulation on waste management and the statutory regulation on biodegradable waste treatment. The waste producer has to classify waste into the appropriate group or subgroup in accordance with the waste classification list published in the Decree on Waste Management (OJ RS, No. 34/08). The Decree also stipulates obligatory waste management for operators of activities irrespective of waste origin, while the Decree on the Treatment of Biodegradable Waste (OJ RS, No. 62/04) regulates biodegradable waste treatment and land application/spreading. If olive pomace is regarded as a by-product, its owner does not need the environmental permit for land application/spreading.

Pursuant to Article 5 of Directive 2009/98/EC of the European Parliament and of the Council on waste and repealing certain Directives of 19 November 2008, the by-product is a substance or object resulting from a production process the primary aim of which is not the production of that item. Such a substance or object can be regarded as not being waste if the following conditions are fulfilled:

- Further use of the substance or object is certain;
- The substance or object can be used directly without any further processing other than normal industrial practice;
- The substance or object is produced as an integral part of a production process; and
- Further use is lawful; the substance or object fulfills all relevant product, environmental and health protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts.

In accordance with the Environmental Protection Act, waste is a substance or an object that its producer or a person owning it discards, intends or has to discard.

Taking into account the afore-mentioned definitions, an olive oil miller has to determine whether or not he is a waste producer. If he is not, his decision must be based on the Communication from the Commission to the Council and the European Parliament on the Interpretative Communication on Waste and By-products of 21 February 2007; more precisely, on the decision tree for waste vs. by-product decisions published in its Annex II.



Annex II – A decision tree for waste vs. by-product decisions

5. Recommendations for changes in the current legislation on olive oil mill operation and olive processing residue/waste management

The current Slovene legislation treats olive residue as waste and does not determine its management. Therefore we propose several recommendations for its alteration. The system proposed is only the first step towards the preparation of relevant Slovene regulation in the field of pomace treatment. Slovenia needs to conceive and implement a more detailed decision-making system and scheme:

- By introducing the monitoring of quantities and manner of pomace land application/spreading. Inappropriate discharge of vegetable water into the environment (lakes and other bodies of water) can give rise to the process of eutrophication, which is a biological response to increased concentration of nutrients in watercourses resulting in higher productivity of algae and other water plants. When the plants decompose, they use oxygen, making the bottom waters deficient in oxygen. Negative effects are also caused by excessive land application of vegetable water (source: *Sonaravno ravnanje z ostanki predelave oljk* [*Sustainable Management of Olive Residue*]).

- By exempting the activities related to olive processing (oil millers) from the Decree on the Emission of Substances and Heat during Waste Water Discharge from Plants for the Production of Vegetable and Animal Oils and Fats *(OJ RS No. 45, 25 May 2007).* In accordance with the Directive 2006/11/EC of the European Parliament and of the Council of 15 February 2006 on the Pollution Caused by Certain Dangerous Substances Discharged into the Aquatic Environment of the Community (OJ L No. 64 of 4 March 2006, p. 52), the Decree stipulates the following conditions for plants for the production of vegetable and animal oils and fats (hereinafter: fat production plants) as regards the emission of substances and heat during the discharge of industrial waste water (hereinafter: waste water):

  – Limit values for waste water related parameters and

  – Special measures for substance emission decrease.

- The issues related to the emission of substances and heat during the discharge of waste water from plants for the production of vegetable and animal oils and fats that are not regulated by the above-mentioned Decree are regulated by the decree on the discharge of waste water into water and the public sewage system. The issues related to waste water monitoring are regulated by the rule on first measurements and operational monitoring of waste waters and conditions of their execution.

- The provisions of this Decree also apply to fat production plants conducting the following processes:

– Production of raw vegetable oils and fats and semi-finished products from oilseeds;

– Refining including extraction of mucilage, neutralization, bleaching, deodorization, hydrogenation and esterification, packaging of vegetable oils and fats;

– Production of margarine and similar edible fats; and

– Production and packaging of animal fats.

- The provisions of this Decree also apply to the production of biofuels from raw vegetable or animal fats.

- By exempting the olive growers from this Decree since olive processing is a seasonal activity yielding very small quantities of products as it was established by the Kranj Institute of Public Health in 2002. Between 2001 and 2002, the Institute carried out operational monitoring of waste water generated during olive oil processing in Slovenia (continuous method) and established that the following limit value were exceeded during the discharge of waste water into the public sewage system: pH and contents of sedimentary substances and hardly-volatile sedimentary substances (Kranj Institute of Public Health, 2002). Even if the exceeded limit values of the above-mentioned parameters were expected, it was for the first time that the monitoring company stated that vegetable water could be treated as a by-product and that the quantity of products and seasonal operation of olive oil mills should be taken into account when implementing the measures prescribed. The report also pointed out that waste water produced during olive oil processing created industrial waste water whose parameters could exceed legally permitted values if no water purification process had been carried out.

- With the quantity of waste water generated in olive oil processing being as a rule extremely small, the purification costs cannot be justified from the point of view of volume and duration of individual production. According to the Kranj Institute of Public Health, olive processing generates only industrial waste water as a by-product and no municipal or cooling waste water. Permanent monitoring of waste water discharge would be economically justifiable if the quantity of waste water at the outflow exceeded 100,000 m^3. Therefore it is not sensible to compare operational monitoring of waste water in plants whose annual waste water discharge surpasses 500,000 m^3 with that in seasonal plants where the annual discharge amounts to a few 10 m^3.

- By introducing a register of olive residue (vegetable water, olive pomace, olive pits) at the national level, which would be kept by an office within the Ministry of Agriculture or the Ministry of the Environment and Spatial Planning and would record data on the quantity of olive residue produced and the quantity of olive residue used for secondary purposes (energy production, composting, land spreading) for each olive oil miller.

6. Recommendations to upgrade the existing financial mechanisms and develop new ones at local level

With regard to the existing financial mechanisms at national and local levels, there is a complete absence of mechanisms to promote the utilization of olive residue as biomass for energy purposes. The EKO SKLAD mechanism introduced by the Republic of Slovenia at national level provides subsidies and co-financing for various projects of natural persons and legal entities (companies) that are aimed at efficient use of energy and renewable energy sources. Whereas most such programs are directed towards utilizing renewable energy sources like wood biomass, as well as solar and water energy, no support has been found for the use of other types of biomass. Therefore we offer the following suggestions in this area of legislation:

- We propose the extension of financial subsidies awarded by EKO SKLAD on the basis of an invitation for “grants to natural persons for the utilization of RES and RUE in residential buildings” under Point D – installment of wood biomass boilers in single-family homes and multi-occupied buildings – by also taking into account the applications of natural persons who wish to use olive residues as biomass (and not only wood biomass);

- We propose that olive residue be treated on equal terms as wood biomass and be listed under development priority 6. Sustainable use of energy (Cohesion Fund), or more accurately, within the framework of the priority policy 6.3 Innovative Measures for Local Energy Supply under the Operational Program for the Development of Environment and Transport Infrastructure. Such initiatives can primarily enable the establishment of an appropriate olive residue treatment plant (depitting, drying,

pelletizing) for energy purposes and, secondly, facilitate the setting-up of remote heating systems at micro local level that will make use of the strong local potential of olive residue as biomass.

- At municipal level (city municipalities of Koper, Izola and Piran) we propose the introduction of an additional financial mechanism (parallel to the invitations by EKO SKLAD) for additional/parallel co-financing of investments of natural persons and legal entities that wish to replace the existing heating systems by those using olive residue as an energy vector.

7. Recommendations to support promotional and awareness-raising activities

With a view to ensuring support and large-scale promotion of olive residue as a local energy source we propose that, in line with the development priority 6. Sustainable use of energy (Cohesion Fund), or more accurately, the priority policy 6.4 Demonstrative Projects, Consulting and Information within the framework of the Operational Program for the Development of Environment and Transport Infrastructure, support be extended to projects aimed at informing and promoting olive residue as biomass which can be put to beneficial use for the production of heat if subject to appropriate treatment (drying, pelletizing, depitting).

8. Conclusion

The strategic development objectives of olive growing are to increase the production (area and yield) with an emphasis on environment-friendly cultivation, which in turn also necessitates:

- Encouraging the most advanced processing technology, in particular the purchase of state-of-the-art 2-phase technologies, or technologies causing the least possible strain on the environment;
- Encouraging and moving oil producers towards using by-products (extraction of olive pomace and use of olive pits as biomass for energy purposes; composting; isolation and concentration of bioactive substances for food purposes; use of active substances from vegetable water in pharmaceutical industry (antimicrobial agents)).

The realization of the proposals indicated above will ensure optimum support for:
- The setting-up of a supply chain for the production of energy from olive residue by involving key public and private entities;
- The creation of a stable local market of olive residues for energy by encouraging investments in treatment plants converting olive residues into a local energy vector as well as investments of individuals (end users) in installing biomass plants that will produce energy (heat) by using olive residue;
- Increased production of energy from olive residue;
- Any new solutions and ideas as to a more efficient use of olive residue for energy and other purposes, and
- Raising the awareness about various possible uses of olive residue as a by-product.

9. ANNEX I - POLICY RECOMMENDATIONS: RES AND RUE FOR SLOVENIA UP TO 2030

We are facing climate and other changes, increasingly widespread modern lifestyle diseases, global financial and economic crisis and problems of reliable energy supply. Renewable sources of energy

provide a sustainable, economical and reliable source of energy. Our goal should be the fastest transition possible to renewable energy sources (RES) and rational use of energy (RUE) because:

1. Our existence in endangered and, consequently, the use of fossil and nuclear energy is no longer an acceptable option;
2. The prices of fossil energy sources and uranium will increase, while those of RES will decrease owing to the scientific and technological progress and mass use of RES;
3. Decentralized introduction of RES brings about new jobs, spurs local development and increases the economic stability of legal entities, natural persons, municipalities, regions and states.

The development of Slovenia is still based on the use of fossil and nuclear energy. By taking into account the experience of the most progressive state, the existing Slovene legislation should be appropriately upgraded as soon as possible. The national strategy and instruments of economic policy should encourage classic energy providing companies to invest in RES and RUE instead in technologies that have no future. Moreover, natural persons and legal entities also have to be encouraged to introduce RES and RUE. Such measures would ensure the fastest transition to the use of RES. In view of the threatening climate change, economic recession and other social problems, we suggest that this happens by 2030 at the latest.

Urgent measures for the transition to RES and RUE:

1. To ensure sufficient budgetary resources for the implementation of an integral system of EU funding for RES and RUE.

2. To ensure constantly available budgetary subsidies for RES and RUE. It is inexcusable that there is no permanent tender for natural persons and legal entities. Moreover, publication of rigid joint tenders for RES and RUE (e.g. the tender for modern wood biomass fuelled boilers) has proven to be unproductive.

3. The prescribed standards for heating systems should be raised to eliminate the financial support for higher-quality natural gas and fuel oil boilers the use of which should be systematically reduced for the benefit of RES. Budget funds must be earmarked exclusively for RES and RUE.

4. All facilities financed from the budget should use renewable energy, whether it be new constructions or ongoing replacements of deteriorated systems.

5. Furthermore, RES should be introduced to ensure the security of supply for the heating of hospitals, nurseries, schools and other public institutions, homes, industrial plants and buildings in other sectors.

6. Legislation and economic policy instruments in the area of agriculture and forestry should ensure optimum conditions for the production of healthy food, raw materials and biomass for energy production, in accordance with the principles of organic farming. There is a need to create the conditions for the formulation of logistics strategy for the collection of biomass and an urgent need to prohibit lighting fires in the open air.

7. Multiple use of space for the utilization of solar, wind, water and geothermal energy should be encouraged (especially in Natura 2000 areas).

8. Appropriate regulations are needed to introduce RES and RUE on the basis of reducing tax rates and excise duties.

9. Legislation for qualified green electricity producers should be harmonized with the most advanced legislations in the EU. Recognizing the scientific and technological development, green electricity may meet Slovenia's demand for electricity by 2030.

10. The price of fossil and nuclear energy should take into account the requisite real share for RES and RUE to provide financial support for the introduction thereof.

11. The state should move fossil and nuclear energy producers towards investing in RES and RUE by means of economic policy systems.

12. It is absolutely necessary to improve science, development and education, as well as focus on sustainable development and RES and RUE. The contents of programs should be updated and revised accordingly.

13. It is necessary to provide continuous information and education on the advantages of RES and RUE in comparison with fossil and nuclear energy on all levels, from politicians and experts to school and other population groups, and thus enable sustainable development of Slovenia's energy, economy and society.

14. The national action plan for biomass should be redefined on the basis of the EU action plan for biomass so as to include wood and other kinds of biomass (agricultural waste such as olive residue, and so forth) to extend the operational program of wood biomass energy utilization (OP ENLES) into an operational program for every type of biomass utilization.

15. The existing financial mechanisms (EKO-SKLAD) should be incorporated with new ones that will not only encourage the use of wood biomass but also that of other RES (geothermal energy, solar energy and other types of biomass), thus contributing to the diversified use of RES.

Martina Šumenjak Sabol, President Jarenina, 8 March 2010