

Policy recommendations at EU, national and local levels to favour the development of olive residues-to-energy projects

FOREWORD: The IEE Project "MARKET of OLIVE RESIDUES for ENERGY"

The main objective of "M.O.R.E." is to generate renewable energy using solid residues deriving from olive oil production process. The project involves 5 European countries (the main world olive oil producers): Italy, Spain, Greece, Croatia and Slovenia, by means of six different local organizations that make up the partnership. In Italy, two partners are involved: the project leader - Liguria's regional agency for energy, ARE Liguria – and the regional association of the four Ligurian Chambers of Commerce – Unioncamere Liguria.

In Croatia the partner is IPTPO, the Institute for Agriculture and Tourism

In Greece the partner is the Regional Agency for Energy of Central Macedonia

In Slovenia the partner is the Science and Research Centre in Koper

In Spain the partner is AGENER, the Agency for Energy Management of Jaen Province.

Running from November 2007 to April 2010, the project MORE aims to:

- *Identify different methodologies to generate renewable energy using solid olive residues and produce related guidelines;*
- *Involve public and private stakeholders to develop the local markets and create supply chains;*
- *Carry out training and promotional activities;*
- *Define business plans for energy facilities running on olive solid residues;*
- *Deliver policy recommendations for local, national, EU governments.*

This document summarises the recommendations elaborated by each project partner through in-depth analyses of legal and policy frameworks at EU and national levels. Full documents are available on: www.moreintelligentenergy.eu.

Italy – developed by ARE Liguria

In Liguria and in Italy the most critical issue has resulted being the regulatory framework which can characterise olive residues as "waste". A specific study on applicable norms has then been carried out and led to the following legal recommendations to facilitate the management of olive mill pomace and to provide incentives for producing energy from biomass starting from this (by-)product:

- ❖ The EC Commission should provide technical specifications, pursuant to art. 5 of directive 2008/98, on the conditions for using olive pomace as a by-product regardless of their economic value and regardless of the possible need of a drying phase and/or pot removal. In the meantime this could also be provided for in national law (albeit with less space to work in and a lower degree of "reliability");
- ❖ national law should be brought in line with this the new concept of by-product by amending art. 183(p) of legislative decree no. 152/2006, namely the part that still provides for the economic value of by-products as a requirement (however, without providing regimes that can make operations particularly burdensome and/or complex, or delay application, which is the risk of "traceability" during transposition *en route*, with regards to residues from agricultural processing, without prejudice to the fact that olive pomace does not fall under this category since it is a residue from the agro-food industry);

- ❖ if olive pomace is considered as waste, national law should allow it to be treated as municipal waste when produced by smaller olive mills;
- ❖ furthermore, the prohibition against transporting waste with vehicles that are not specially equipped for that purpose should be dropped when the materials to be transported are natural and non-hazardous;
- ❖ more favourable national laws should be introduced for obtaining permits for facilities producing energy from biomass, especially when they are small;
- ❖ national law should expressly provide that, in the absence of adequate private initiative, municipalities are able to build such facilities (or have them built) and operate them (at least during the start-up phase) within the scope of their local public services and with corresponding forms. Economic incentives should also be provided to ensure this actually happens (or at least the regions can be oriented to that effect, in collaboration with local "pilot" bodies within the scope of regional plans providing incentives for energy from renewable sources).

Other recommendations at regional policy level are:

- establish a (regional) monitoring system able to record olive residues quantities produced each year
- promote a joint interest in this issue by Energy, Environment and Agriculture departments of regional government
- promote the legal recommendations above at the national level on the occasion of the normal regions-state meetings
- fund a pilot project.

Slovenia – developed by UPZRS

Recommendations have been elaborated in the fields of legislation, incentives and communication:

Recommendations for changes in the current legislation

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.
- 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 the 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 m³. Therefore it is not sensible to compare operational monitoring of waste water in plants whose annual waste water discharge surpasses 500,000 m³ with that in seasonal plants where the annual discharge amounts to a few 10 m³.

- 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.

Recommendations on financial mechanisms

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 (pitting, 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.

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, pitting).

Greece – developed by Anatoliki SA

In Greece, olive residues have been widely used in the past for space heating in the domestic sector (and still remain an important fuel type for rural areas) and as fuel for process heat requirements in a large number of small-scale industries (i.e. olive mills, greenhouses, cotton ginning factories, sawmills, etc.).¹

However, it should be stressed out that the traditional use of biomass energy has its own problems: inefficient energy production, sharp temperature rises, prolonged drought periods, decreased crop productivity are some of the most important ones that Greece already faces. Increasing oil prices, awareness for climate change and its adverse effects have recently brought biomass to the front stage along with the other renewable energy technologies.

The rural areas present certain characteristics which favour the potential development of an olive-to-energy chain:

- the agricultural sector is one of the most important economic activities of the region of Chania (Crete) which itself is facing significant difficulties. The unemployment rate is higher than the national average, especially among young people (National Statistics on Employment and Unemployment, 2004),
- additional economic activity is offered to the local community. The development of community-based bio industries often results in strengthening the community support services, providing additional jobs in the local government and service sectors.
- Provides a green label to the energy user differentiating it from other competitors
- mitigating rural depopulation

Public awareness

The following aspects should be addressed:

- There is a lack of data for specific quantities of the olive-mill solid residues produced.

¹ Bioenergy in Greece: Policies, diffusion framework and stakeholder interactions, Calliope Panoutsou, Available online 13 August 2008

- Dissemination of information relating to the disposal and recycling techniques of olive-mill waste in an efficient and economic way.
- Elaboration of common rules about the management of olive-mill solid residues.
- Economic evaluation.

Institutional framework

It is generally acknowledged that biomass lies across the borders of several policy sectors, the most important ones being agriculture, energy, environment and international trade. Each of them has a major effect on the successful development of biomass systems and efficient interaction is expected to be critical for future development. Ideally, a platform should be created linking the relevant policy sectors and using biomass in an overall climate change strategy by the following key areas:

- Effectively linked policy framework
- Harmonise support mechanisms to improve the overall effectiveness of biomass supply chains.
- Favourable national laws should be introduced for obtaining permits for facilities producing energy from biomass

Public funding

The lack of measures providing public funding could likely be offset by:

- The alleviation of the bureaucratic burden through the simplification of procedures and the overcoming of administrative constraints in using pomace as energy source.
- The consolidation and stabilisation of the investment environment by means of broader development and favourable taxation policies.
- The continuation of the feed-in price regime of the renewable energy on a permanent and stable base.
- The announcement of the new Development law with special measures on biomass plants.

Economic viability of the project

Two main conditions are needed for the viability of bioconversion projects and concern both sides, first of all the investors (responsible for the realization and the operation of the biomass units) and the farmers-producers (providers of the primary sources in the conversion units):

- The olive millers should provide their primary sources to the plants and keep the agreement with the investors in maintaining steady prices.
- The investors should have a minimum percentage of profit, which is expressed with the Internal Rate of Return (IRR) and is set equal to 15%.

Investors/energy plant owners

Investors/energy plant owners involved in the olive-to-energy schemes are greatly concerned about biomass availability, feedstock properties and the economic viability of such energy systems. Their focus lies on:

- feedstock quality and year-round security of supply,
- current feedstock prices and projected increases,
- efficient technologies,
- governmental support to ensure successful take-off of bioenergy schemes.

Current policies, provide some subsidies for investors. Others believe that the best way to increase competitiveness of biomass to energy schemes is through environmental taxes on fossil fuels.

State-of-the-art technologies, advanced combustion systems and co-generation schemes seem to be the most economically attractive solutions for heat and electricity generation at the moment

A reliable source of energy (heat and/or power) requires long term guaranteed contracts with primary source suppliers. Therefore in the development of local bioenergy schemes it would be advisable to encourage local agricultural cooperatives or other local businesses to participate as contract coordinators. Cooperatives could indeed act as independent power producers, producing the feedstock and using it locally for heat and/or electricity production. Such a role for cooperatives would be consistent with their existing roles with respect to conventional crops. Local cooperatives could join bioenergy schemes in order to raise their income and keep their interest in the subject.

Decision-making groups

Politicians, who constitute the most important decision-making group, raise a great number of questions, which can be categorised as follows:

- Environmental impacts:
 - of exploiting residues for energy purposes,
 - of feedstock production/handling schemes, and

- of their use as a fuel.
- Competitiveness of biomass in the market (compared to the alternative market demands);
- Agriculture's role within an appropriate energy policy;

Current subsidy programmes for the energy industry and for agriculture should be evaluated and perhaps integrated to support this opportunity. Olive pomace energy production has the potential to benefit not only the power industry and the agricultural community, but the public and environment as well.

Spain – developed by Agener

These are the recommendations in order to promote the use of pomace for heat production as well as for electricity production.

1. Establish a specific Andalusian plan orientated to encourage in a decisive way the promotion of olive biomass as an alternative within rural environment thus obtaining a different energy to that generated by fossil fuels.
2. Promote research and support for the establishment of a competitive industrial supply chain system centred on olive biomass in the province of Jaén.
3. A commitment to work in this sense at all levels of the system - starting with the administration and reaching farmers and industry, promoting it in a specific way:
 - a) Establishing adequate rules which regulate, in an independent manner, this sector, taking into account its specific nature.
 - b) Putting into effect studies and / or research projects, development and innovation (I+D+I) aimed to improve and transfer the knowledge in this field.
 - c) Carrying out information activities.
 - d) Promoting all the proposed measures already mentioned by establishing and formalizing agreements with competent Official Bodies and associated industries.
 - e) Boost in establishing companies in the service sector associated with the use of olive biomass.
4. Promote with Official Bodies and Industries the development of projects and experiences related to the use of biomass, through informative actions.
6. Reach a necessary diversification in olive farming, through the development and execution of projects.
7. Review the price system for the production of electric energy using olive biomass.

We must not forget that olive farming is the only woods which can be 100 % managed because the number of olive trees in the territory is known.

Republic of Croatia – developed by Institute of agriculture and tourism Poreč

Fact 1

With regard to the existing financial mechanisms defined through measures organized by Fund for environmental protection and energy efficiency at national and local levels, we must mention that in this moment in Croatian market lots of co financing possibilities exist. One of the biggest is 70% co financing for quality business plans for implementing a RES plant (including biomass – olive residues) and replace existing heating system or electrical facilities. But the problem is that in Croatia tariff regulations for renewable energy in Croatian energy act (NN 68/2001) and in Regulation on fees are not defined. (NN 33/2007). Tariffs would be important in order to let local governments implement and promote small electricity producers and plant producers in local areas.

Recommendation:

Improve circulation of basic information to potential users of those co financing programs so they could invest into a new energy facility. Also tariff regulations must be defined for renewable energy sources to encourage all potential small investors to invest into those energy facilities.

Fact 2

In the Republic of Croatia every county has its own energy agency which has duty to implement conclusions defined in Strategy of energy development of Republic of Croatia (NN 38/2002). One of the main activities in those agencies is dissemination about renewable energy sources through EU directives and plan to reach 20 – 20 – 20 measure.

Recommendation:

Improve contacts with local governments, public bodies, schools, students, small and medium enterprises, agricultural companies, associations. This is one of the main activities based on "Rural development plan 2007 – 2013" by Ministry of agriculture and rural development. Associations and those agencies must take care about environmental development in rural areas on every platform (ecological, economical and field of energy). Local resources must be used to satisfy local needs for energy, clean environment and economic sustainability.

Fact 3

In the Republic of Croatia there is no biomass market so there are no prices, transport calculations, etc. In same time almost all biomass is being exported to Austria and Germany for their biomass plants and energy facilities. Olive residues still have not got a defined clear purpose.

Recommendation:

To stop with this practice and establish biomass market inside Croatian territory so we could reach our energy objectives.

Fact 4

In Croatia there is a "Regulation on the use of renewable energy sources and congregations". Regulation was adopted 15.06.2007. the problems of all forms of renewable energy sources, except for biomass, are defined. Biomass is mentioned in only one short paragraph. Olive pits are not mentioned. Following the Regulation this source of renewable energy is defined as solid biomass from forestry and agriculture (lop, straw, seeds) and solid biomass from wood processing industry (bark, sawdust, chaff).

Recommendation:

This issue should be further promoted and developed. Fund for Energy Efficiency of Republic of Croatia is formed in parallel with the adoption of this regulation and has not yet really started with quality work. In Regulation there are no defined rules on how to manage biomass as a renewable source of energy.

Fact 5

Residues of agricultural production have an important role. Agricultural SMEs are not stimulated to use renewable sources of energy. There is a highly complex procedure of acquiring the status of eligible producers of energy (equal to 100 kW and 100 MW). In Croatia, the primary energy obtained from biomass and wood is 0.00025% and is now used exclusively for the individual examples of heating homes or smaller spaces of certain manufacturing facilities. Only one big furniture factory uses their own biomass to close the energy circle and in Croatia are more than 150 producers in wood industry. A problem is that Croatian basic strategy of biomass promotion is primarily focused on stimulation to use wood biomass (wood pellets, wood chips etc.) due to high percentage of Croatian territory covered by forests. On whole territory is almost 60% covered by forest.

Recommendation:

There is political support nor legislation that would motivate people to invest in systems of producing energy from renewable sources.

For Republic of Croatia main recommendations is to develop such market and resolve olive residues problem through:

1. Increasing levels of knowledge and awareness about the need for olive producers to use new technologies.
2. The establishment of olive cadastre.
3. Increase the area of olive groves.
4. Increase the quantity of Olive production.
5. Revitalization of old and abandoned olive trees.
6. Make business plans where olive pits, and wooden residues are mixed.
7. Organize co-financed transport supply.
8. Make a control management to organize market for olive residues.
9. Better control of process disposal of olive residues.
10. Control of all acts and regulations.

11. Establish new co financing positions for small investors.
12. Define popular tariff for selling electricity to national electrical system.
13. Encourage potential investors to invest not only in energy but also in other kinds of olive residues by-products.
14. Try to do everything so the problem of olive residues could become one of the basic biomass resources.