

MòRe

MARKET OF
OLIVE RESIDUES
FOR ENERGY

REPORT ON TRAINING SESSIONS FOR MARKET OPERATORS-MODULE 1,2,3

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

Deliverable: D4.3

WP4 leader: IPTPO – Institute of Agriculture and Tourism Poreč, Croatia

WP4 Partner: REACM-Regional Energy Agency of Central Macedonia

Training sessions for market operators held at Chania, in the island of Crete, Greece on October 16th 2008 & October 12th 2009.

REPORT ON TRAINING SESSIONS FOR MARKET OPERATORS

1. Module – short report

In this section, please write the short report on training session (indicate the module, date, place, objectives of the session and include the short description/report of event).

Suggested length: max 2 pages

The Regional Energy Agency of Central Macedonia (REACM) in cooperation with the Renewable and Sustainable Energy Systems Laboratory (ReSEL) of Technical University of Crete and the Technical Chamber of Western Crete organized two training sessions for olive stakeholders at Chania, Crete.

- **The first training session (module 1) took place on October 16th 2008.**

The title of the training session was: “**The use of olive solid residues for energy production**”.

- **The second training session (module 2 & 3) took place on October 12th 2009**

The title of the training session was: “**The exploitation of the local olive solid residues and the elaboration of a business plan**”

Approximately 60 participants took part in the 1st training session & 25 in the 2nd training session, including olive growers, millers, potential investors, researchers, industrialists, and engineers.

MODULE 1

The objectives of the 1st session were:

1. Diffusion of “MORE” project objectives and expected results
2. The potential of energy generation from olive by-products.
3. New techniques in olive tree cultivation.
4. Best Cases from other countries.
5. Local problems and possible solutions.

The agenda of the 1st training session was the following:

- 15:00 – 15:20 : Registration
- 15:20 – 15:30 : Welcoming Session and general presentation of the training session
Session I
- 15:30 – 17:00 : Energy exploitation methods of olive residues-
Local Experience in the field of olive residues market
- 17:00 – 17:30 : Coffee Brake
Session II

17:30 – 18:00 : The project More
18:00 – 19:30 : Best Case applications in Spain, Italy and Greece
19:30 – 20:30 : Discussion

MODULE 2 + 3

The objectives of the 2nd session were:

- Market opportunities derived from the exploitation of the local olive residues.
- Presentation of a Business Plan for the area of Chania, Crete
- Methodology of the pellet production process

The agenda of the 2nd training session was the following:

17:00 - 17:30 : Registration
17:30 - 17:45 : Welcoming Session and general presentation of the training session
17:45 - 18:30 : Current developments in energy use of biomass and olive solid waste
18:30 -19:15 : Business Plan for energy exploitation of the depleted olive pomace of the region
19:15 - 20:30: The process of making pellets. Technology, economic aspects and benefits
20:30 - 21:00: Discussion

Please attach a few photos taken during session.

Module 1





Module 2 & 3



2. Programme

In this section, please insert the training session programme and attach the presentations given (in ppt format)

Suggested length: max 1 page

Training sessions Presentations:

- **MODULE 1 October 16th 2008.**

Session I- Energy exploitation methods of olive solid residues - Local Experience in the field of olive residues market

1. Dr. Theocharis Tsoutsos, Renewable and Sustainable Energy Laboratory (ReSEL), Technical University of Crete Environmental Engineering Department, Energy exploitation methods of olive residues, the Renewable and Sustainable Energy Laboratory
2. K. Chartzoulakis, G. Psarras, E.Stefanoudaki, Institute of Olive Tree and Subtropical Plants of Chania (National Agricultural Research Foundation-NAGREF), The use of liquid waste by 3-phase extraction in olive mills as fertilizer in olive groves
3. P. Kefalas PhD, D.P. Makris PhD, Department of Food Quality & Chemistry of Natural Products Mediterranean Agronomic Institute of Chania (M.A.I.Ch.), Exploitation of Olive Industry By-Products for the Recovery of Value-Added Phytochemicals.
4. Dr. Vassilis Gekas, Department of Environmental Engineering, Technical University Of Crete, Incineration of municipal & industrial wastes, A Case Study for Chania, Crete

Session II- Case studies

5. Dr. Kostas Konstantinou, Irene Tsakiridou, REACM-Anatoliki s.a, The energy exploitation of olive solid residues for energy production, the project MORE, Energetic data, Case studies, the energy potential in Crete.
6. Roberta Casapietra - ARE Liguria, The use of olive solid residues for energy production. Case studies in Italy.
7. Elena Romero Aranda, The use of olive solid residues for energy production. Case studies in Spain.

Supportive Material:

- Guide of Local Government policies, CRES
- Technical Guide, CRES
- Energy saving in the food sector. Topics relative in food industry. CRES
- List of pertinent projects and publications of the Renewable and Sustainable Energy Systems Laboratory.

Material

Relevant presentations and supportive material are attached. All presentations, case studies, project leaflet, leaflets promoting the institutions that organized the workshop and the agenda were made available to all the participants and uploaded at the internet site of Anatoliki s.a (www.anatoliki.gr).

- **MODULE 2 & 3 October 12th 2009.**

Session I

- Dr. Theocharis Tsoutsos, Renewable and Sustainable Energy Laboratory (ReSEL), Technical University of Crete Environmental Engineering Department, market opportunities derived from the exploitation of the local olive residues.
- Dr. Kostas Konstantinou, REACM-Anatoliki s.a, Current developments in energy use of biomass and olive solid waste.
- Sarantopoulos Ioannis, Renewable and Sustainable Energy Laboratory (ReSEL), Technical University of Crete Environmental Engineering Department, Business Plan for the realization of a plant aiming at the exploitation and promotion of olive pomace as energy fuel.

Session II- Case study

- Irene Tsakiridou, REACM-Anatoliki s.a, The production line of making pellets-A case study of exploiting the olive pomace and pruning of an area in Greece for thermal energy production. Technology & Economic aspects

Supportive Material:

- Presentations of the speakers
- The case study of exploiting the olive pruning of an area in northern Greece for thermal energy production.
- Project leaflet, 1st newsletter, 2nd newsletter

3. Quality and success

This section will present the evaluation and criteria for quantification of training session success in each partner's country. Please give all relevant information related to number and structure of participants and results of satisfaction questionnaires (in %).

Suggested length: max 2 pages

Participants' profile

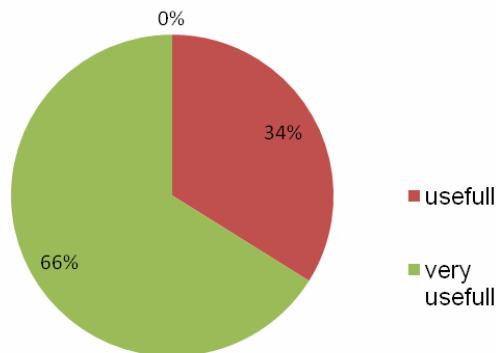
In general, the participants showed great interest in the workshop. They participated vividly, asking questions and triggering several discussions. Many of them are involved directly with the energy use of pomace and had previous experience in the field of energy exploitation of olive residues and shared them with the audience.

The following paragraphs include data analysis for the entire questionnaire which includes 11 questions.

Data Analysis

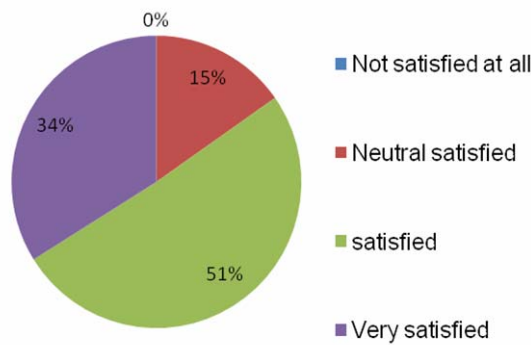
According to statistical analysis, 66% of the respondents found the workshop very useful while 34% of the respondents found the workshop useful.

Usefulness of topic,material,discussion



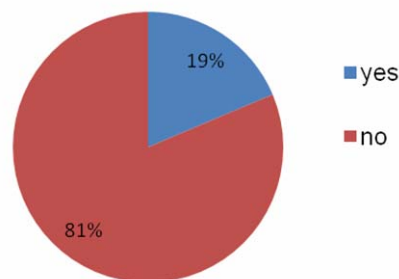
The overall evaluation of the course resulted in 34 % very satisfied., 51% satisfied and 15% of the participants feeling neutral or moderately satisfied

Overall evaluation of the training session

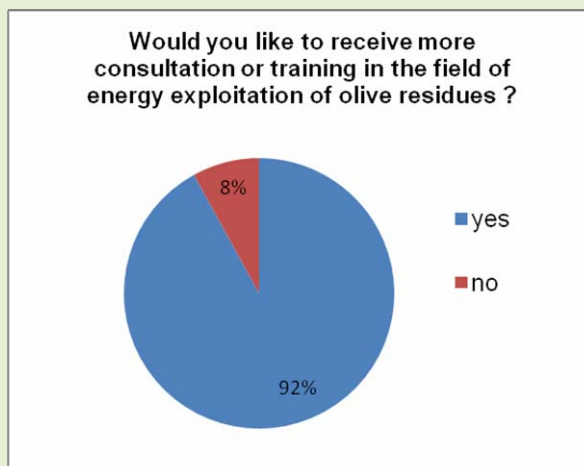


From the graph below we can see that only 19% have attended another seminar on energy exploitation of olive residues. This has both a positive and a negative conclusion: The positive side is that there is a large market to train and raise awareness but on the other hand it is negative to consider that key actors do not attend seminars of this type.

Have you ever attended another seminar in the field of energy exploitation of olive residues?



Finally, 92% of the respondents expressed their desire to receive more customized consultation or training on energy exploitation of olive residues aspects. This result shows that most respondents are interested in this field.



4. Conclusions

Please give the conclusions and priorities defined during session taking into account the suggestions and comments of the participants.

Suggested length: max 1/2 pages

The following conclusions were drawn by the participants who took part in the discussion after the 1st training session:

- The quantities of solid residues from olive mills in Crete may be utilized to satisfy thermal as well as electric needs in small size installations including, olive mills and commercial establishments (i.e hotels and spas) however, they can not be compared to large size power plants like the ones in Jaen, Spain
- There are major terminology differences of the solid olive waste by-products between the producing countries which may be confusing when it comes to evaluating the energy potential of these products
- In order to create viable power plants from olive solid waste, olive miller associations need to get involved actively and participate in the business scheme of the proposed enterprise
- The technology to be used (energy from biomass by Pyrolysis etc) exists in the market however, interested actors are not aware of its full potential and show scepticism
- The making of 'pellets' is another entrepreneurial potential of the olive solid residues
- There are further possibilities of exploitation of olive solid waste combined with solar heating and cooling with the auxiliary use of municipal and industrial waste
- There is also potential of the use of olive liquid waste as fertilizer in olive groves
- There is a definitive need to continue the capacity building in the subject by further events of this kind

The following conclusions were drawn by the participants who took part in the discussion after the 2nd training session:

- There is a great potential in pellet production from solid olive residues in the region of Chania
- Pellets are easier to be transported, stored and burned than depleted pomace. In addition, they sell at a higher price which makes it more profitable to olive millers
- The technology of pellet boilers is not very mature yet, however, it is accessible and can be made more widely known through proper dissemination to interested stakeholders
- The quantities of pomace residues (in pomace or pellet form) are suitable for thermal use, but not enough for electric power generation
- The potential National financing programs for pellet making equipment would make such investment attractive at the present time
- The possibility of making pellets from olive pruning is also an important energy source.
- There is need for developing standards for pellets in Greece.

5. Anexes

Please include the training material and attendants list.

Suggested length: optional

MODULE 1

The files 1, 2, 4 and 5 below can be found at the web site of Anatoliki at the following link:

<http://www.anatoliki.gr/anatoliki/include/asp/textTemplate.asp?pageCild=703&targetPage=82&lang=en#2>

or via the official website of MORE at the following link:

<http://www.moreintelligentenergy.eu/events.asp>

1)Agenda

2)Press Release

3)Attendance list

4)Seminar Presentations:

Dr. Theocharis Tsoutsos, Renewable and Sustainable Energy Laboratory (ReSEL), Technical University of Crete Environmental Engineering Department



K. Chartzoulakis, G. Psarras, E.Stefanoudaki, Institute of Olive Tree and Subtropical Plants of Chania (National Agricultural Research Foundation-NAGREF)






P. Kefalas PhD, D.P. Makris PhD, Department of Food Quality & Chemistry of Natural Products Mediterranean Agronomic Institute of Chania (M.A.I.Ch.)







Dr. Vassilis Gekas, Department of Environmental



Engineering, Technical University Of Crete	
Dr. Kostas Konstantinou, Irene Tsakiridou, REACM-Anatoliki s.a	
Roberta Casapietra - ARE Liguria, The use of olive oil solid residues for energy production	
Elena Romero Aranda, The use of olive oil solid residues for energy production	

5)Supportive Material:

Guide of Local Government policis, CRES	
Technical Guide, CRES	
Energy saving in the food sector. Topics relative in food industry. CRES,	
List of pertinent projects and publications of the Renewable and Sustainable Energy Systems Laboratory	

MODULE 2 & 3

(Can be found at “More” website (reserved area))

1)Agenda

2)Press Release

3)Attendance list

4)Seminar Presentations:

Dr. Theocharis Tsoutsos, Renewable and Sustainable Energy Laboratory (ReSEL), Technical University of Crete Environmental Engineering Department, Current developments in energy use of biomass and waste.	Oral presentation
Dr. Kostas Konstantinou, REACM-Anatoliki s.a, Current developments in energy use of biomass and olive solid waste	Can be found at More website (reserved area)
Sarantopoulos Ioannis, Renewable and Sustainable Energy Laboratory (ReSEL), Technical University of Crete Environmental Engineering Department, Businesses Plan for the realization of a plant aiming at the exploitation and promotion of olive pomace as fuel to generate energy.	Can be found at More website (reserved area)
Irene Tsakiridou, REACM-Anatoliki s.a, The production line of making pellets-A case study of exploiting the olive pomace and pruning of an area in Greece for thermal energy production. Technology & Economical aspects	Can be found at More website (reserved area)

Please fill in the tables using font style: Arial 11pt, spacing single.

