

# Forest Bioenergy in the Protected Mediterranean Areas

## Technical panel in Valencia (Spain)

5<sup>th</sup> workshop (4<sup>th</sup> thematic workshop) Sustainability requirements and quality standards of forest biomass



Workpackage 4 - Transferring  
Activity A.4.2. - Technical panels

May 2019

## Workshop report

<b>Workpackage 4</b>	<b>Transferring</b>
<b>Activity A.4.2</b>	<b>Technical Panel</b>
<b>Deliverable D.4.2.1</b>	<b>Workshop' Reports</b>

Pilot Area	Comunitat Valenciana
Involved partner	Association of Forest Municipalities of the Comunitat Valenciana (AMUFOR) Official Chamber of Commerce, Industry, Services and Shipping of Valencia (COCINSV)
Responsible partners	Project Partner (PP5) - AMUFOR PP6 - COCINSV
Work mode	Thematic session: n.4 Sustainability requirements and quality standards of forest biomass
Location	Polytechnic City of Innovation, Camino de Vera, s/n, 46022 Valencia
Date	16.05.2019
Participants	13 participants: researchers, technicians and enterprises.
Experts	Dr. Victoria Lerma Arce PhD Forest engineer. Researcher of the Institute ITACA-UPV (Institute of Information and Communication Technologies), ICTs against the Climatic Change group (ICTvsCC)
Workshop Material	Requirements and quality standards for wood chips and pellets.
Workshop's Outline	<p>In the workshop, the use of biofuels based on forest biomass such as woodchips and pellets was explained; what is to be known about its quality and what variables have influence on it.</p> <p>The objective is to explain the international and European quality requirements and standards for the bioenergy use of woodchips and pellets, studied in the framework of the ForBioEnergy project and to emphasize the potential of the Mediterranean forests, both in quantity and quality, to provide these biofuels which have an opportunity for mobilization, management and added value for our forests.</p> <p>Thus, the importance of increasing the use of forest biomass in its energy valorisation for both thermal and electrical purposes, the quality standards that ensure the commercialization of a homogeneous and verifiable quality product, as well as the creation of exclusive regulations for solid biofuels.</p> <p>Therefore, special mention is made to the Spanish Association for Standardization and Certification (AENOR - Asociación Española de Normalización y Certificación) as it is the competent Spanish body dedicated to standardization and certification, being a part of the International Organization for Standardization (ISO), as well as the European Committee for Standardization (CEN).</p>

Compliance with regulations and classification within established standards improves the competitiveness of companies and encourages technological innovation.

The rules exposed in the workshop are the following:

- ISO/UNE standards:  
(woodchips) ISO 17225-1 2014, 17827-2: 2016, 18134: 2017, 18122: 2016, 18125: 2018.  
(pellet) 17225-1: 2014; 17829: 2016; 18134: 2017; 18122: 2016; 18125: 2018; 17828: 2016; 17831-2: 2016; 16994: 2015
- ENPlus® Certification
- BIOmasud ® certification

During the workshop, the field study framed in the “Influence of raw material composition of Mediterranean pinewood on pellet quality” (Lerma-Arce *et al.* 2017) study, it was put in value The processing of the samples in the laboratory was explained, together with the variables to be considered (species, bark, fraction of biomass), the interrelation between them and the maximum allowable bark contents.

#### Main criticalities

There is lack of knowledge about the forest-based bioenergy value chain. It is noted that at the level of the Comunitat Valenciana, bioenergy from forest biomass could supply 10% of all energy demand. It is really important that bioenergy be combined with other renewable energy sources such as wind, hydroelectric, geothermal and photovoltaic energy.

Concerning the raw material extracted from the silvicultural treatments of *Pinus halepensis*, *Pinus pinaster* and *Quercus ilex*, high quality woodchips can be obtained, although from this last species its percentage of ash content can negatively affect combustion or pelletization processes, as well as the final quality of the derived solid biofuels.

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On the other hand, during the workshop, systems for generating electric and thermal energy were discussed. Specifically, biomass was discussed by Rankine cycle whose approximate ratio is 1-4 or 1-5 electricity-heat, having two design options:

1. To supply the electrical need and therefore, the heat that can be used is dissipated.
2. According to the demand for heat and electricity produced or consumed or is discharged into the Electric Network.

The first case can be very inefficient if there is not enough heat consumption to dissipate the minimum possible. In the second case, electricity production may be very low if there is not high thermal consumption.

#### Main solutions

The production of pellets from debarked and without debarks of the *Pinus halepensis* and *Pinus pinaster* species, as well as their fraction of branches, is feasible. In addition, it highlights that the drying can be natural (natural

agglomerate pure wood, by natural additive of the wood that facilitates the cohesion) although normally it is in dryer.

Provided that humidity and the presence of ashes are controlled, it is possible to obtain woodchips with enough quality from these biomass harvesting systems. It is noted that the main raw material variables that affect pellet quality are the selection of the pine tree species and the percentage of bark content. The tree main species (*Pinus halepensis*, *Pinus pinaster* and *Quercus ilex*) mainly affects bulk density and mechanical durability, while bark presence mainly has influence on moisture and ash content.

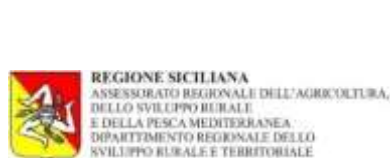
Specifically, the province of Valencia, in which these species are predominant, has abundant biomass resources that can be transformed into energy products with high added value, opening new opportunities for the development of forest-based bioenergy bioenergy chain in the protected areas of Natura 2000 at the local level. At the Mediterranean level, there is also a high potential for the use of biomass for energy purposes.

Therefore, it is really important that bioenergy be combined with other renewable energy sources such as wind, hydroelectric, geothermal and photovoltaic energy.

Finally, different Platforms are noted, such as Rhc-platorm.org (RHC; Renewable Heating & Cooling; European Technology and Innovation Platform) in general and the rhc-etc: biomass panel, in particular

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Municipality of  
Petralia Sottana



GOZDARSKI INŠTITUT SLOVENIJE  
SLOVENIAN FORESTRY INSTITUTE



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