



International Forum – Second Edition  
**BIOENERGY in EU countries – Current Status and Future Trends**

# **Fuels and Biofuels in Italy and Italian Technological Platform**

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# 1. Fuels and Biofuels in Italy

## Introduction

- ❖ The spread of biofuels is linked to the combination of a large number of factors.
- ❖ Environmental, technical, social and political factors. Each of them on global, EU, national or local level.



## Introduction

- ❖ The effects, for or against, resulting not necessarily replicated in terms of time and space.
- ❖ In other words, the spread of biofuels (necessarily linked to environmental, social and economic sustainability) should never be considered in general terms, but must always be related to specific and clearly defined circumstances of time and place.



## Forecasts for 2020

- ❖ The Italian car park will tend to stabilize at about 32.5 million current.
- ❖ Diesel cars will rise from 33% in 2007 to 43% in 2020 (about 14.1 million cars).
- ❖ Gasoline-powered automobiles will drop from 20.2 million in 2007 and 18.6 million in 2010 to about 15 million in 2020.
- ❖ Autogas and, to a lesser extent, LPG cars will tend to grow.
- ❖ New generation of cars will spread after 2015.



<b>Cars (x 10<sup>3</sup>)</b>	<b>2015</b>	<b>2020</b>
<b>Electric</b>	<b>10</b>	<b>50</b>
<b>Hybrid</b>	<b>30</b>	<b>590</b>
<b>Fuel cells</b>	<b>100</b>	<b>380</b>
<b>Liquid hydrogen</b>	<b>?</b>	<b>10</b>
<b>Total</b>	<b>≈ 140</b>	<b>≈ 1.030</b>

Source: Italian oil union, 2008, modified.



## Mobility in Italy

Years	Distance traveled by cars (km x 10 <sup>3</sup> )		Consumption (l x km <sup>-1</sup> )	
	gasoline	diesel	gasoline	diesel
2007	9,4	18,3	15,0	17,5
2010	8,7	17,0	15,3	18,0
2015	7,7	14,8	15,3	18,5
2020	7,5	14,3	15,4	19,0

There is a gradual decline in annual average mileage and improved efficiency

Source: Italian oil union, 2008, modified.



## Fuel consumption in Italy

<b>Years</b>	<b>Unleaded (t x 10<sup>6</sup>)</b>	<b>Diesel (t x 10<sup>6</sup>)</b>
<b>2000</b>	<b>12,0</b>	<b>18,3</b>
<b>2001</b>	<b>13,3</b>	<b>20,1</b>
<b>2002</b>	<b>16,1</b>	<b>21,5</b>
<b>2003</b>	<b>15,4</b>	<b>22,4</b>
<b>2004</b>	<b>14,5</b>	<b>23,9</b>
<b>2005</b>	<b>13,5</b>	<b>24,4</b>
<b>2006</b>	<b>12,7</b>	<b>25,5</b>
<b>2007</b>	<b>11,9</b>	<b>26,2</b>
<b>2008</b>	<b>11,0</b>	<b>26,0</b>
<b>2009</b>	<b>10,6</b>	<b>25,4</b>

Tendency to decrease in gasoline consumption and increase those of diesel

Source: ACI, data from the Ministry of Economy



## Consumption of fuel for vehicles (million tonnes)

	Years			
Fuel	2005	2010	2015	2020
unleaded	13,6	10,2	8,6	8,2
diesel	24,4	27,1	25,9	25,4
<b>Total</b>	<b>38,0</b>	<b>37,3</b>	<b>34,5</b>	<b>33,6</b>

Source: Italian oil union





## Demand for biofuels in Italy

Years	Total fuels (m <sup>3</sup> x 10 <sup>3</sup> )	Biofuels		Partition		
		(m <sup>3</sup> x 10 <sup>3</sup> )	on total (%)	Biodiesel (%)	ETBE (%)	Bioethanol (%)
2000	52.240	40	0,07	100	-	-
2005	54.680	210	0,38	100	-	-
2010	50.840	1.325	2,61	100	-	-
2015	52.630	3.120	5,93	65	20	15
2020	52.170	5.190	9,95	66	20	14

Source: Italian oil union

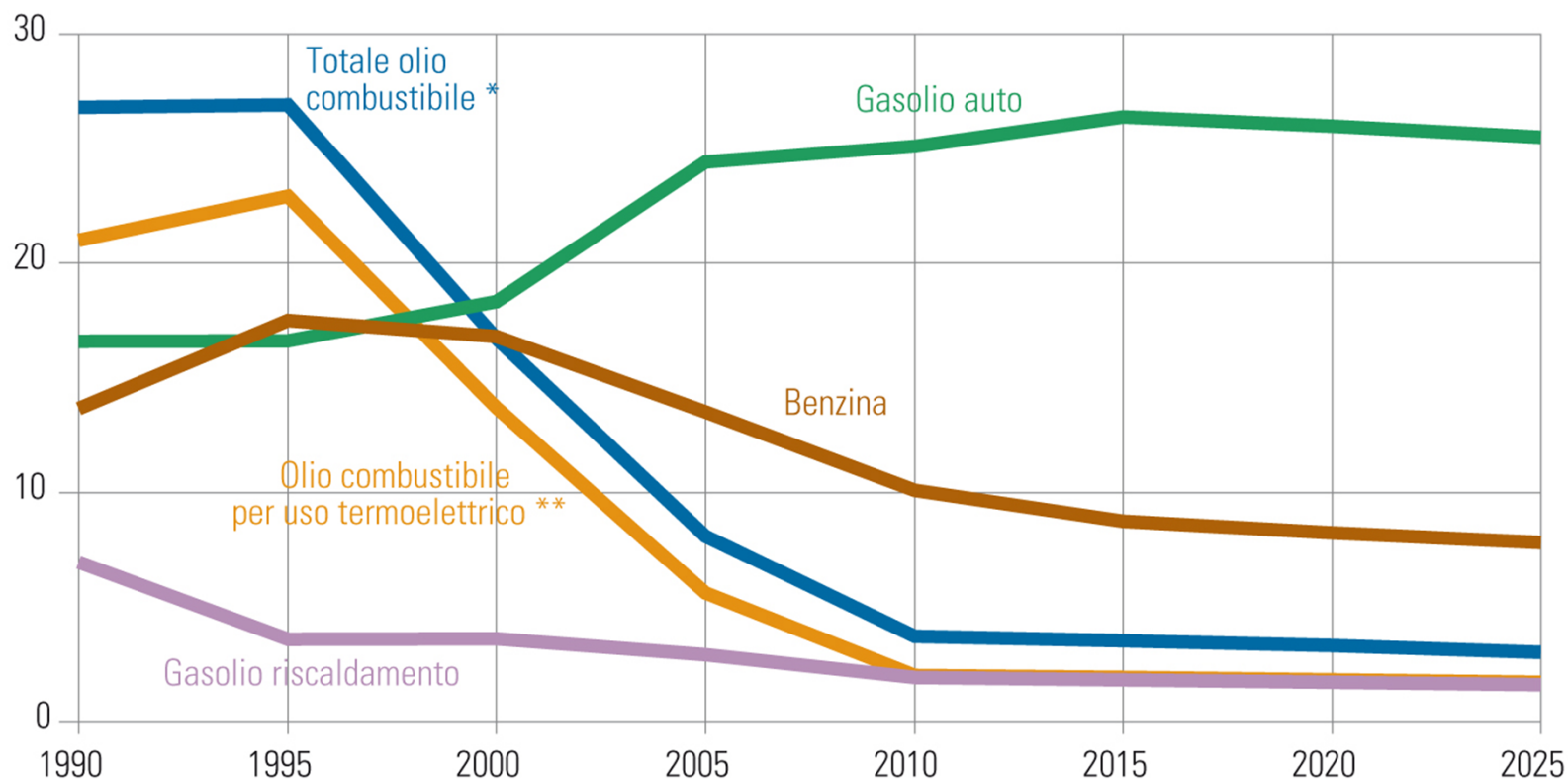


# Forecast of domestic demand of major oil products (million tonnes)



## PREVISIONE DI DOMANDA INTERNA DEI PRINCIPALI PRODOTTI PETROLIFERI

[Milioni di tonnellate]



(\*) Esclusi bunkeraggi e fabbisogni petrolchimica.

(\*\*) Esclusa autoproduzione da parte dell'industria.

Fonte: UP



## Italian territory

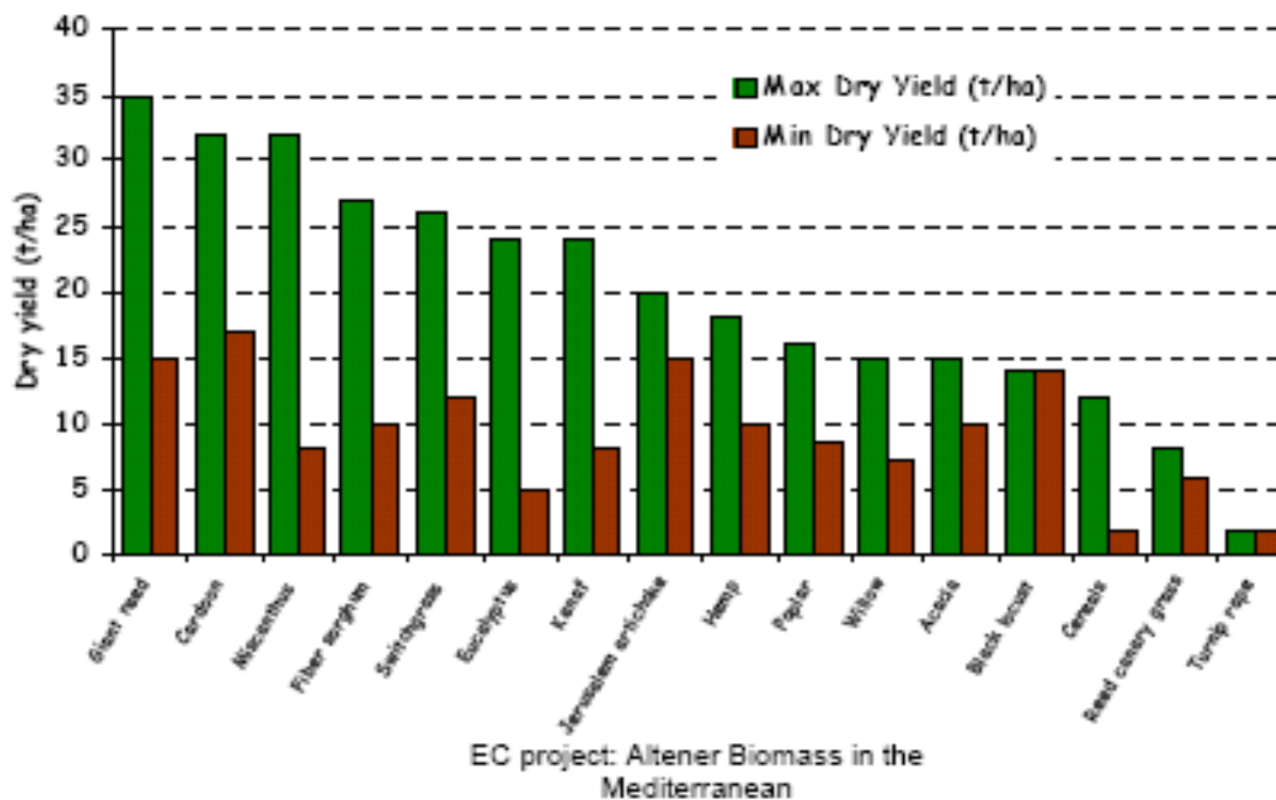
	ha x 10 <sup>3</sup>	%
Useful agricultural area (SAU) :		
- arable land	8.804	29,2
- woody crops permanent	2.898	9,6
- meadows and permanent grassland	4.133	13,7
Forest	4.524	15,0
Marginal land	2.262	7,5
Rest of territory	7.513	25,0
Total	30.134	100,0

Useful agricultural area (SAU), with 15,8 million hectares, reaches 52.5% of the national territory

Source: ISTAT, census 2000



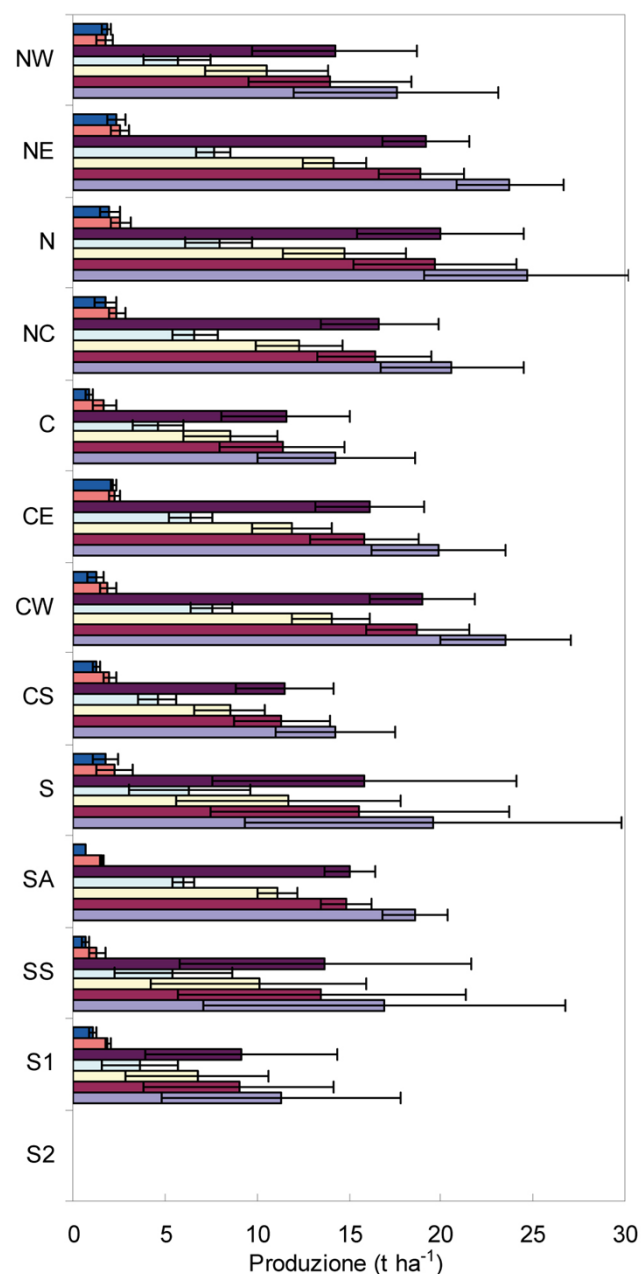
## Yielding potential of energy crops in EU25



Source: Panoutsou, 2006



## Production potential and relative standard deviations (t ha<sup>-1</sup> DM) in different Italian ecological soil areas



- Colza
- Girasole
- Sorgo
- Cardo
- Panico
- Miscanto
- Arundo

Standard deviations are calculated on the average production of the provinces included in the area. S2 was not regarded as having no land to corn sufficiently representative.

Source: Survey of the productivity of energy crops in Italy and analysis of their market, ENEA, Ministry of Economic Development, Report RSE/2009/49, April 2009



**Average last 5 years  
(2006-2010)**

Species	Cultivated area (ha x 10 <sup>3</sup> )	Crop production		Biofuel production	
		real (t ha <sup>-1</sup> )	medium range (t ha <sup>-1</sup> )	likely (liters ha <sup>-1</sup> )	range (liters ha <sup>-1</sup> )
<b><u>Carbohydrates crops</u></b>					
Wheat	1.993	3,7	1,3-6,5	1.400	500-2.300
Barley	329	3,1	1,3-6,2	1.300	400-2.200
Corn	1.017	9,1	3,2-12,3	2.850	1.200-4.500
Grain sorghum	38	6,0	2,0-8,7	1.850	700-3.000
Beet	72	54,6	34,5-66,4	4.500	3.000-6.000
<b><u>Lignocellulosic crops</u></b>					
Sorghum fiber	-	-	15-30	5.000	3.500-7.000
Arundo	-	-	15-35	7.500	4.500-10.500
Miscanto	-	-	15-30	6.750	4.500-9.000
Switchgrass	-	-	10-25	5.250	3.000-7.500
Carduus	-	-	10-20	4.500	3.000-6.000
Populus	-	-	9-22	6.500	3.500-10.000
Salix	-	-	9-19	5.500	3.000-8.000
Robinia	-	-	10-13	4.000	3.500-4.500
Eucalyptus	-	-	5-15	3.500	2.000-5.000
<b><u>Oil crops</u></b>					
Rapeseed	13	2,2	0,3-3,1	650	100-1.200
Sunflower	122	2,1	0,8-3,8	1.050	300-1.800
Soybean	143	3,3	2,9-4,6	700	500-900



## Area needed to meet the demand for single-crop biofuels



Species	Year 2010 (2,61%) (ha x 10 <sup>3</sup> )	Year 2015 (5,93%) (ha x 10 <sup>3</sup> )	Year 2020 (9,95%) (ha x 10 <sup>3</sup> )
<b><u>Carbohydrates crops</u></b>			
Wheat	-	860	1.350
Barley	-	1.060	1.650
Corn	-	340	520
Grain sorghum	-	540	830
Beet	-	230	360
<b><u>Lignocellulosic crops</u></b>			
Sorghum fiber	-	230	690
Arundo	-	150	460
Miscanto	-	170	510
Switchgrass	-	215	650
Carduus	-	250	760
Populus	-	175	530
Salix	-	205	625
Robinia	-	280	860
Eucalyptus	-	325	980
<b><u>Oil crops</u></b>			
Rapeseed	1.740	2.690	4.370
Sunflower	1.550	2.400	3.900
Soybean	2.260	3.500	5.680



## 2. Italian Technological Platform

- ❖ Biofuels Italy was created in 2007 on the initiative of the University of Bologna.
- ❖ Promoters (University of Bologna, Itabia, Centro Ricerche FIAT, Magneti Marelli, ENI, ENEA, Assocostieri, Assodistil, Lyondell, Confagricoltura, also representing Coldiretti and CIA) in 2007 have formed the Executive Committee and later Board.
- ❖ They developed the structure, divided as in Europe, agreed the Memorandum of Understanding and Mission.





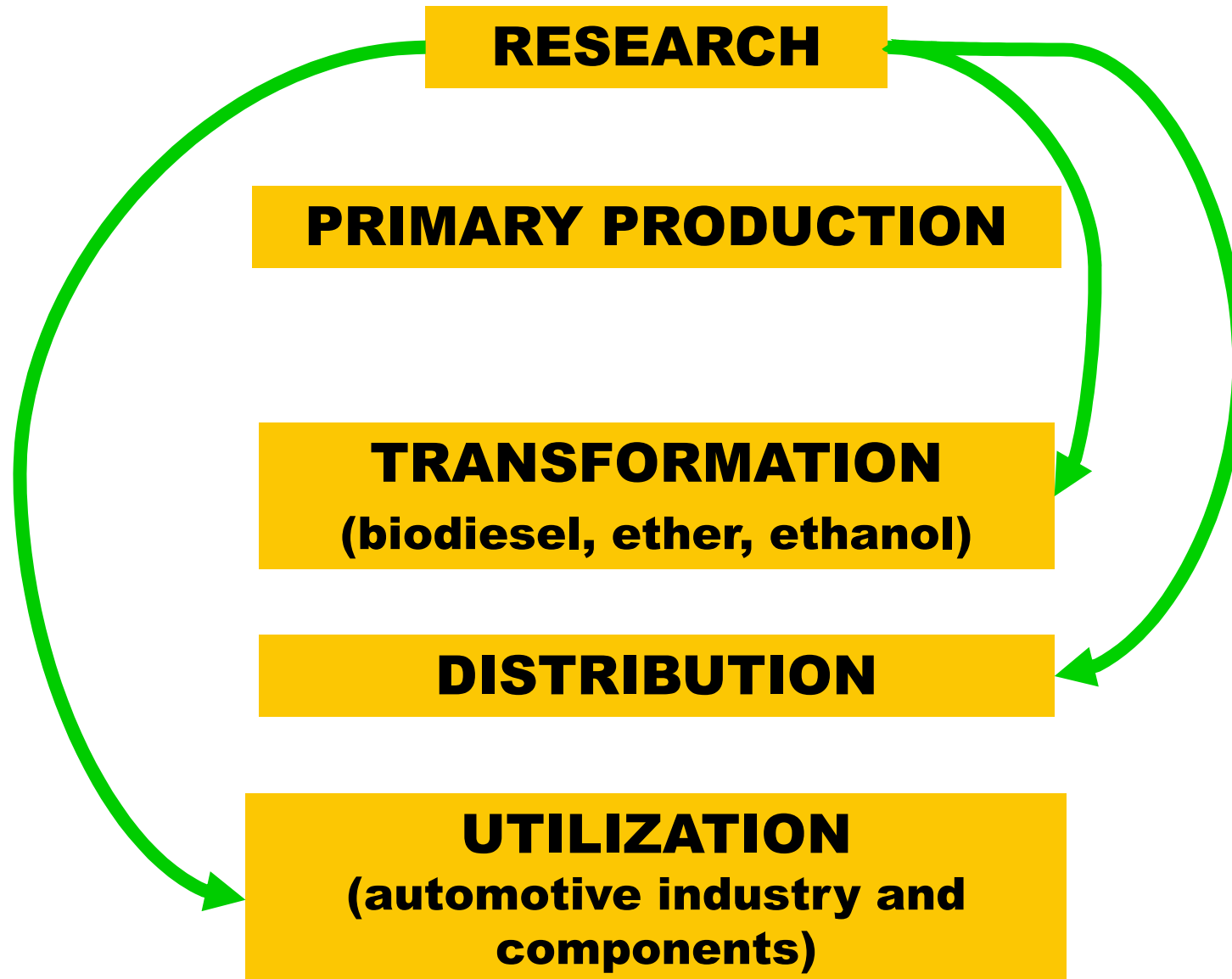
- ❖ The Platform is a forum open to anyone - individuals or legal entities - who are interested in the development of sustainable biofuels in a systemic vision of energy, environment and productive activities.
- ❖ Therefore Biofuels Italy includes representatives of agricultural organizations, industrial research, also involving trade associations. Representatives of these organizations are qualified experts able to contribute to the objectives of the Platform through a professional and consultancy activities and promotion .



- ❖ The intense activity in preparation for 2007, which allowed also to identify the initial nucleus of the Scientific Committee, resulted in the organization of the Plenary Assembly of the stakeholders and launch the Platform .
- ❖ The Plenary Assembly (2007, 12<sup>th</sup> december) has formalized the appointment of members and coordinators of the five working groups, as well as that of the General Coordinator of the Scientific Committee .
- ❖ The launch took place on January 28, in the classroom apse of S. Lucia, University of Bologna, in the presence of the Italian Minister of Agriculture and EU leaders at the highest level .



- ❖ It has been presented the platform illustrating the structure, organization, objectives and programs .
- ❖ The Italian platform is essentially based on voluntary membership of the Steering Committee and Scientific Council .
- ❖ The Steering Committee reflects the entire value chain, with the participation of key components, bound together by the research: from agricultural production to use, through the stages of processing and distribution .





<b>Research</b>	University of Bologna	Prof. Gianpietro Venturi (Chairman)
	ENEA	Dott. Vito Pignatelli
<b>Agricultural producers and associations</b>	Confagricoltura (Coldiretti and CIA)	Dott. Marco Caliceti
	ITABIA (Italian Biomass Association)	Ing. Giuseppe Caserta (provvisory) (Co-chairman)
<b>Biodiesel – ethanol, ethers producers</b>	Assocostieri (Union of biodiesel producers)	Dott. M. Rosaria Di Somma
	Ethanol producers	Ing. Roberto Scavone
	Lyondell	Dott. Walter Mirabella
<b>Users: distribution, vehicle industry, components</b>	ENI	Ing. Aldo Bosetti
	FIAT Research	Dott.ssa Silvia Ricchiuto (provvisory)
	MAGNETI MARELLI	Dott. Marco Piraccini (Co-chairman)



**Divided into 5 working groups (WG), as European PT,  
Responsible scientific G. Riva – Polytechnic University of Marche**

### **BIOMASS**

- L. Cosentino (chairman) Univ. Catania**
- **P. Cavrini (vice) Confcooperative**
  - **R. Manfredini (vice) Coldiretti**

### **CONVERSION**

- L. Amatruda (chairman) NOVAOL**
- M. Ricci (vice) Univ. Roma**
- R. Scavone (vice) Bertolino**

### **ECONOMICS**

- R. Deserti (chairman) MiPAF**
- A. Zezza (vice) INEA**

### **SUSTENIBILITY**

- C. Clini (chairman) Ministero dell' Ambiente**
- G. Mosca (vice) Univ. Padova**
- B. Croce (vice) LEGAMBIENTE**

### **UTILIZATION**

- F. Del Manso (chairman) UNIONE PETROLIFERA**
- M.V. Prati (vice) CNR Napoli**
- M. Mattei (vice) UNACOMA**



## The Platform

- ❖ By its very composition, it collaborates with the different components of the supply chain.
- ❖ Through its members is connected with the European Platform (with members participating in the Steering Committee and Working Groups).
- ❖ Through members participating in international projects has contacts with research centers and foreign colleagues.
- ❖ Some members of the Board of Directors and of Scientific Council are part of important National and European Committees.



- ❖ He has good contacts with the Ministry of Agriculture and to a lesser extent with those of the Environment and Production Activities .
- ❖ He established relations with the regions that have already appointed two representatives (Tuscany and Umbria regions) in the Mirror Group.
- ❖ It established a task force organized at the ENEA (December 20, 2010) a panel discussion with the Ministries in order to discuss and complete the document that Italy, like all Member States should complete within the year the transposition of directives and FQD RES.





## Future activities

The Platform aims to develop all initiatives aimed at encouraging the development of biofuels, and research, dissemination, demonstrations etc. In particular:

- ❖ Specific studies of the working groups of the Scientific Board.
- ❖ Dispensation of information within and outside the platform.
- ❖ Development of partnerships and synergies to improve the system.
- ❖ Correct information to the public.
- ❖ Action on decision makers (ministries, regions, etc..) and support for the enactment of regulations, frameworks, etc.
- ❖ Presentation at the European level, a unique entry in the country in relation to the entire chain.
- ❖ Organization of symposia, conferences, etc.
- ❖ Preparation of Research and Development.
- ❖ Expansion of the site prepared by the University.



# *THANK YOU FOR YOUR ATTENTION*

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[biofuelsitaliatp.it](http://biofuelsitaliatp.it) (Piattaforma italiana biofuels)

