

Bioenergy development: Perspectives and Barriers”
Padova, 20th April 2007

*Biomass in Italy:
current utilization and perspectives*
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Sources of data:

ENEA, CTI, Regione Lombardia, UNCEM, Assitol, ITABIA

Worked out by

ITABIA
The Italian Biomass Association

On behalf of the

AEBIOM
European Biomass Association

For the EU Project

KEY ISSUES FOR RENEWABLE HEAT IN EUROPE

BIOMASS TYPES

- Solid biomass
- MSW
- ISW
- Biogas
- Liquid biomass

BIOMASS PRIMARY ENERGY BALANCE IN ITALY

- **Present Availability of Primary Biomass Energy produced on national land :**
20-25 Mtoe/y
- **Accessible potential at present:**
13-15 Mtoe/y
- **Total Biomass Primary Energy Supply (TBPES) in the last couple of years** (*including non-commercial domestic biomass and feedstocks imported from abroad*)
7-8 Mtoe/y
(3-4 % of the national TPES)

**SHARE OF BIOMASS TYPES
IN TOTAL BIOMASS ENERGY SUPPLY**

Biomass	Percentage in total biomass	Origin
Solid biomass	70-80	Wood from domestic and foreign trade; agri-forestal and industry residues
MSW and ISW	15-18	Waste management Companies
Biogas	4-5	Livestock and urban effluents, wet fractions of MSW, landfills
Liquid biomass	3-4	Over 70% of raw material is imported

END USES OF BIOMASS PRIMARY ENERGY

Final energy	Percentage in TB PES %	Users	Contribution to global national need (%)
Heat	65 -70	Household	9-10
Electricity	30-32	National grid	1-2
Transport: biodiesel	3 - 4	Diesel enhancer	0.5

MATURE TECHNOLOGY CHAINS

Solid biomass

1. Small household appliances
2. District heating
3. Small co-generation
4. Thermal energy from self-produced agro-industry residues
5. Power plants
6. Trigeneration

Biogas

7. Thermal energy and co-generation

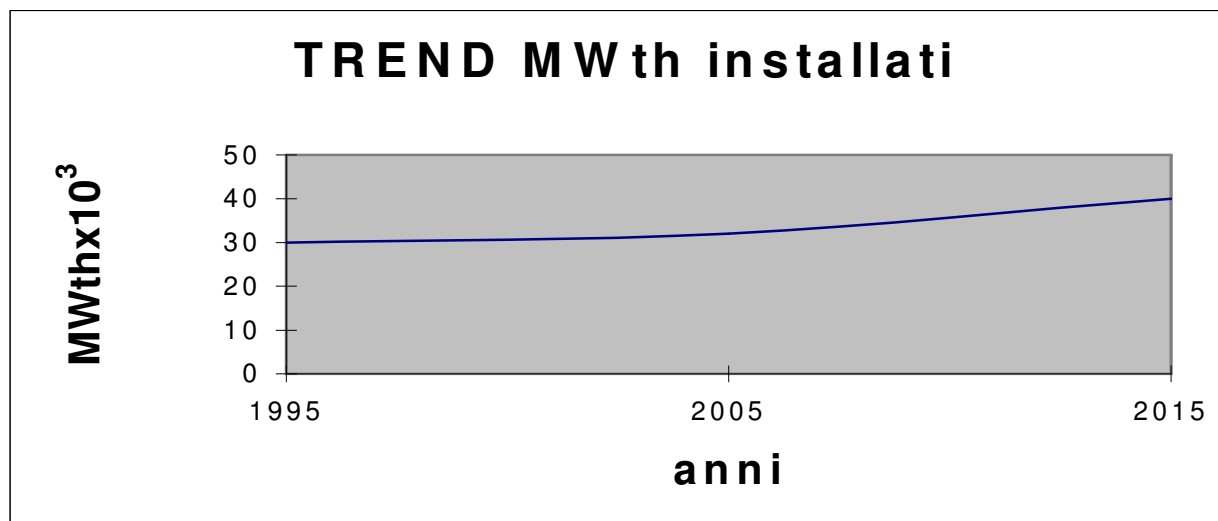
Liquid biomass

8. Electric energy and co-generation
9. Biodiesel as gasoil enhancer

Present status and prospects: solid biomass

1) Small household appliances

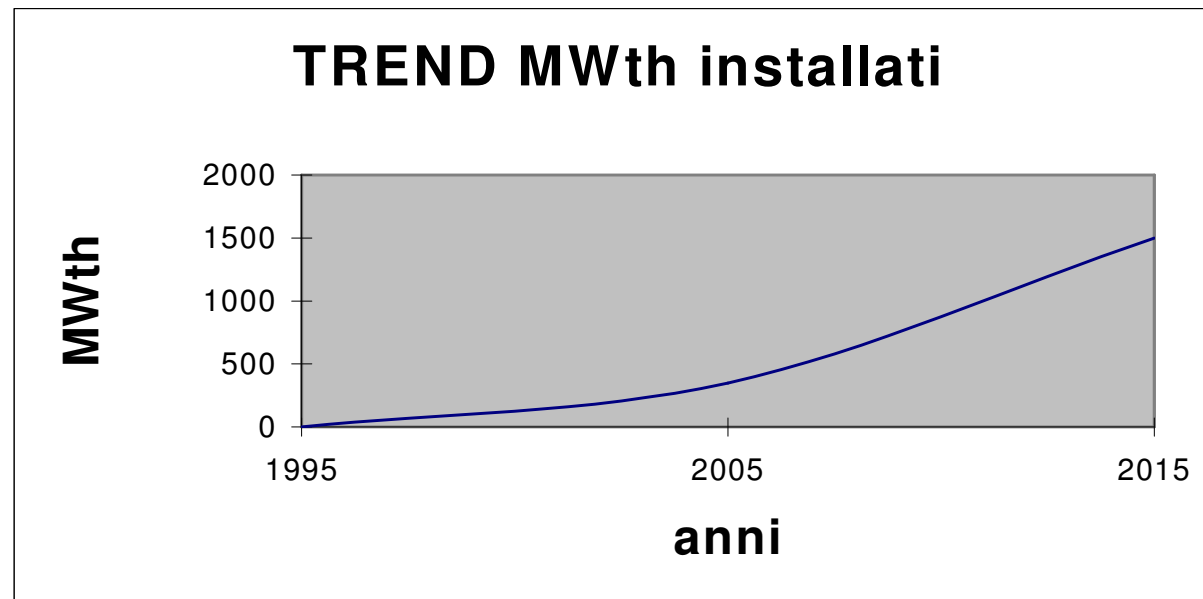
N° of plants	MWth	N° users
6 mln	30,000	mln



Present status and prospects: solid biomass

2) District heating

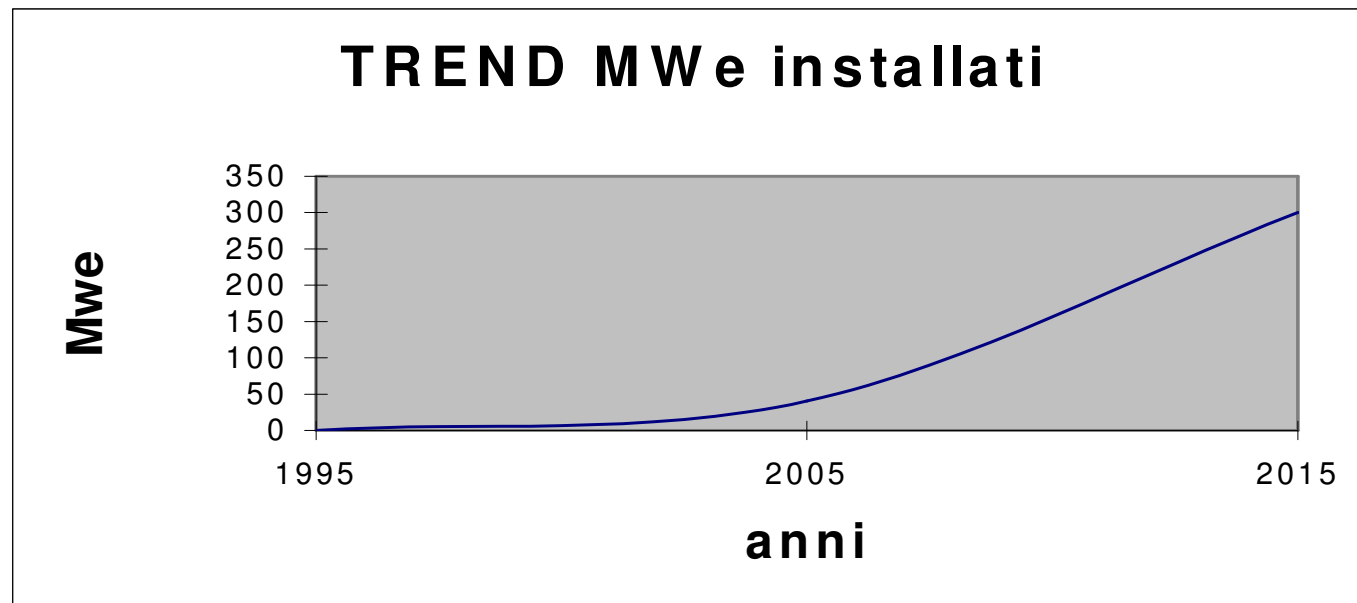
N° of plants	MWth	N° of users
60	400	thousands



Present status and prospects: solid biomass

3) Small co-generation

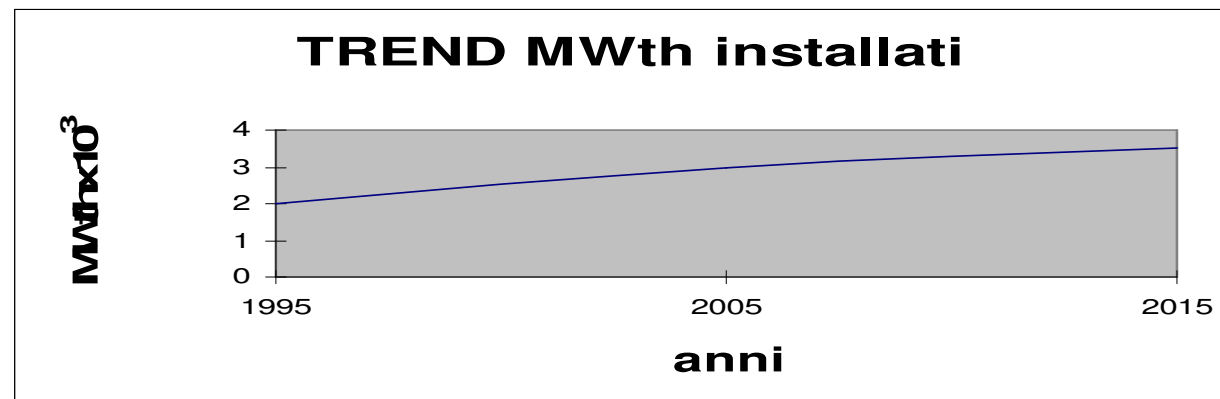
- A few tens of MWe installed at present, but great expectation for the future



Present status and prospects: solid biomass

4) Thermal energy from self-produced agro-industry residues

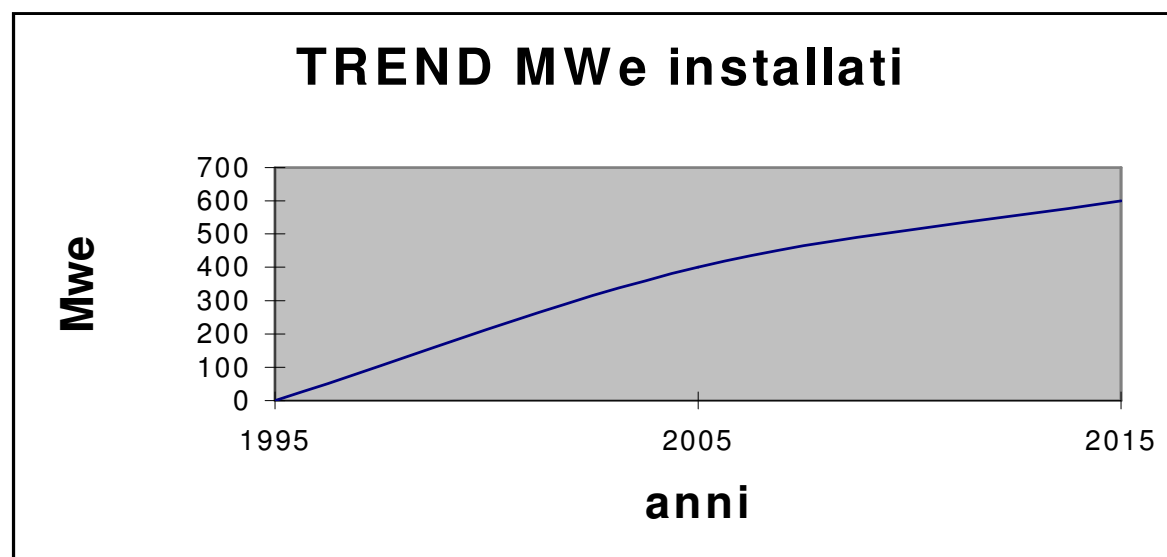
N° of plants	MWth
1,500	3,000



Present status and prospects: solid biomass

5) Power plants fed with pellets and chips

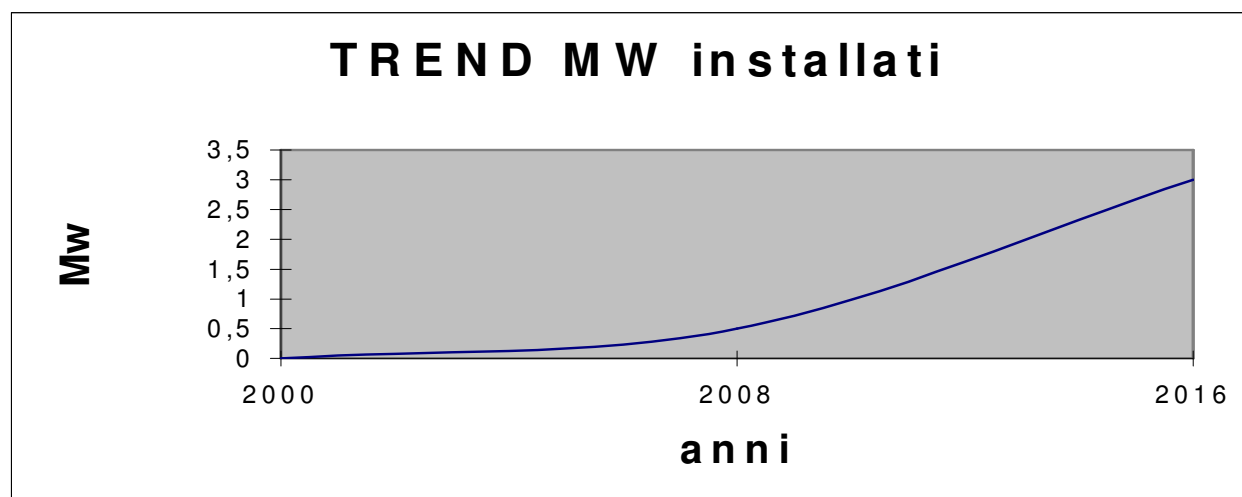
N° of plants	MWe	Users
40	350	domestic grid



Present status and prospects: solid biomass

6) Trigeneration from lignocellulosics

- Some hundreds of kW are installed at present, but the potential is high, especially in the space cooling sector and the conservation of agriculture produces.

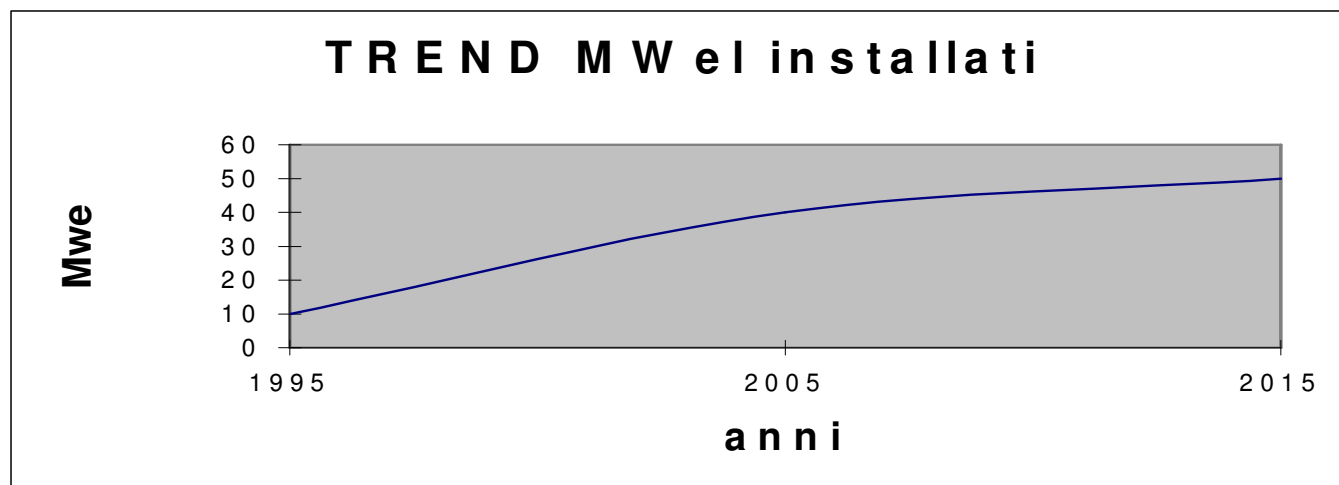


Present status and prospects: biogas

7) Thermal energy and co-generation from biogas

- About 100 plants are installed for production of thermal energy used for the space heating of the breeding.
- A few tens of plants produce also electric energy.

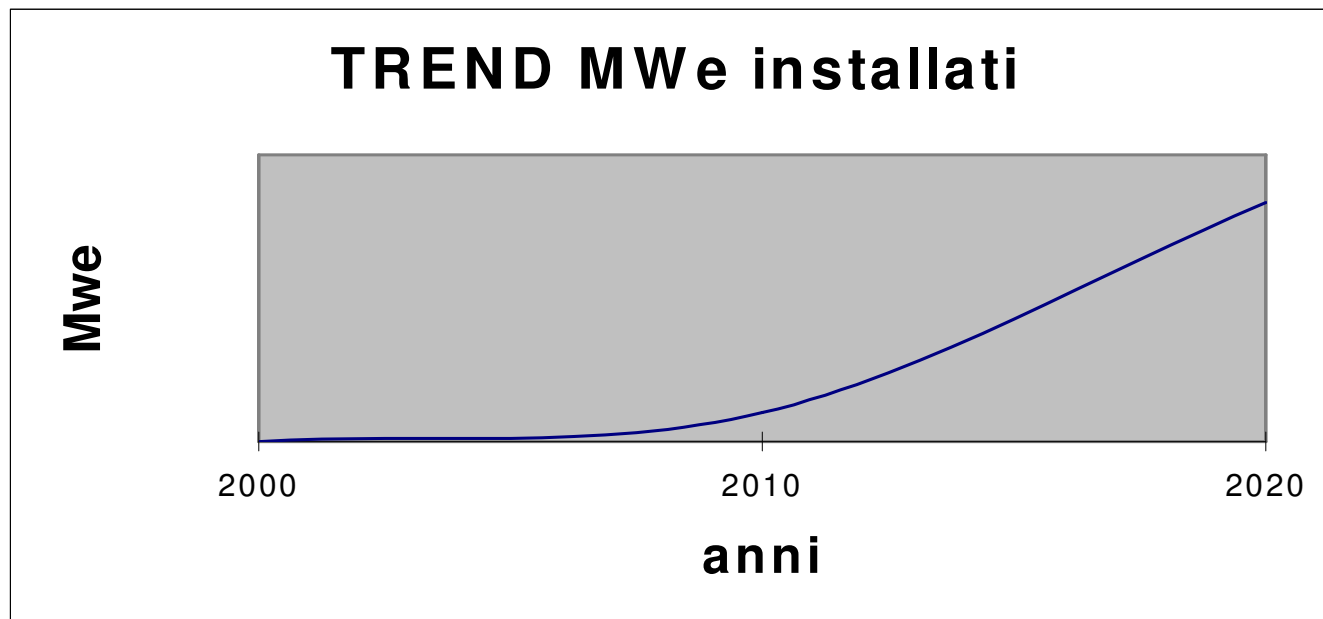
N° of plants	MWe	Users
23	42	Domestic grid



Present status and prospects: liquid biomass

8) Electric energy and co-generation from liquid biofuels

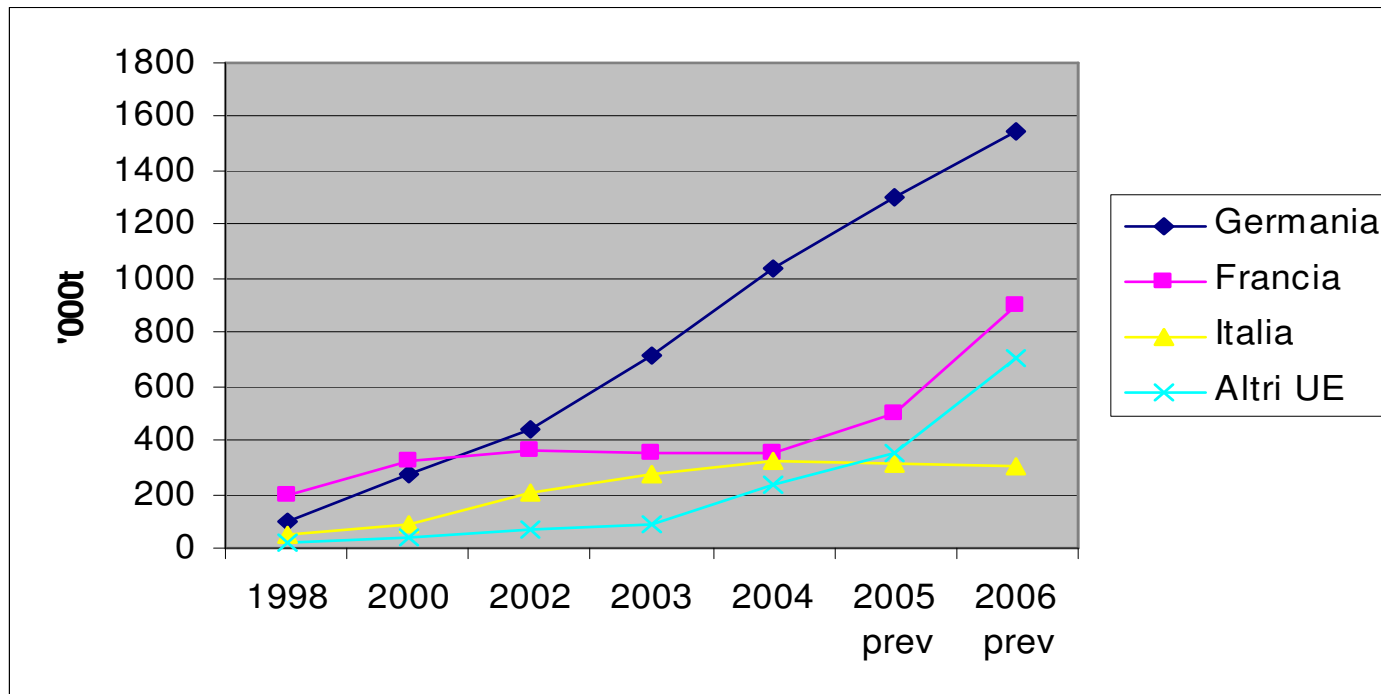
- A few tens of MWe installed at present, but great expectation for the future



Present status and prospects: biodiesel

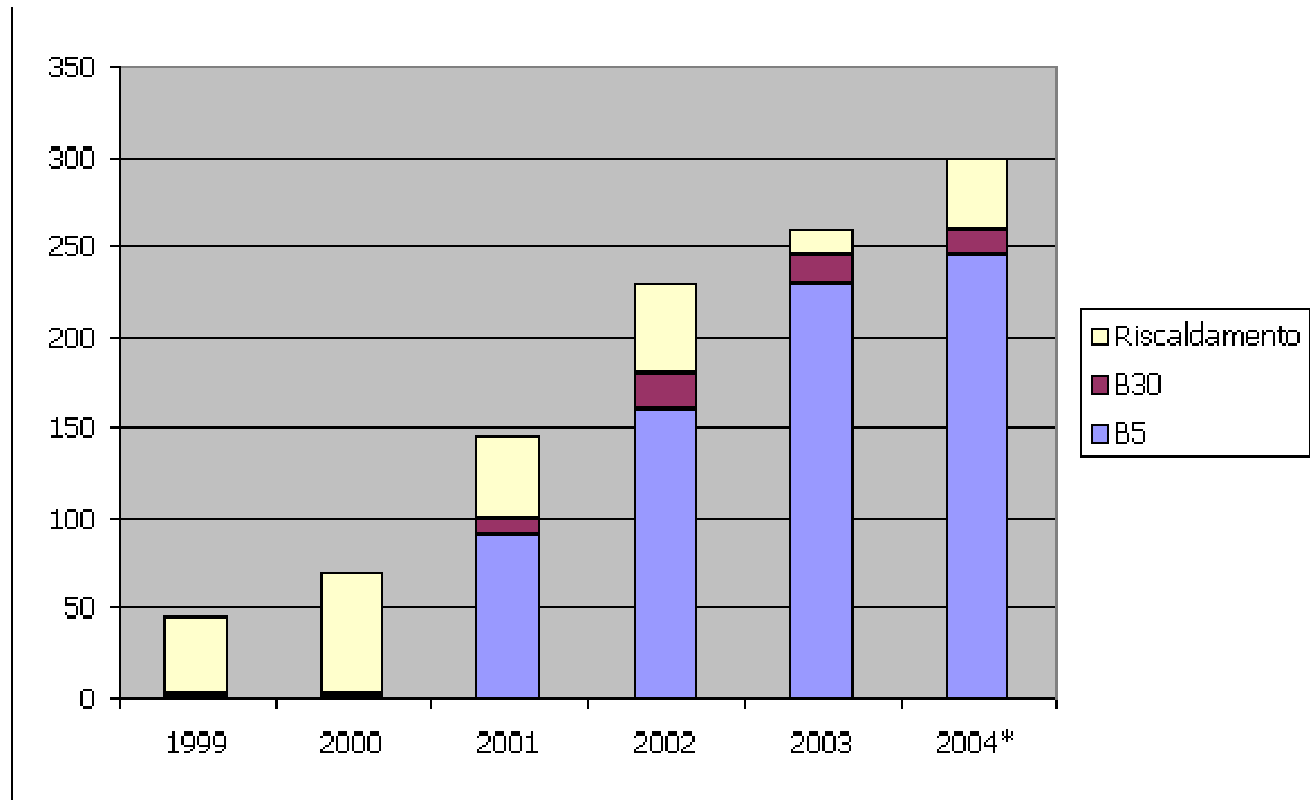
9) Production of biodiesel in Italy in comparison with other EU Countries

Source: Assitol 2006



End use of biodiesel in Italy

Present status and prospects



GLOBAL NEAR TERM PROSPECTS

(all biomass)

- **Mean annual grow rate (2000/2004):**
14-15%
- **Expectation at 2010-2015:**
16-18 Mtoe
- **Further contribution from dedicated agro-forestry cultures**
5 Mtoe/y

MAIN PRE-CONDITIONS FOR A SUSTAINABLE DEPLOYMENT

- 1. Clear and consolidated legislation**
- 2. Standardization and chains' certification**
- 3. Re-organisation of agriculture and forestry**
- 4. Pushing on profitable projects**
- 5. Stimulating demand**
- 6. System approach**

1. Legislation

Present Status:

- *More than 60 laws and decrees have direct and indirect connection with bioenergy, generating confusion and uncertainty.*
- *Partial adoption of EU Directives.*

Future Requirements:

- *New biomass action plan, in the frame of EU directives.*
- *Consolidated statutes for procedures.*
- *Specific incentives for biomass detached from other RES.*

2. Standardization and chains' certification

Present Status:

- *Many rules concerning solid biomass.*
- *Very few concerning liquid and gaseous biofuels.*
- *Sectorial certification.*

Requirements:

- *Additional standard for biodiesel and biogas.*
- *Certification of the whole biomass chain from production to end use.*

3. Re-organization of agri-forestry sector

Present status:

- *A non-food agriculture policy is missing.*
- *About 2 mln ha of low productive and surplus lands are abandoned.*
- *Modern forestry is not practiced.*

Future requirement:

- *Integrating the energy use of biomass with non-food agriculture.*
- *Forming modern forestall enterprises.*
- *Integrating biomass production with land protection.*

4. Pushing on profitable projects

Present Status:

- *Limited access to innovative individual heating devices, as well as to district heating and cooling systems.*
- *Unnatural approach to bioelectricity, wasting 75-80% of biomass energy content.*
- *No bioethanol production.*

Future Requirements:

- *Adoption of combined heat and power production (co-generation).*
- *Burning biomass in mixture with fossil fuels (co-firing).*
- *Use, by little adjustments, already existing plants (retrofitting).*
- *Activation of bioethanol chain.*

5. Stimulating demand

Present status:

- *Unawareness of environmental benefit.*
- *Lacking of levy policy.*
- *Lacking of product standards.*

Future Requirements:

- *Information campaign.*
- *Relieving levies, through fiscal bonus and VAT reduction.*
- *Securing concrete benefits.*

6. System approach

Present status:

- *Unilateral approach to bioenergy*

Future requirement:

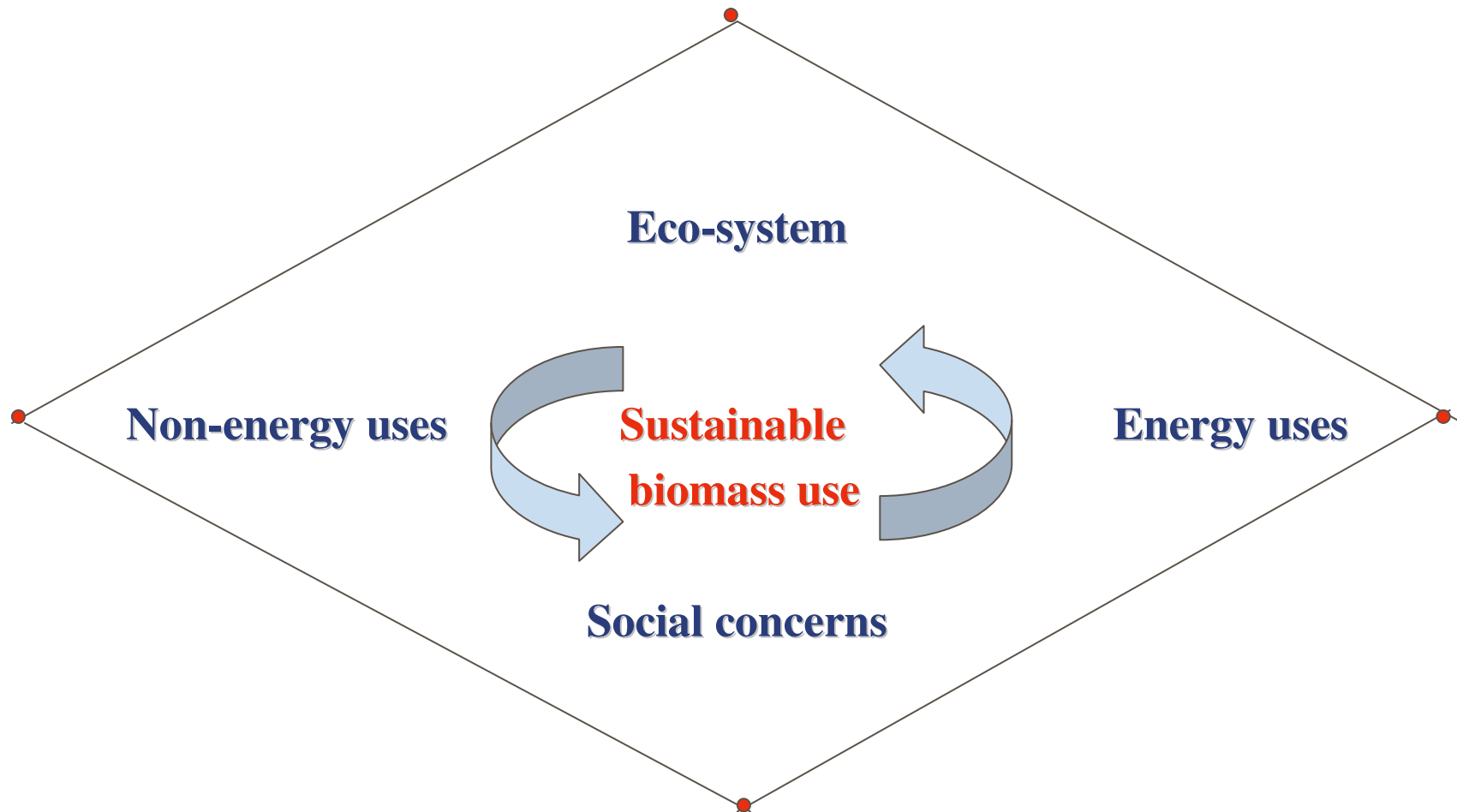
High integration with

- *Many different non-energy uses
(food, fiber, fertilizers)*

- *Eco-system preservation and land protection
(restoring organic matter in the soils, reclaiming
abandoned land, sequestering CO₂, etc.)*

- *Facing socio-economic concerns
(compatibility with local needs and expectations)*

An intercrossing approach to bioenergy deployment



**To get more information, as well as to join ITABIA,
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