



# The Italian Case Study

Expo Athens exhibition centre  
Heating With Biomass in the Tertiary Sector  
Athens 7 April 2011  
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# Contents of this Presentation



- The Biomass situation in Italy at national and regional level
  - Legislative framework
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- The regional case studies (overview)



# National Programs and Strategies -1



- The renewable energy policy activity carried out by Italy during the last ten years appears to be fragmental and not well coordinated
- During the year 1998 and 1999 were issued two important documents: the *“National Program of Renewable Energy from Biomasses”* and the *National program for the utilization of the agricultural and forest biomasses.*
- Unfortunately, from that date, no new strategic and comprehensive plan has been issued apart the *“National Action Plan for Renewable Energy”* (June 2010) that is a good initiative but that deals with the Biomasses only marginally



## National Programs and Strategies - 2



- Actually several legislative proposals directly or indirectly related to bio-energies are currently under discussion in the Italian Parliament
- They deal with provisions to encourage the production and use of biofuels as well as the development and enhancement of agro-energy production
- A Commission of the Deputies Chamber is currently working to harmonize in a unique law text all these provisions with the aim to:
  - set a national bio-energy plan
  - foster the development of agricultural and bio energy districts
  - promote sectoral agreements between the main territorial operators (agricultural and forestry companies, transport and distribution companies, energy plants managers) by favoring the development of short range production chains



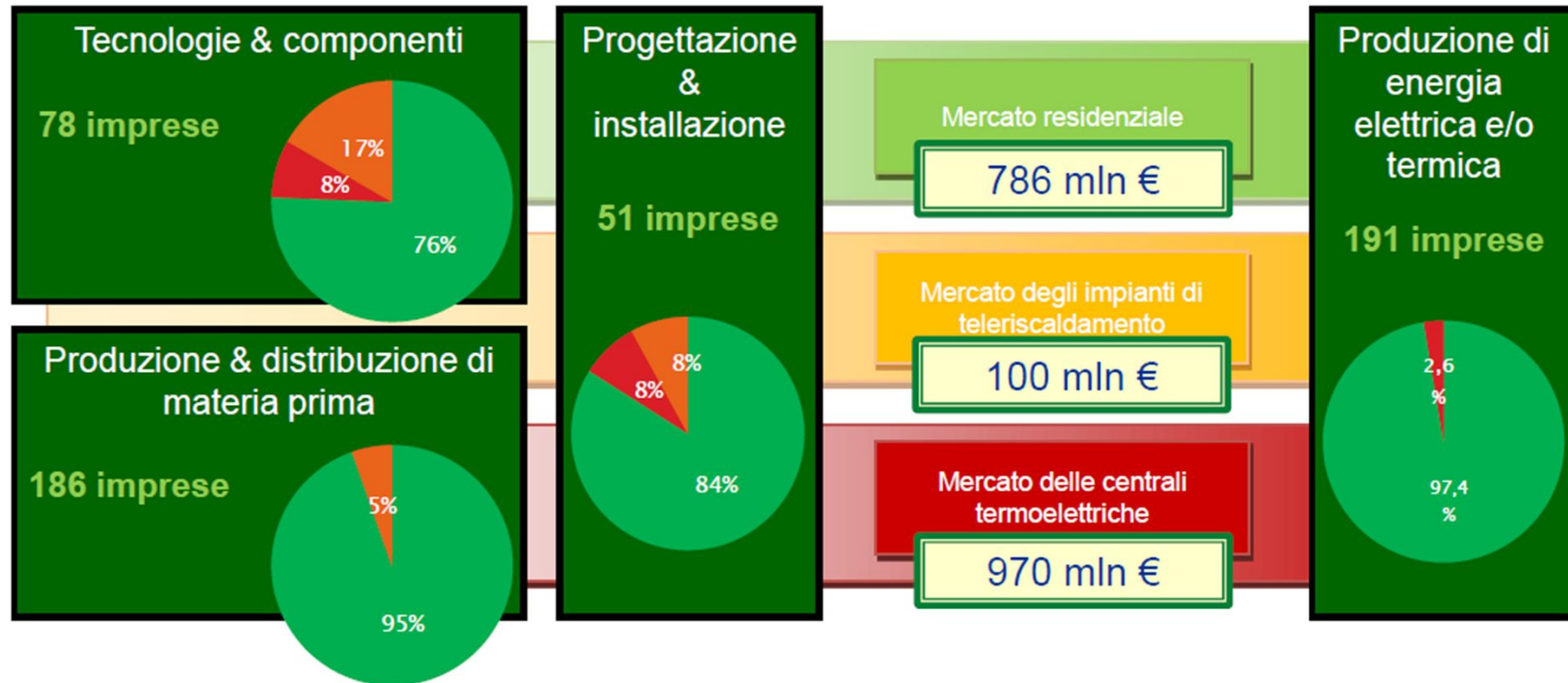
# Biomass market and production - 1



- During the year 2009, the agricultural and forestry biomasses have contributed to the production of primary energy in Italy for a total of 5.2 Mtoe (equivalent to 60.5 TWh thermal production or 23,6 TWh of electricity), corresponding to approximately 2.7% of the overall Italian energy demand (PHV 0,05%, Wind 0,6%)
- The bulk of this production is relative to the thermal energy production both for residential heating uses or district heating plants, which in 2009 has weighed approximately 76% of the total biomass energy use
- Nonetheless the objectives indicated in the aforementioned national plans envisaged a production of 8-10 Mtoe in 2010, that is, the double of the actual production of 2009
- Poor coordination, not effective implementation measures as well as the economic crises of the beginning of the years 2000 and that of the current years have severely hindered the achievement of this goal.



# The agro-forestry industrial chain in Italy

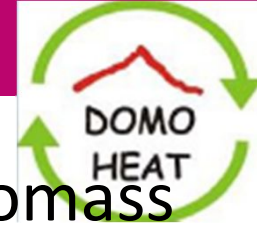


- impresa italiana
- impresa estera con filiale italiana
- impresa estera

Source: Biomass energy report, Milan Polytechnic, 2009



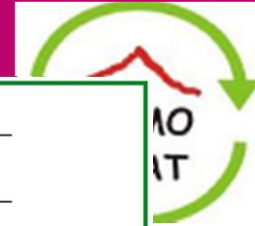
## Biomass market and production - 2



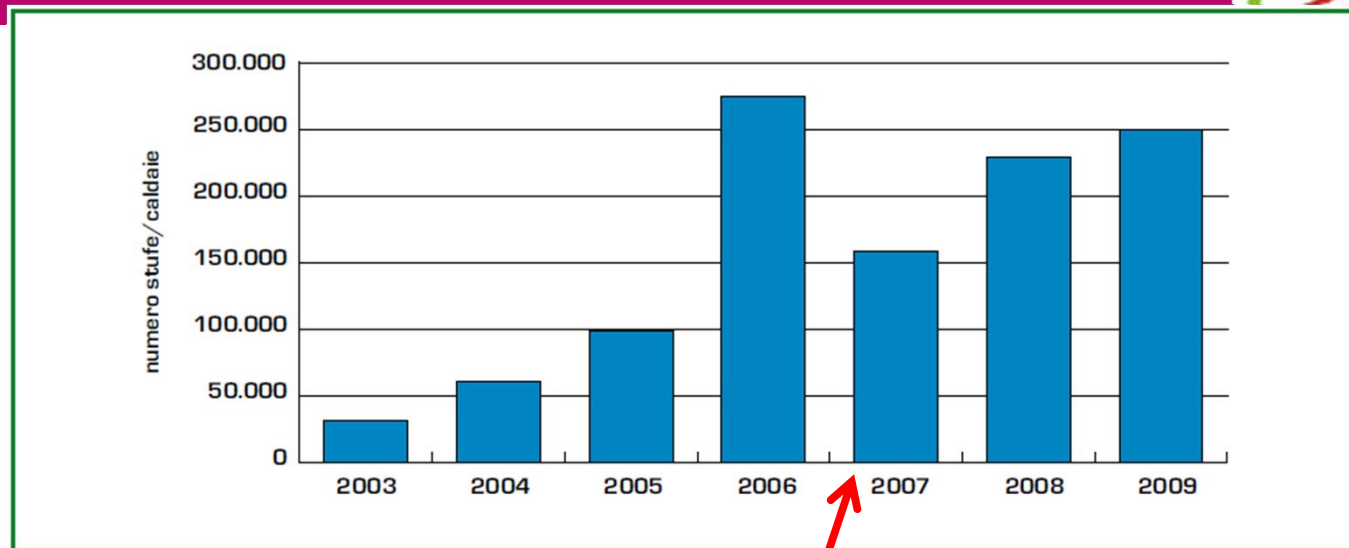
- In Italy the thermal energy production from biomass can be roughly divided in two classes:
  - **residential boilers**, that is, stoves or pellet boilers of size normally less than 1 MWt that normally substitute or integrate the heating system of a single residential unit, multiple apartments, or small offices and small commercial facilities
  - **district heating systems** having, on average, a size between 0,5 and 20 MWt and are used to supply heat to the users connected to the network (for example, individual residential units, schools, offices, hospitals, etc.)



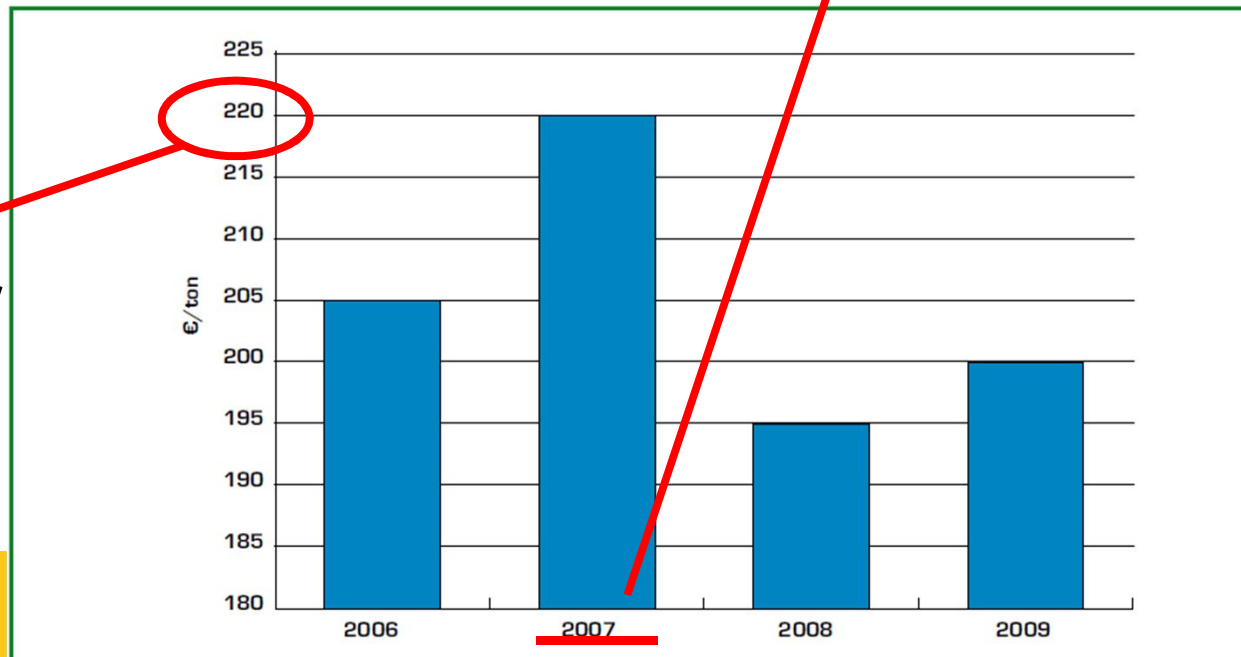
# Number of sold boiler pellets and pellets price trend



**1.000.000**  
of  
installed  
pellets  
boiler



**220**  
Euro/year



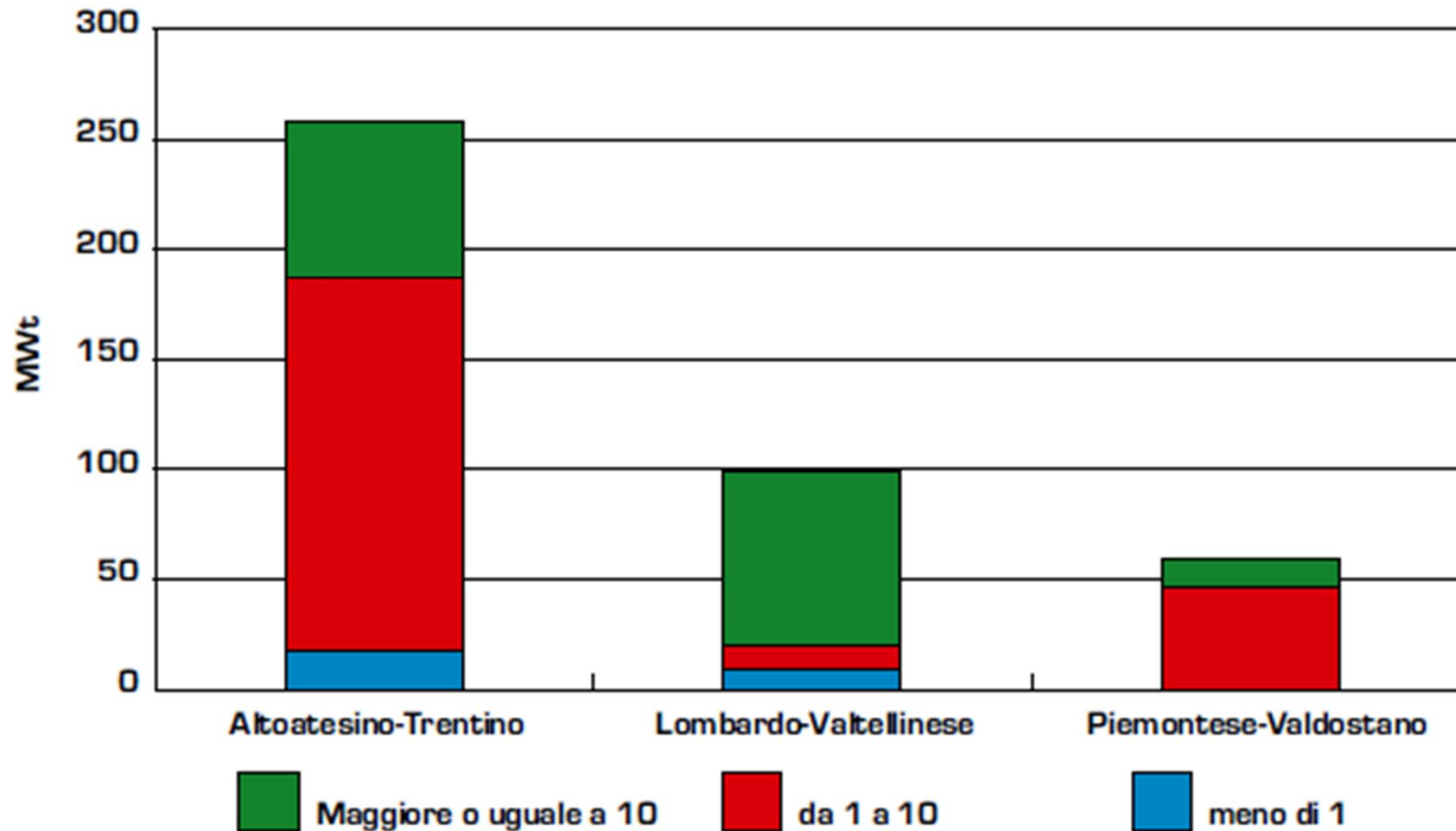
Source:  
Biomass  
energy  
report, Milan  
Polytechnic,  
2009



# Biomass districts heating



Installed power in the main northern Italian regions (2009)



Source:  
Biomass  
energy  
report, Milan  
Polytechnic,  
2009



# The regional case studies



# The Italian case studies - 1



## ❖ Four case studies:

- Trentino-Alto Adige: two medium sized plants (120 and 200 kW) for the heating and sanitary hot water uses of a camping and an hotel. The biomass fuel is constituted by fir (conifer) chips.
- Veneto: three small installations (from 30 to 45 kW) for the heating and sanitary hot water uses of three farms (among which a farm holiday and a farm with a plant nursery). In this case the biomass is provided by the cutting and pruning of the farms arborous cultivations, hedges and bushes. The cases described here refer to a group of 30 biomass plants financed by the Padua Chamber of Commerce in 2003



## The Italian case studies - 2



- Tuscany: a district heating plant connected to a one school and two other administrative buildings for a total of 270 people served. The total heated volume is of 16.000 cubic meters and the network piping lengths of 270 meters. The boilers are fed by conifer chips provided by the municipality woods. The plant pertains to a set of set of five small scale biomass district heating plants financed by the Toscana Region
- Sicily: an experimental biomass plant of 348 kW providing thermal energy for a big greenhouse. The boiler is fed by olive tree pruning and similar agricultural residuals (i.e from vine grape cultivations). The biomass plant has been designed and installed in the framework of a demonstrative project of the Sicily Region and has educative and promotional purposes.



## Background slides



# Incentivizing mechanisms



- There have been incentivizing measures (i.e. in the Financial Framework Laws) but often they have not been implemented or had got lost because either the implementing measures have not been issued or because for long (and exhausting) approval procedures for the construction of new renewable energy plants
- The only grant which can theoretically be used for subsidizing a biomass thermal plant is addressed to the local district heating plants and is represented by the so called: "Stocks of Energy Efficiency" (in Italian Titoli di Efficienza Energetica, TEE).
- These certificates envisage the creation of a securities market aimed at subsidy interventions with the purpose to save primary energy for both the production of electricity or thermal energy:
  - The operators that participates to this stock market have the obligation to achieve a minimum level of primary energy savings per year. If the operator exceed this minimum threshold, can sell on the market the exceeding securities, realizing a profit (1 TEE = 1 toe).
  - If he is not able to achieve the established threshold of savings, has to buy the number of missing securities required to comply with the saving obligation.





- It is nonetheless worth noting that the bulk of the biomass incentivizing legislation has been entrusted by the national government to the regional authorities.
- There are and there have been then a flourishing of regional provisions aiming at financing or subsidizing local projects but very often issued in form of tenders and having, for this reason, limited temporal validity.
- Nonetheless some regions (like, i.e the Trentino Alto Adige) envisage ad hoc
- The funds of these local subsidizing initiatives come often from the EU (i.e. the structural funds).

