

Renewable Technology for improving Energy Efficiency in Greenhouses Italy



Description of the programme/ measure

European greenhouse agriculture is strictly linked to high fossil energy use and CO₂ emissions.

Italian greenhouse agriculture consumes for acclimatization about 0.74 MTOE of fossil energy, which corresponds to 2 MtCO₂ emissions.

Energy power load for greenhouse microclimate varying from 30 to 125 W/m² in the southern areas to more than 175 W/m² in the northern areas of Italy.

Critical success factors

The Italian White Certificates scheme was created by the Ministerial Decree 20 July 2004, whose purpose is to promote measures to improve energy efficiency among end-users. Savings can be achieved through energy efficiency actions among end-users and are assessed using tons of oil equivalent (toe) as measurement unit.

(1 toe = 1 White Certificate)

Innovation

Woods solid biomass (chips, pellets, briquettes) is considered as GHG neutral when converted to heat energy, excluding greenhouse gas generation during harvesting, transportation, pre-processing. Greenhouses which are heated by biomass boiler can account for White Certificates in terms of saved fossil fuel by solid biomass for greenhouse heating.

BIOMASS POLICY

The large scale penetration of biomass use in Europe will have positive influence on the country's economies:

benefits from the utilisation of local fuels from the viewpoints of costs and security of energy;

biomass production, processing and trade will improve the employment opportunities, especially in rural areas;

reduced CO₂ and other emissions, will contribute to the economy recovering as creating more business opportunities;

contribute to a balanced growth of agricultural sectors of the countries.

RECOMMENDATIONS

- Establishing and funding organisational structures, that would help both the learning process of all the local actors (agricultural farms, equipment producers, planners, engineering companies, operators) and the technological transfer from one country/region to another.
- Cooperation with authorities, professionals, agencies and SME will contribute to use resources in efficient and sized way and to modernise and upgrade local production capacities and technologies.
- Financial incentives together with standards on technical design and emissions have to be designed in a way a.) to overcome the market disadvantages compared to fossil fuels and b.) to avoid any increase of investment costs.
- Targeted education of local authorities, growers and technicians on environmental impacts and benefits of bio-energy could help to improve public awareness, culture and acceptance on biomass industry and market

Further information



CONCERTED ACTION
ENERGY EFFICIENCY
DIRECTIVE

Final comments

- **First** and foremost, it will provide input for the standardisation of greenhouse acclimatization technologies and equipment for efficient energy conversion of solid biomass.
- **Second**, it will feed into the formulation of regulatory policies of countries with regard to the large-scale implementation of solid biomass and/or their integration with the current use of fossil fuels/renewable in greenhouse agriculture.
- **Third**, the promotional policy and the expansion of solid biomass use in greenhouse will also lead in the future to moderation of the costs and the competitiveness of the biomass fuel products.
- **Fourth**, the cooperation with research institution and SME could also contribute to profit from EU Carbon Trading policy (European Emissions legislation 2003/87/EG) through the Kyoto protocol's Clean Development Mechanism.

Further information

- www.enea.it
- <http://www.enea.it/en/research-development/energy-efficiency>
- <http://www.eam.ase.ro/conferinte/PEEC-2>
- <http://www.gse.it/it/CertificatiBianchi/Pages/default.aspx>
- <http://www.eam.ase.ro/conferinte/PEEC-2>
- <http://www.greensys2015.uevora.pt>

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