

# ***“Methane emission reduction from renewable energy projects”***

## ***The Italian Experience***



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***WIREC Official Side Event - M2M Partnership: International Opportunities in Renewable Energy Projects in Landfills and Manure Waste Management***

***Washington DC, March 4, 2007***

# ***Biogas Recovery: drivers***

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## ***NATIONALLY***

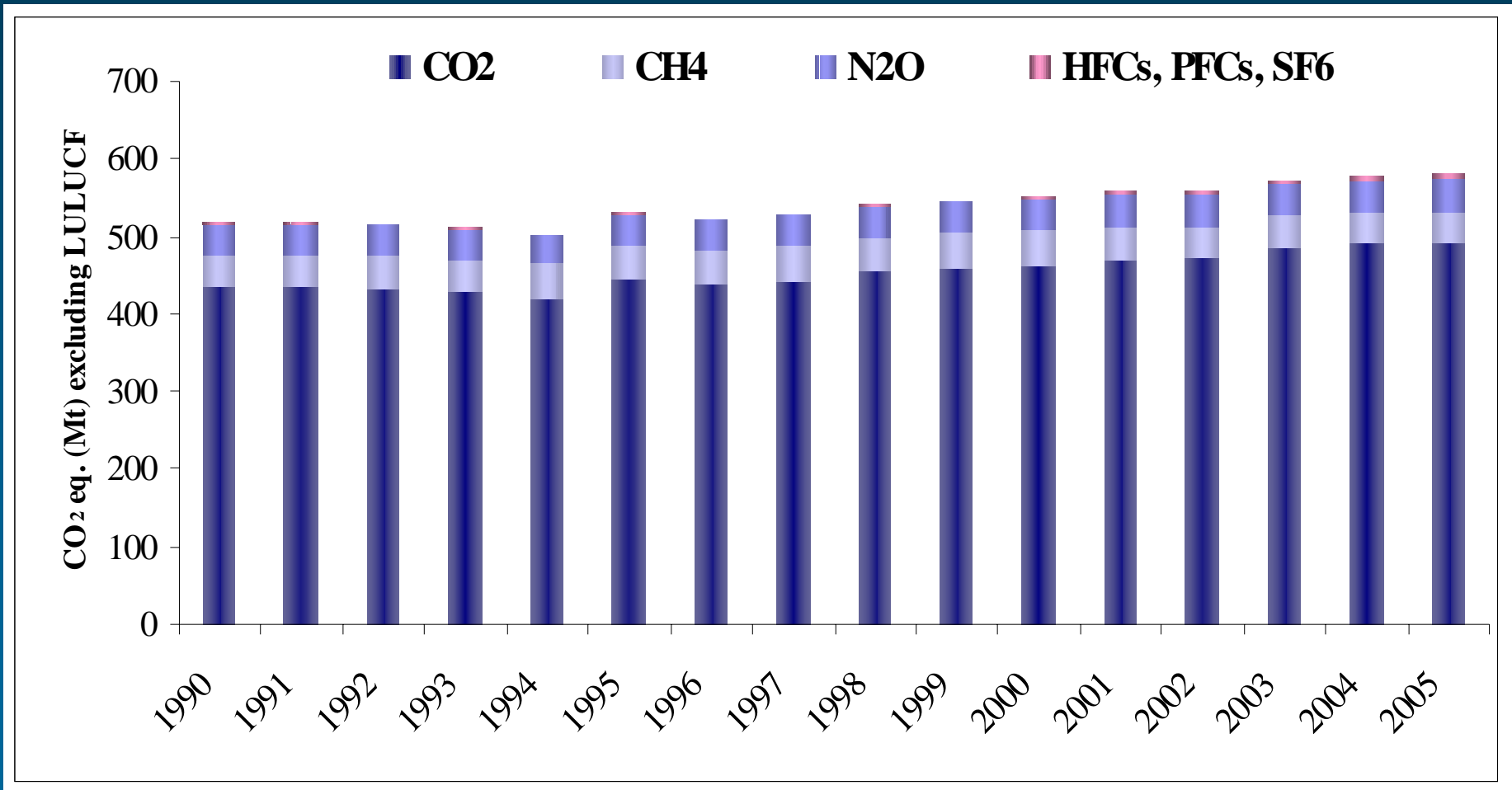
- ***Energy and Climate policies***
- ***Environmental policies***
- ***European legislation***
- ***Economic incentives provided for the production of electricity from renewable energy sources***
- ***Other financial incentives***

## ***INTERNATIONALLY***

- ***Global climate protection***
- ***Jl – CDM projects. New tool: programmatic CDM***
- ***Regional energy policies***
- ***Technology transfer***
- ***Others***

# Methane Emissions in Italy

- Account for 6.9 % of total CO<sub>2</sub>eq emissions (2005 data), equal to 39.7 Mt in CO<sub>2</sub> equivalent

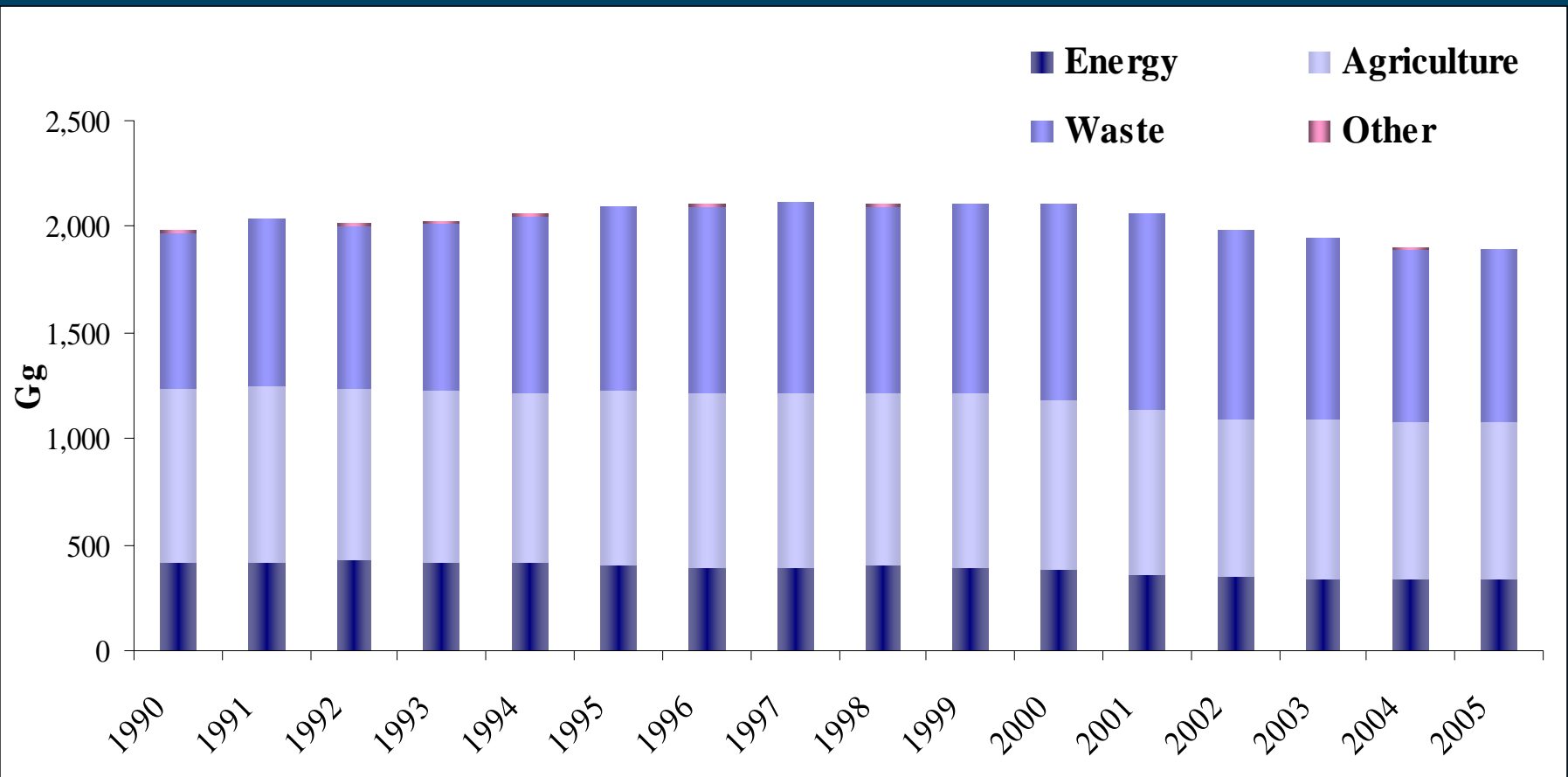


# ***Methane Emissions in Italy***

- **Decrease of approximately 1.8 Mt as compared to 1990 levels**
- **Mainly originated from the waste sector (42.9%), agriculture (39%) and energy (17.9%)**
- **Waste sector : mainly landfills and industrial waste-water. Shows an increase in emission levels, 10.6% compared to 1990**
- **Agriculture sector: mainly enteric fermentation and manure management. Shows a decrease of CH<sub>4</sub> emissions equal to 10.1% as compared to 1990**
- **Energy sector: the reduction (-19.3%) is the result of *Reduction of leakage from the extraction and distribution of fossil fuels vs increased emissions in the road transport sector and increased use of methane in heating systems***

# Methane Emissions in Italy

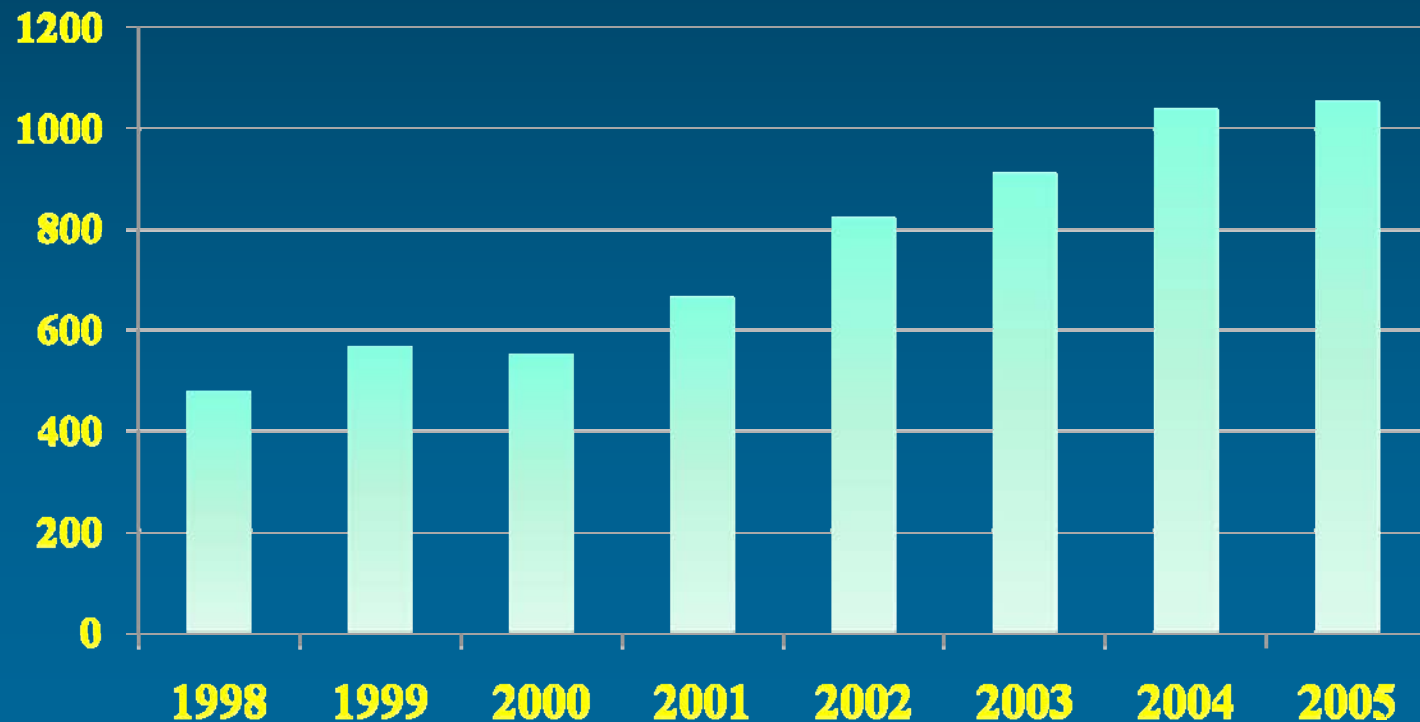
## Methane emissions by sector in Italy from 1990 to 2005



# Landfill Gas Recovery in Italy

79 operating plants in 1998  
160 operating plants in 2005

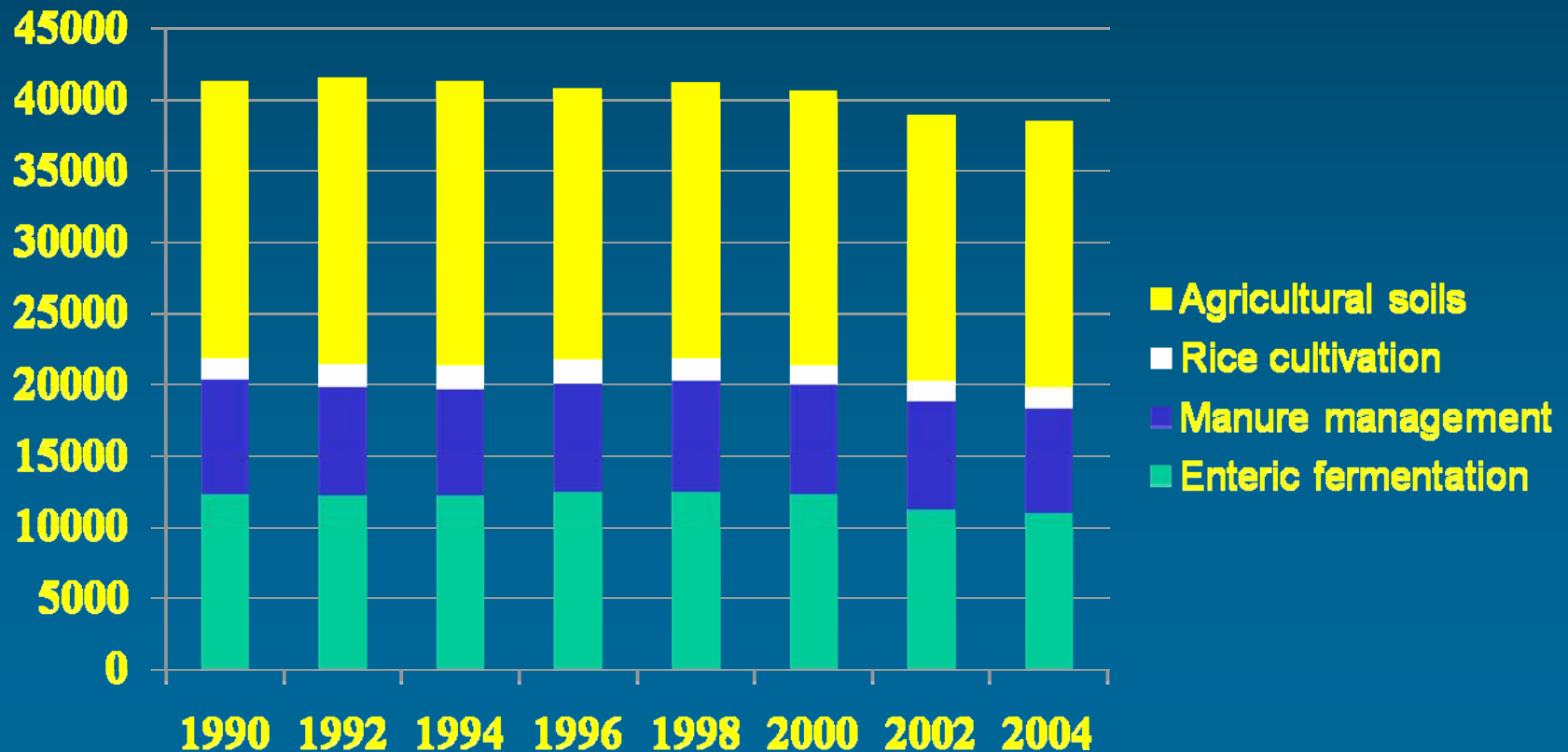
Energy recovery from landfill biogas (GWh)



# Emissions from the agricultural sector

- Main emission reductions achieved through methane reduction in enteric fermentation

Emissions (kton CO<sub>2</sub>eq)



# *Emissions from the agricultural sector*

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- **Electricity generation from Animal Waste has increased in Italy up to 25.7 GWh in 2005**
- **Support provided by feed-in prices (Resolution no. 6/92 of the Inter-ministerial Price Committee - CIP 6/92) and the renewable quota obligation for electricity producers/importers (Legislative Decree of March 16, 1999, No. 79)**
- **Integrated Pollution Prevention and Control Directive (96/61/EC), calls for the introduction of an authorisation process based on the adoption of BATs for poultry farms with more than 40,000 birds and pig farms with more than 2,000 animals (heavier than 30 kg)**
- **Financial incentives drawn from the Rural Development Plans financed by the European Agriculture Guidance and Guarantee Fund**



# *Emissions from the agricultural sector*

- In future years, further intervention will be required to sustain this trend, and to extend the covering of animal waste storage systems, equipped with devices allowing collection and use of biogas, not only in new farms but also in major existing ones
- Additional measures for the reduction of methane emission are concentrated in two animal categories: cattle and swine

<i>ADDITIONAL MEASURE</i>	Estimated reduction (Mt CO <sub>2</sub> eq.)		
	2010	2015	2020
Rationalisation in the use of nitrogen fertilizer	0.18	0.36	0.36
Recovery of biogas from animal storage systems	0.32	0.47	0.62

## *Italian participation in the Methane to Markets Partnership*

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- *Partner country since 2004*
- *Participates in all subcommittees, co-chairs the Landfill subcommittee*
- *International methane reduction projects presented in 2007 Partnership Expo*
- *Steering Committee 2006 hosted in Rome*
- *Private sector involved in partnership activities*

## INTERNATIONAL PROJECTS

*Anaerobic digestion of animal manure for biogas production in China*

*Feasibility study on an anaerobic digestion plant for cow manure and joint electric power production from the collected biogas carried out at the Pinjipu Cattle Farm in Ningxia Province*

*A plant to digest manure producing biogas, equipped with a gas cleaning system and a power generating set*

*Development of a methodology research of biogas digesters for households*



## INTERNATIONAL PROJECTS

*Landfill gas recovery for energy production in China*

*Feasibility studies of landfill gas extraction and use for energy production carried out in 10 Chinese sites*

*Hangu – Tianjin province*

*Handan – Hebei province*

*Haikou – Hainan province*

*Anyang – Henan province*

*Wangcheng – Hunan province*

*Harbin – Heilongjiang province*

*Mudanjiang – Heilongjiang province*

*Xuzhou – Jiangsu province*

*Yinchuan – Ningxia province*



## INTERNATIONAL PROJECTS

*Studies on biogas utilization in rural villages in the framework of the Mediterranean Renewable Energy Programme*

- *Biogas from animal and agricultural waste for cooking and heating purposes*
- *Protection of forest resources*
- *Contribution to sustainable development*



## OTHER INITIATIVES

*The **MEDITERRANEAN RENEWABLE ENERGY PROGRAMME**, a Partnership Initiative in the Mediterranean Region, launched by Italy with the participation of the countries, the energy agencies and the energy companies of the Region, is supporting hybrid technologies combining Renewables, biogas and methane natural gas to supply electricity*

*In the Gleneagles Plan of Action, the G8 Leaders agreed on launching a **GLOBAL BIOENERGY PARTNERSHIP**, on the basis of an Italian initiative to support wider, cost effective, biomass and biofuels deployment.*

*The general purpose of the Global Bioenergy Partnership is to provide a mechanism for Partners to organise, coordinate and implement targeted international research, development, demonstration and commercial activities related to production, delivery, conversion and use of biomass for energy.*

# OPPORTUNITIES AND CHALLENGES

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*Involve the private sector*

*Maximize efforts by developing synergies with other initiatives*

*Involve the financial community and leverage investment*

*Feed in other international processes*

*Propose innovative models for climate and environmental protection*