

# Italy Country Situation

*Giancarlo Scorsoni*

- General information
- Electricity system features
- Electricity sector organization
- Power market
- Renewable source, CHP end energy efficiency incentivizing

# Economic background



Population

60 Millions

GDP

1 535 GEUR 2007

*per capita*

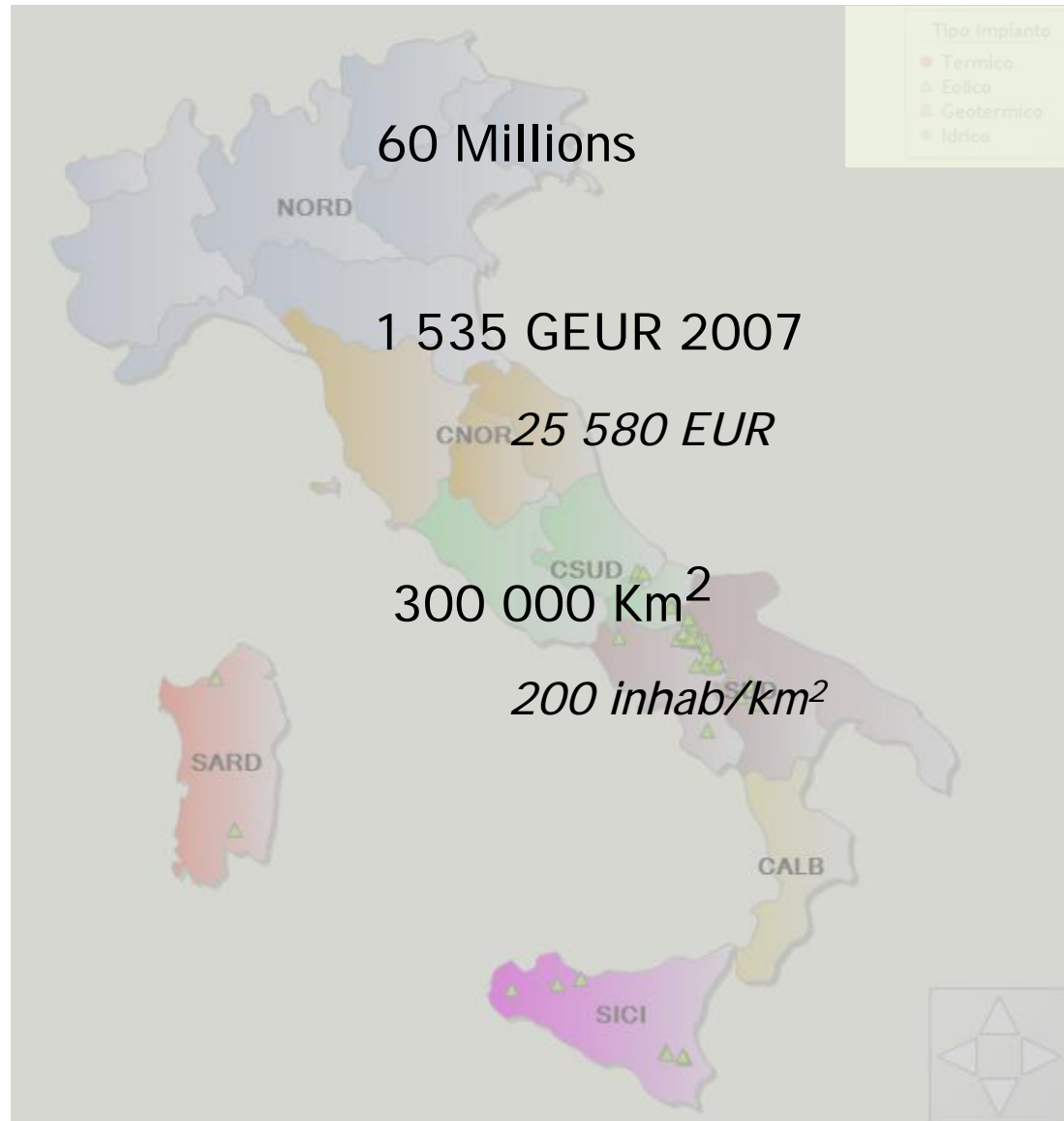
25 580 EUR

Area

300 000 Km<sup>2</sup>

*per capita*

200 inhab/km<sup>2</sup>



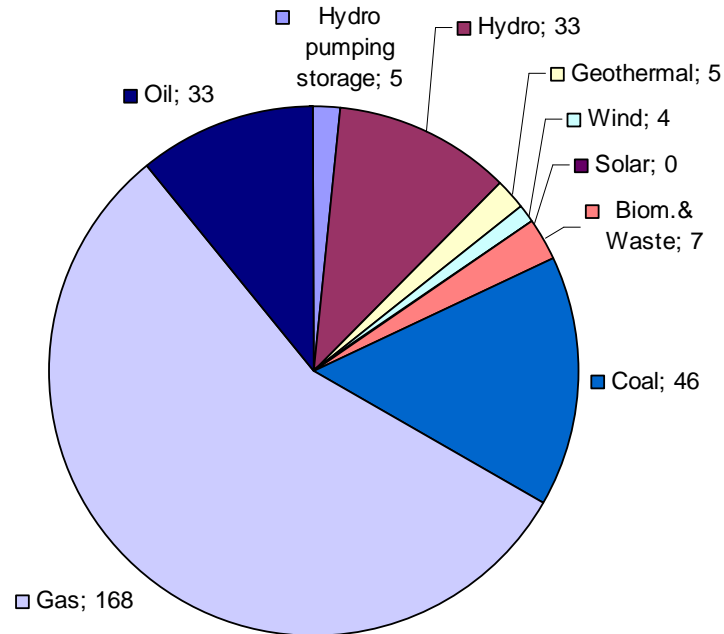
		Dependence on	
		imports	hydrocarbons
Energy demand	195 Mtoe	85%	78%
<i>per capita</i>	<i>3.2 toe</i>		
CO2 emissions	470 Mt		
<i>per capita</i>	<i>7.8 ton</i>		
Electricity demand	340 TWh	14%	55%
<i>per capita</i>	<i>5 670 kWh</i>		(62% of generation)
CO2 emissions	137 Mt		

# Electricity balance 2007 (TWh)

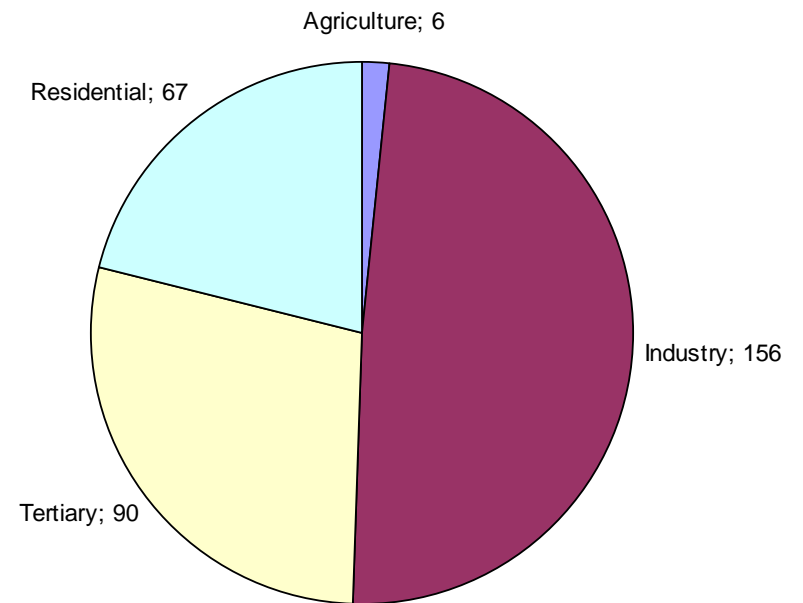


<b>Generation</b>	<b>+</b>	<b>Imp(+)/Exp(-)</b>	<b>-</b>	<b>Pumping storage</b>	<b>=</b>	<b>Final consumption</b>	<b>+</b>	<b>Losses</b>
301		46		7		294		21

**Generation by source (TWh)**



**Final Consumption by sector (TWh)**

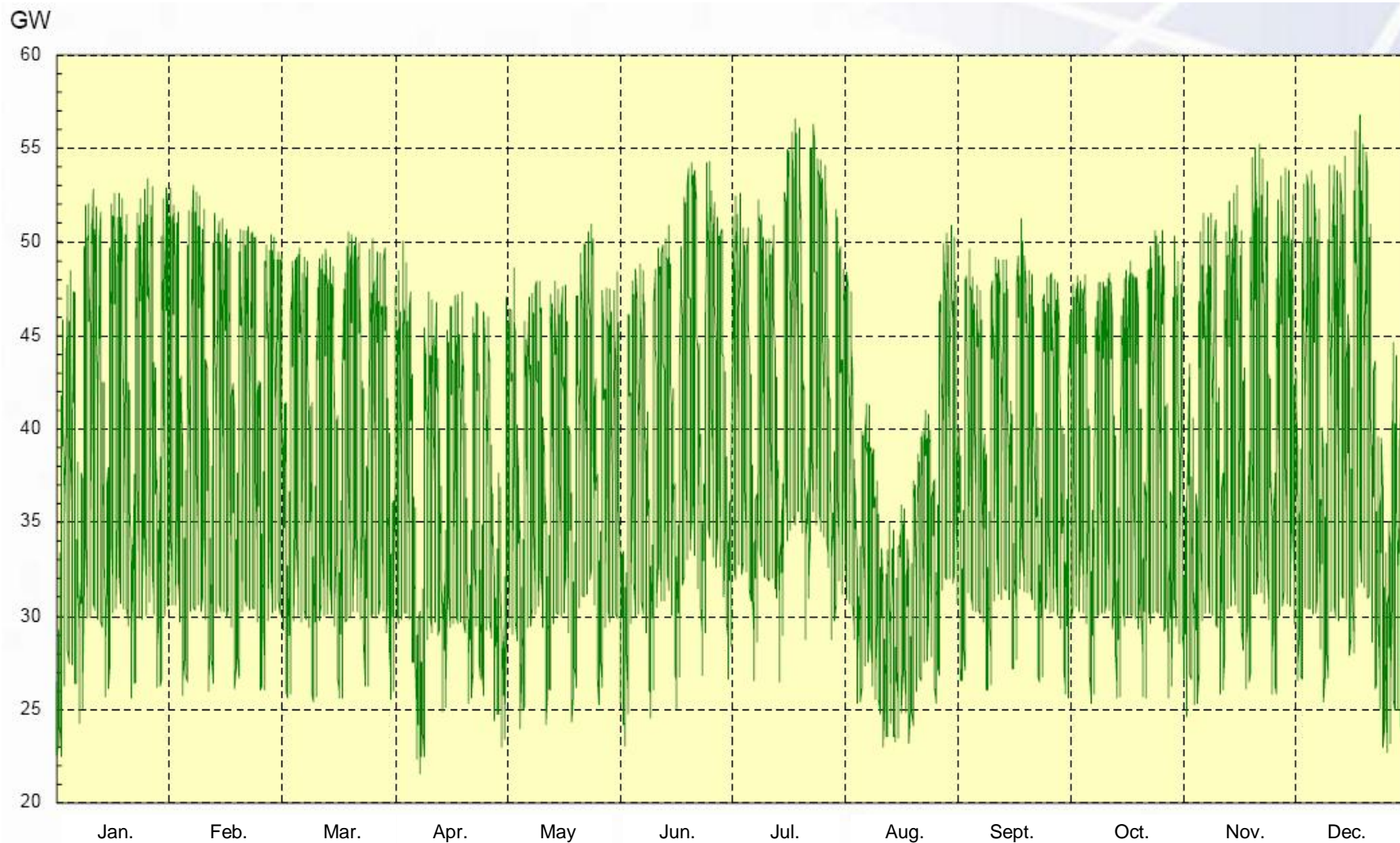


# Evolution of demand and load



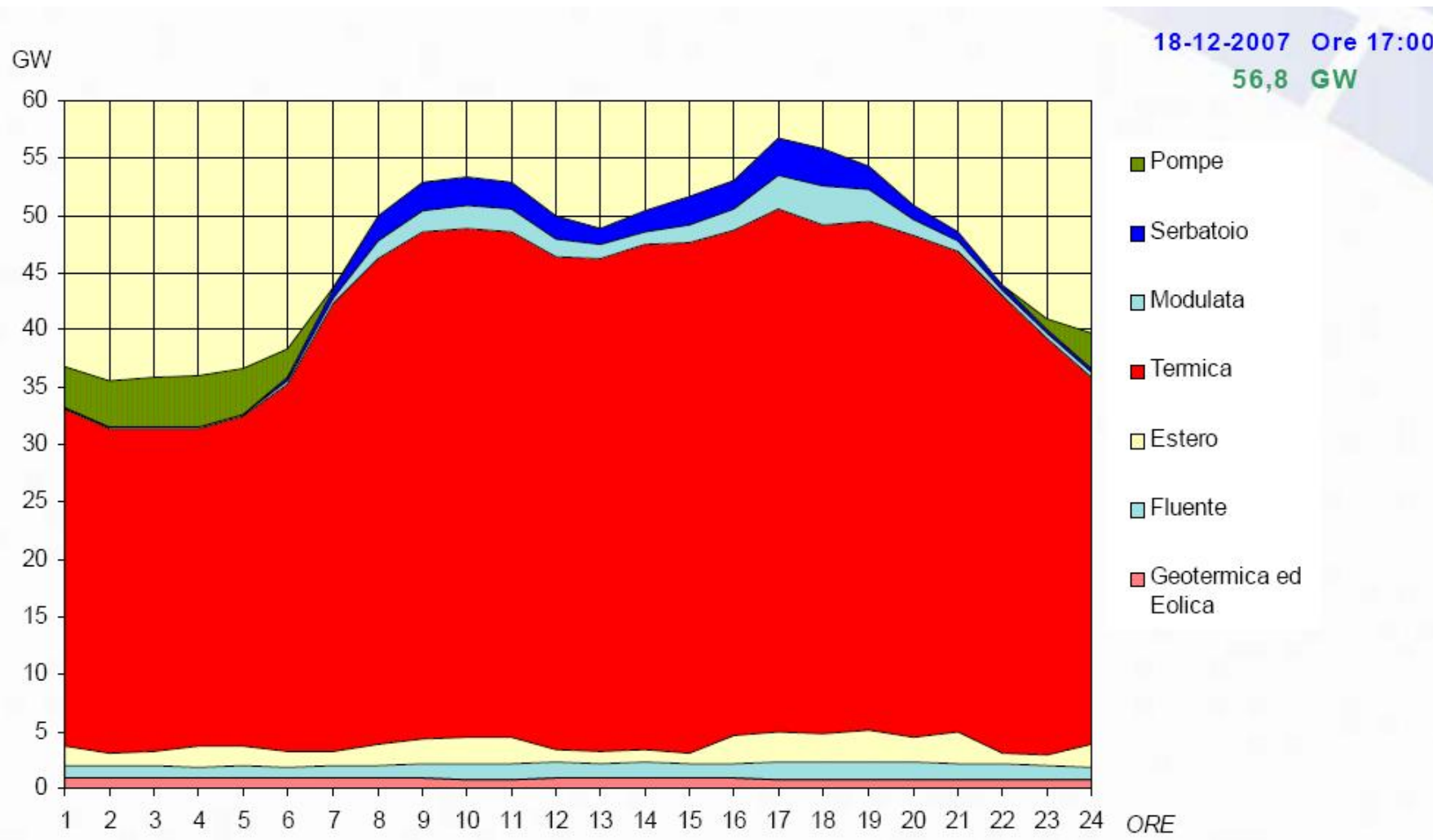
	1980	1990	2000	2005	2006	2007	2010	2015	2020	2025	2030
<b>Connected System (*)</b>											
Total Demand (TWh)	180.3	235.1	298.5	330.4	337.5	339.8	360.2	407.4	450.1	498.2	550.0
Peak Demand (GW)	31.4	40.5	49.019	55.0	55.6	56.8	61.2	69.1	75.9	83.0	90.9
Date of Peak Demand	Dec-Jan	Dec-Jan	Dec-Jan	Dec-Jan	Jun-Jul	Dec-Jan	Jun-Jul	Jun-Jul	Jun-Jul	Jun-Jul	Jun-Jul
Use factor of Peak Demand (h/a)	5 740	5 800	6 090	6 010	6 070	5 980	5 890	5 900	5 930	6 000	6 050

# Yearly hourly load curve (2007)



<G.S.>

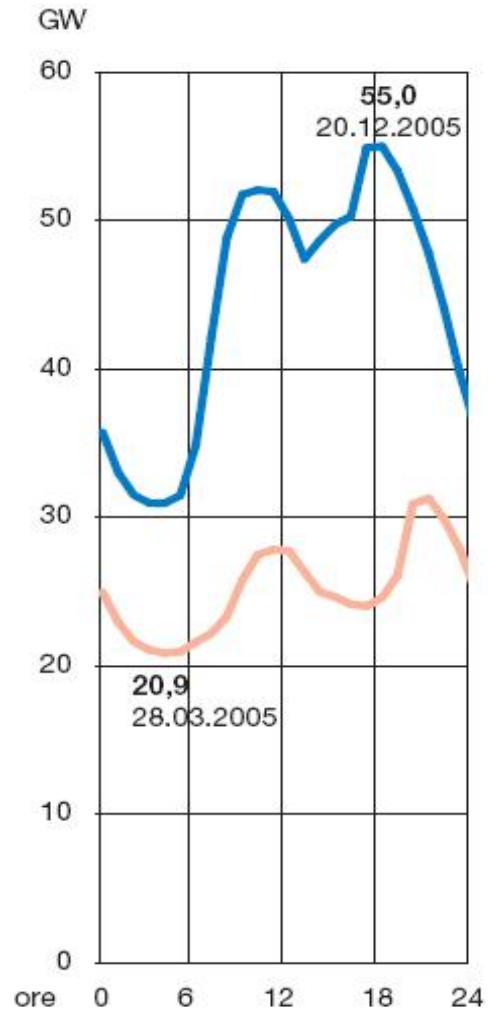
# Balance supply-load on the peak day



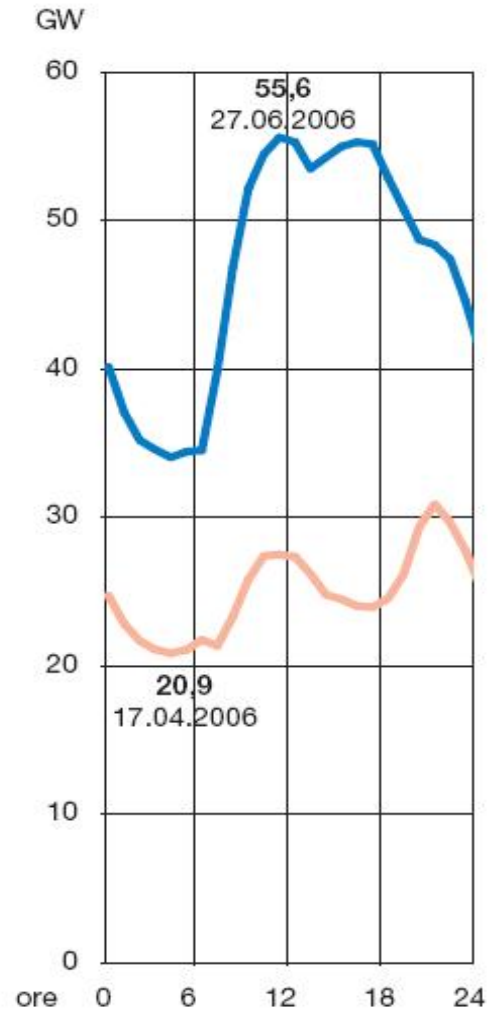
<G.S.>



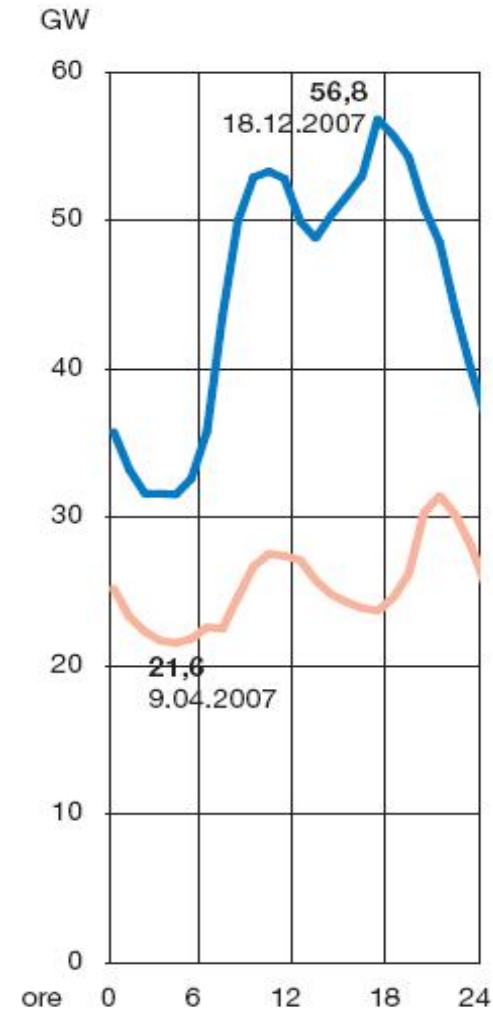
# Max and min load days



Max 2005  
Min 2005

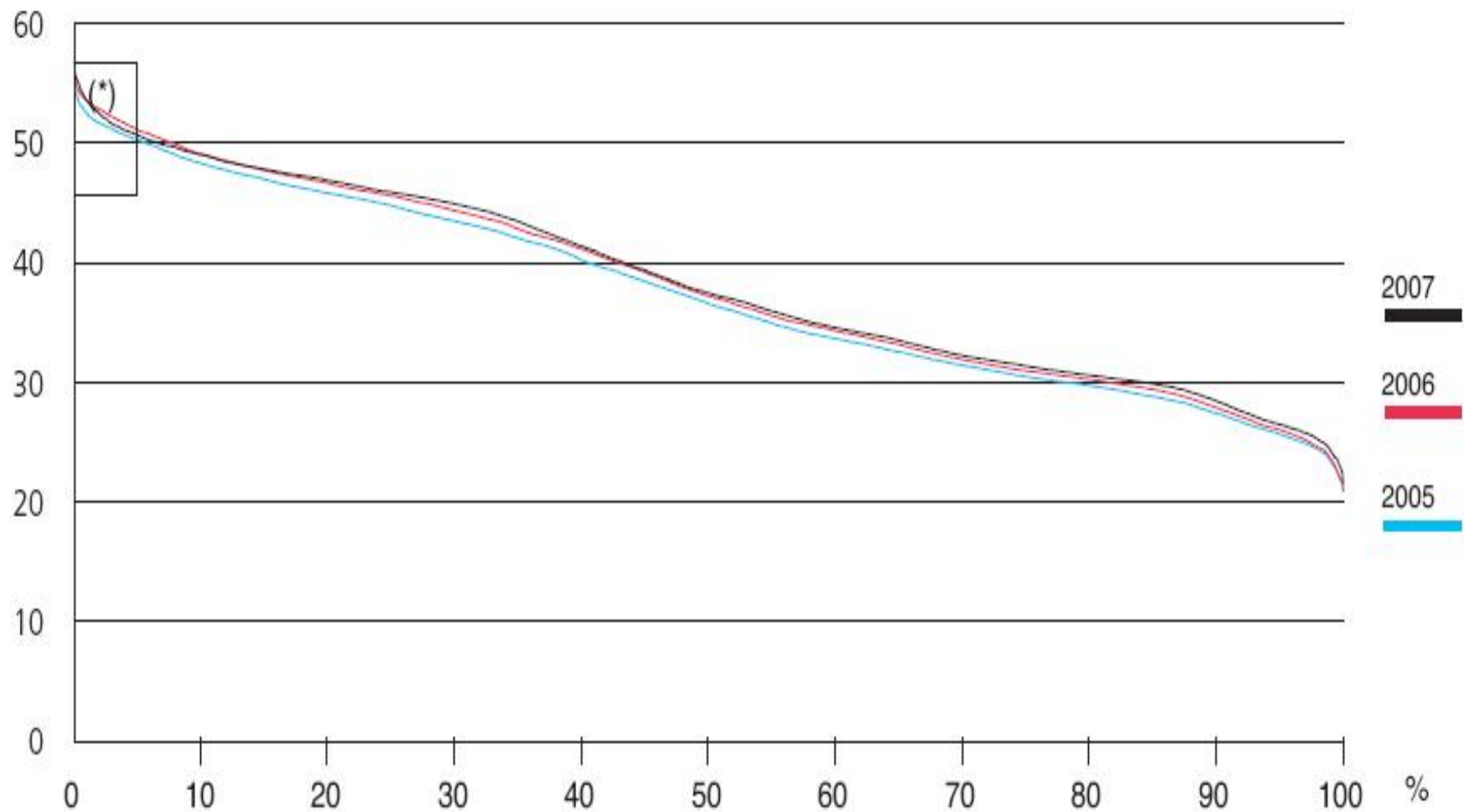


Max 2006  
Min 2006



Max 2007  
Min 2007

# Load duration curves



<G.S.>

# Distributed generation (2007)



Technology	No	Capacity (MW)	Size
Hydro	1 949	4 138	<i>Up to 20 MW</i>
Wind	203	2 714	<i>Up to ? MW</i>
Sun	7 647	87	<i>Up to ? MW</i>
<b>Thermal</b>			
<i>Only Power</i>			<i>Up to 25 MW</i>
Internal combustion	607	538	
Gas turbine	15	71	
Steam turbine	63	408	
Combined cycle	2	26	
Others	33	205	
Total DG	720	1 248	
<i>CHP</i>			<i>Up to 25 MW</i>
Internal combustion	513	745	
Gas turbine	159	719	
Steam turbine	261	1 420	
Combined cycle	53	423	
Total CHP DG	986	3 307	
Total thermal DG	1 706	4 555	
<G.S.> <i>Thermal DG/Thermal</i>	85%	7%	

# Distributed generation (2007)

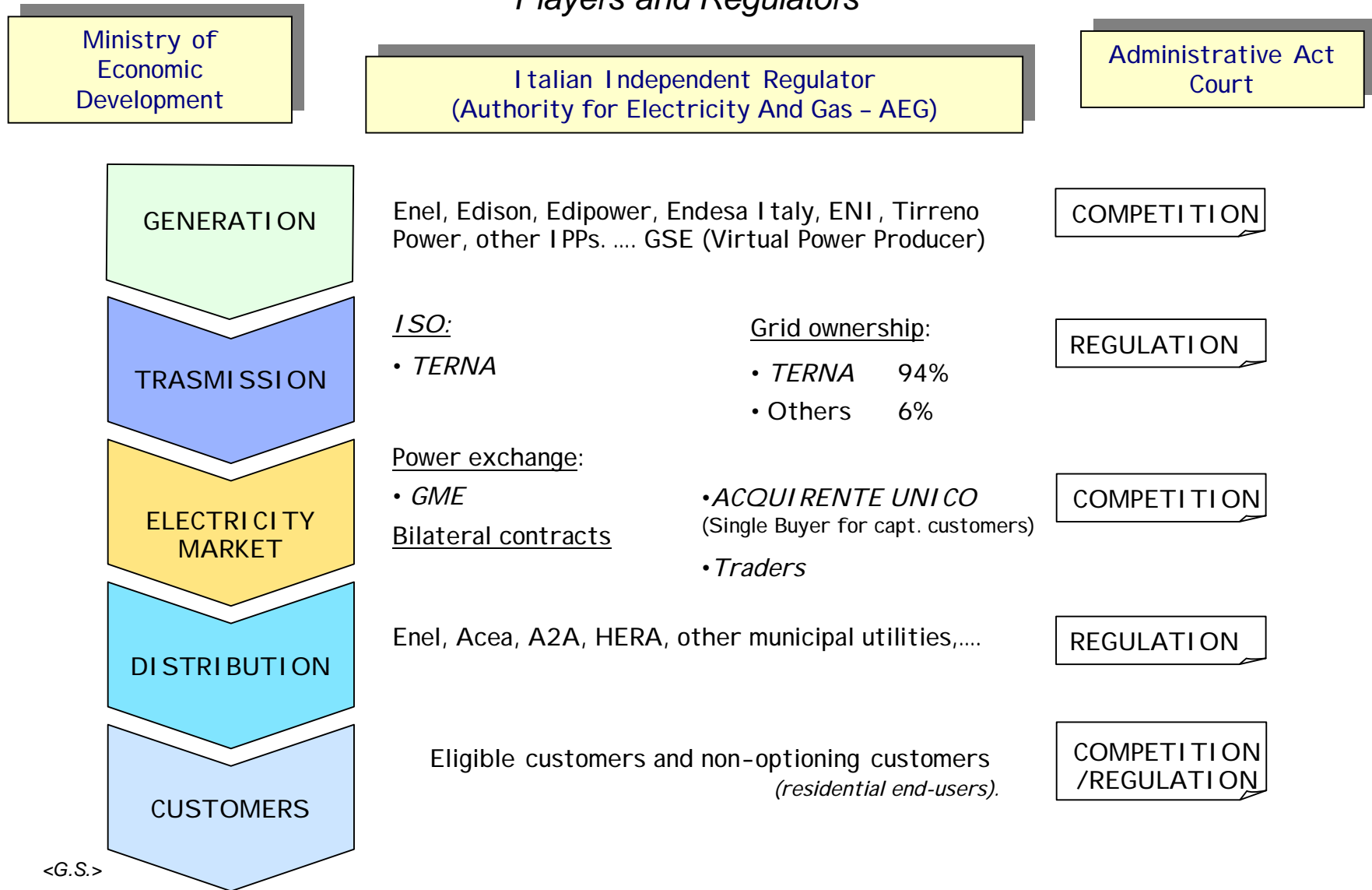


<b>Technology</b>	<b>No</b>	<b>Capacity (MW)</b>	<b>Size</b>
Hydro	1 949	4 138	<i>Up to 20 MW</i>
Wind	218	1 475	<i>Up to 20 MW</i>
Sun	7 647	87	<i>Up to 20 MW</i>
<b>Thermal</b>			
<b>Only Power</b>			<i>Up to 25 MW</i>
Internal combustion	607	538	
Gas turbine	15	71	
Steam turbine	63	408	
Combined cycle	2	26	
Others	33	205	
<i>Total DG</i>	720	1 248	
<b>CHP</b>			<i>Up to 25 MW</i>
Internal combustion	513	745	
Gas turbine	159	719	
Steam turbine	261	1 420	
Combined cycle	53	423	
<i>Total CHP DG</i>	986	3 307	
Total thermal DG	1 706	4 555	
<G.S> <b>Thermal DG/Thermal</b>	<b>85%</b>	<b>7%</b>	

# Electricity supply industry organization



## Italian Electricity Industry Players and Regulators

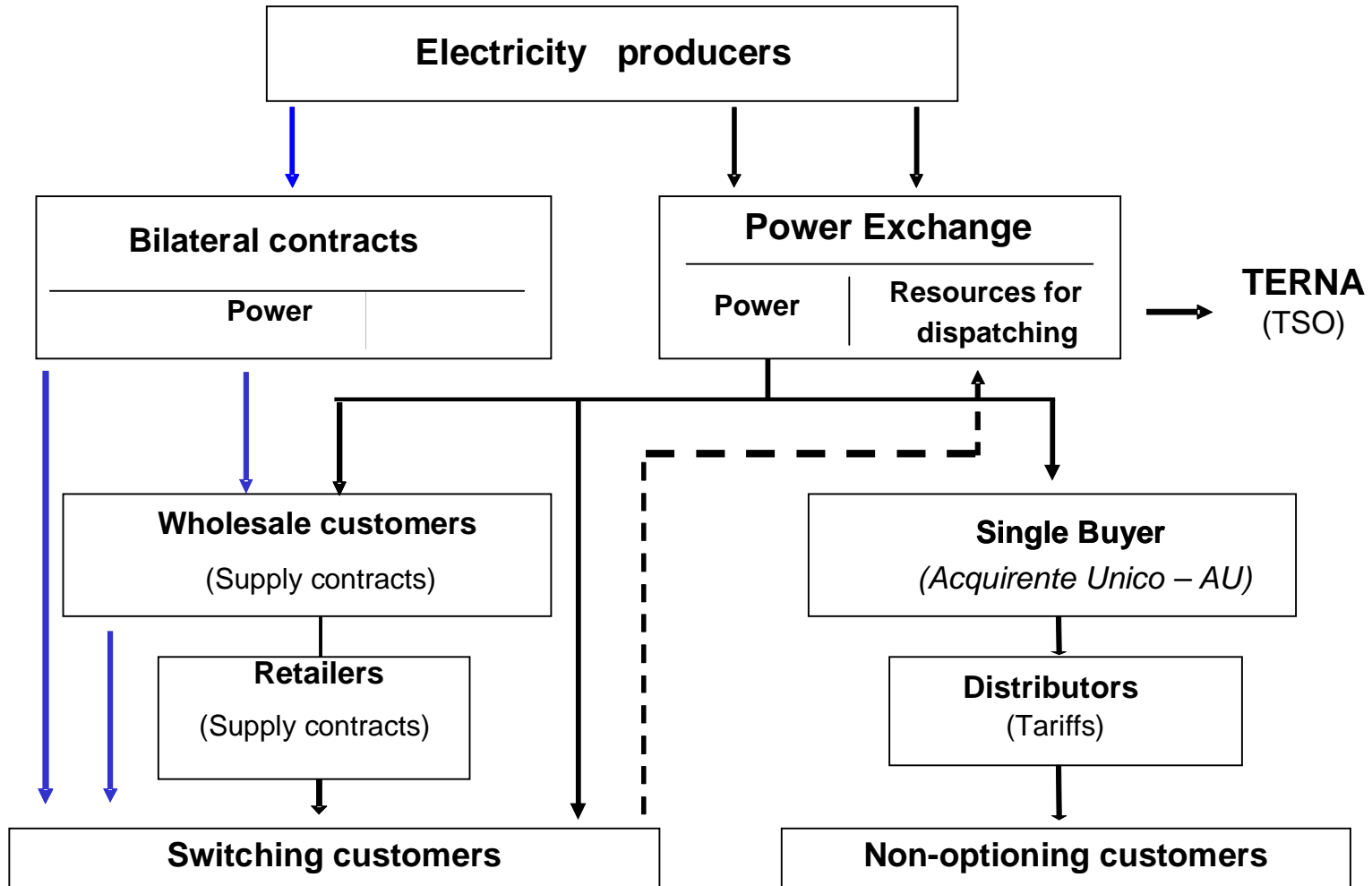


<G.S.>

# Market organization



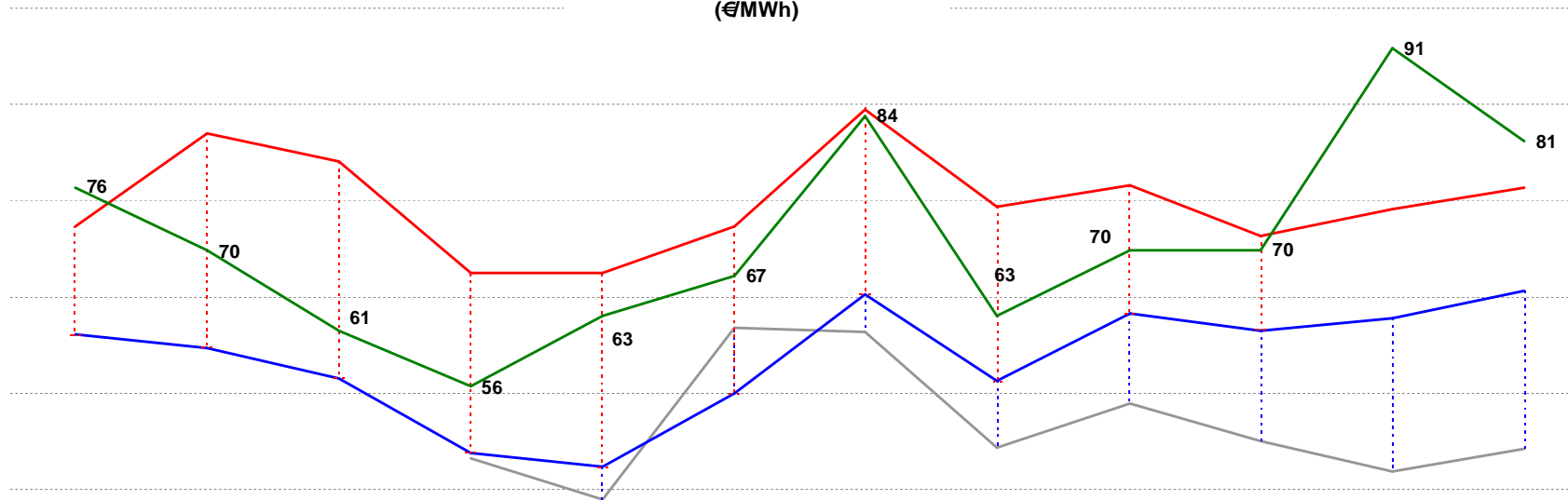
Organisation of the Italian Electricity Market as spring 2008



# Wholesale prices



Italian Power Exchange  
Monthly average National Price - PUN  
(€/MWh)



Exchange starting date: April 204

	January	February	March	April	May	June	July	August	September	October	November	December
— 2004				48	44	62	61	49	54	50	47	49
— 2005	61	60	57	49	47	55	65	56	63	62	63	66
— 2006	72	82	79	67	67	72	84	74	77	71	74	76
— 2007	76	70	61	56	63	67	84	63	70	70	91	81

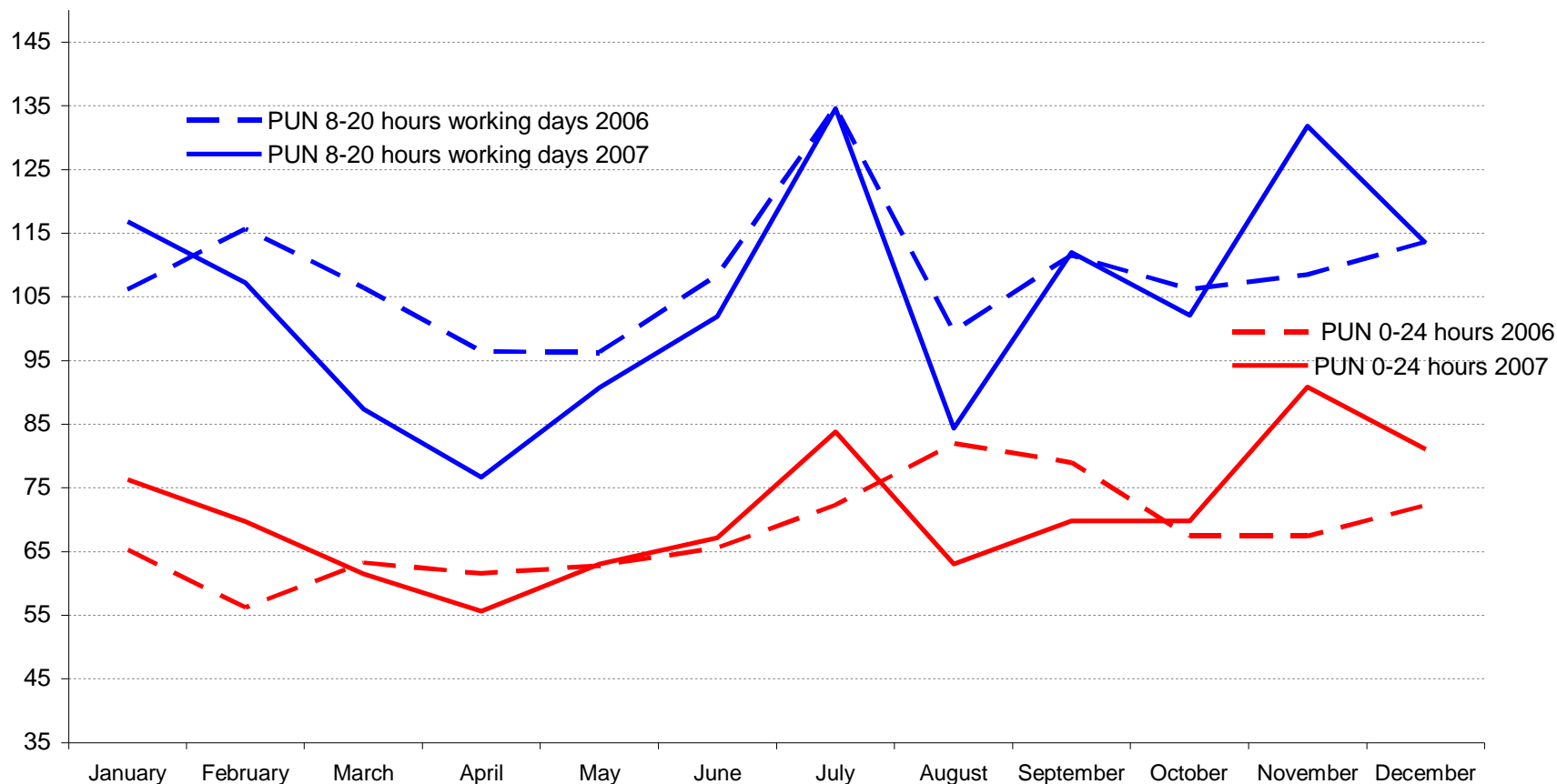
Source: GME

<G.S.>

# Day vs day&night mean prices



Italian Power Exchange  
Monthly average National Price - PUN  
(€/MWh)



Source: GME

<G.S.>



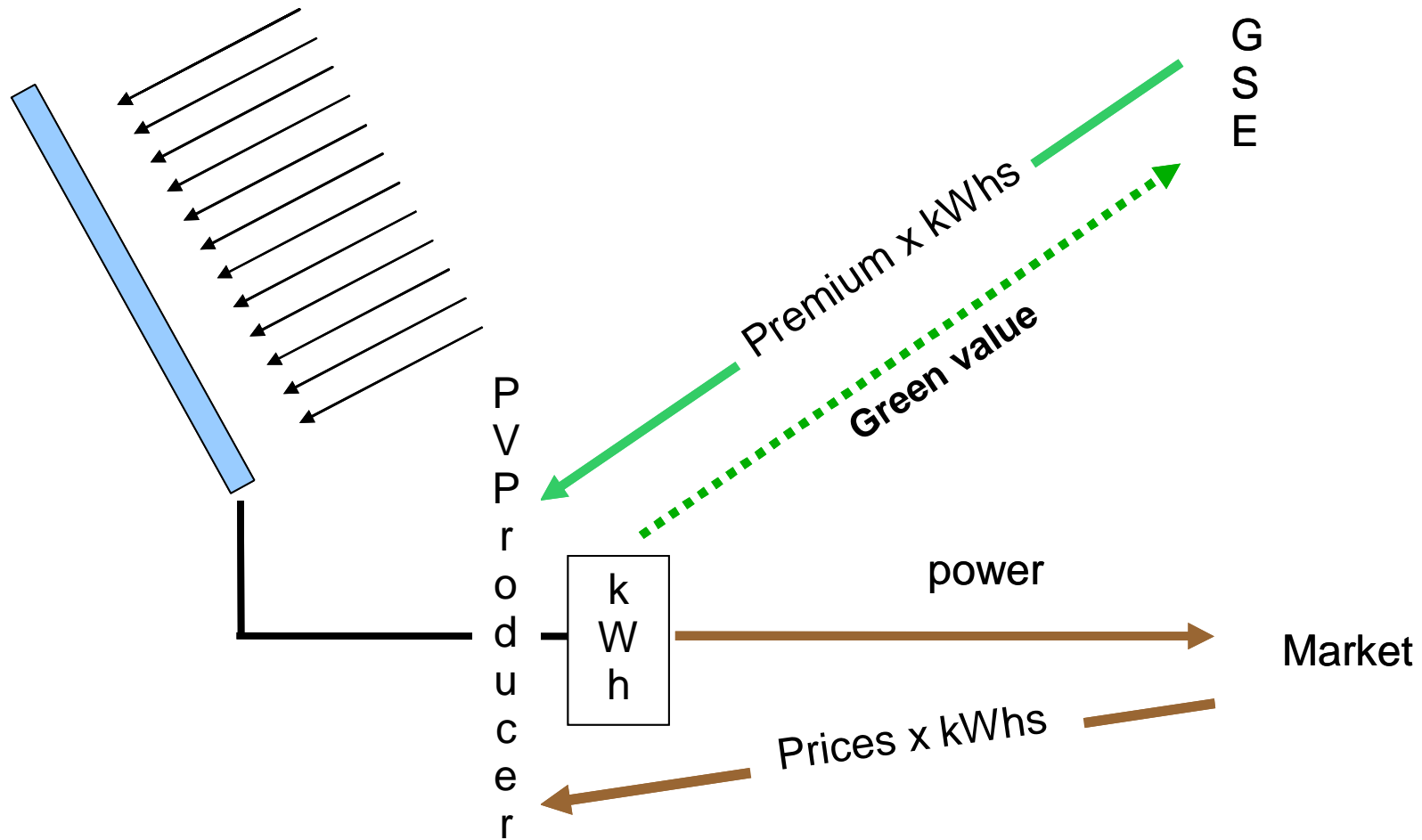
# Incentivizing schemes for RE-E

---



- Feed in-tariffs for RE-E (*and quasi RE-E*) for plants listed eligible within 1 April 1999
- Quotas & TGCs for RE-E plants commissioned after 1 April 1999 (*subjected to frequent upgrading*)
- Fixed premium for PV-E green value
- Global tariff (*green value + brown value*) for RE-E plants < than 1 MW (*wind farms < than 200 kW; biomasses: only local*) on producer choose
- Brown value for RE-E paid by GSE on producer choose @ power market prices
- Net-metering in place for RE-E up to 200 kW size devices

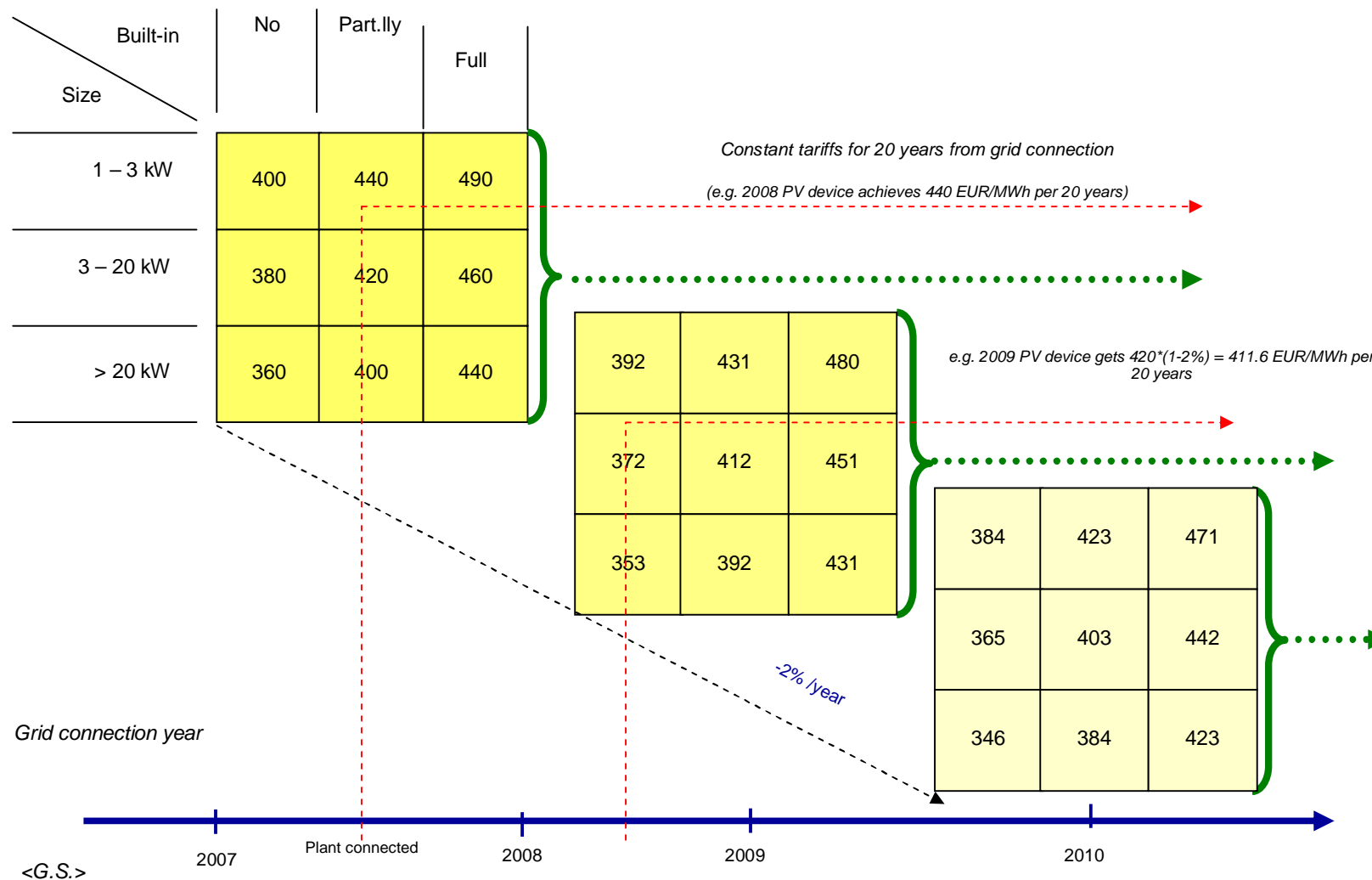
# Fixed premium for PV generation



# Base premium tariffs for PV green value



**Base tariffs for grid connection in the 2007- 2010  
(EUR/MWh)**

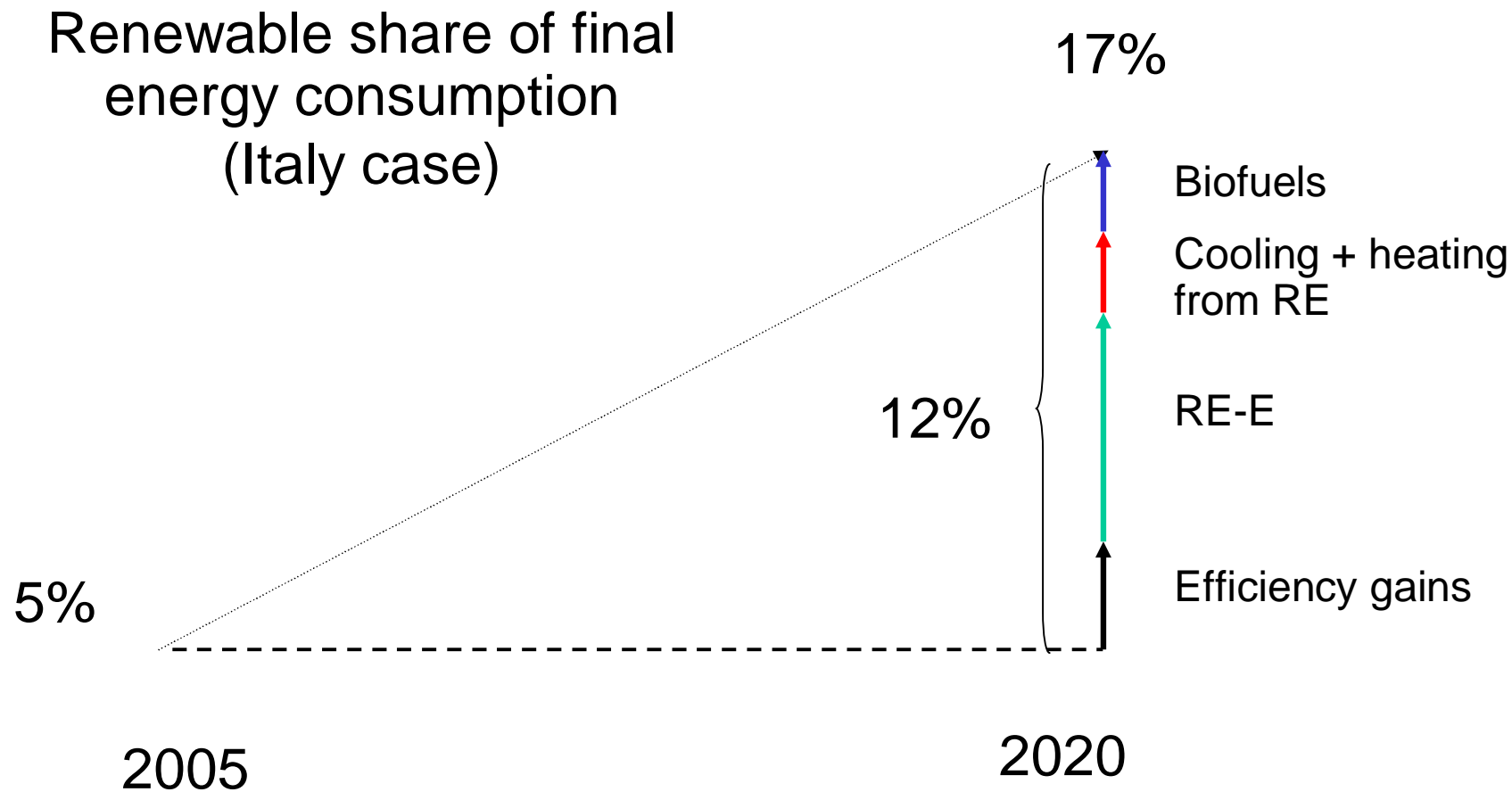


- No monetary incentives, other than High efficiency sets listed for White Certificates
- Priority of access
- Net metering for CHP plants less than 200 kW

- White certificates (*reserved to suppliers and ESCOs*)
  - ✓ **Power and gas distributors obliged to get efficiency targets**
  - ✓ **Obligation is fulfilled by tradable white certificates**
  - ✓ **Three types of certificates:**
    - ◆ *Electricity savings by power distributors and ESCOs*
    - ◆ *Gas savings by gas distributors and ESCOs*
    - ◆ *Primary energy savings by utilities and ESCOs*
  
- Income tax rebates (*reserved to individuals and firms*)

55% of installed costs returned via income tax rebates  
(*Applicable to solar heating, condensing boilers, heat pumps, building insulation, .....*)

# Options to meet the 2020 UE RE target



- GSE, owned by the Italian Government, plays a central role in promoting and incentivizing RE sources in Italy.
- As virtual producer, GSE puts on the energy market yearly about 60 TWh (Italy: 300 TWh), of which 20 TWh from RE sources (Italy: 50 TWh)
- The wind power short-term forecasting implementation started in 2007. The forecasting activity for energy bidding from January 2008. At the moment, 1300 MW (40 plants) are scheduled by the GSE forecast models
- The short term wind power forecasting is part of a large project, aiming at forecasting the random (not programmable) RE-E (wind, solar and run of rivers). The PV solar module is under test, in use in September. The run of river module is expected ready for use at the end of 2008