



**Energy Efficiency and the future
strategies of the energy industry**
Focus on the building sector

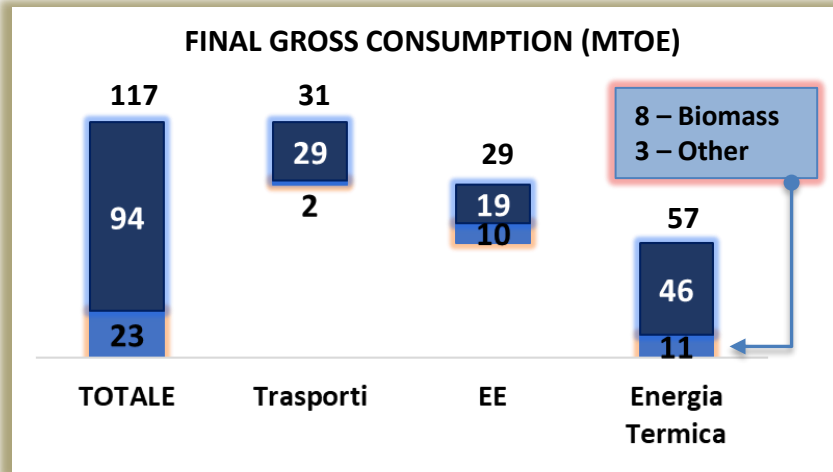
Rome, December 17th 2020



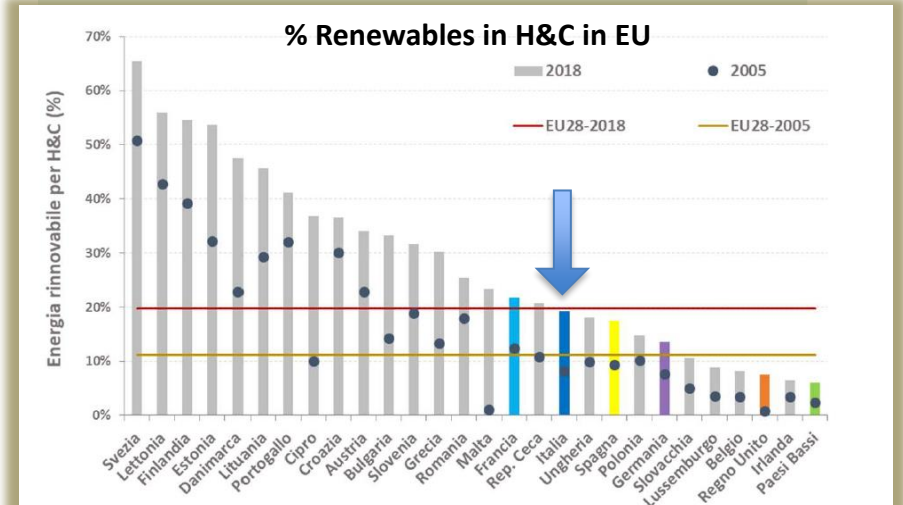
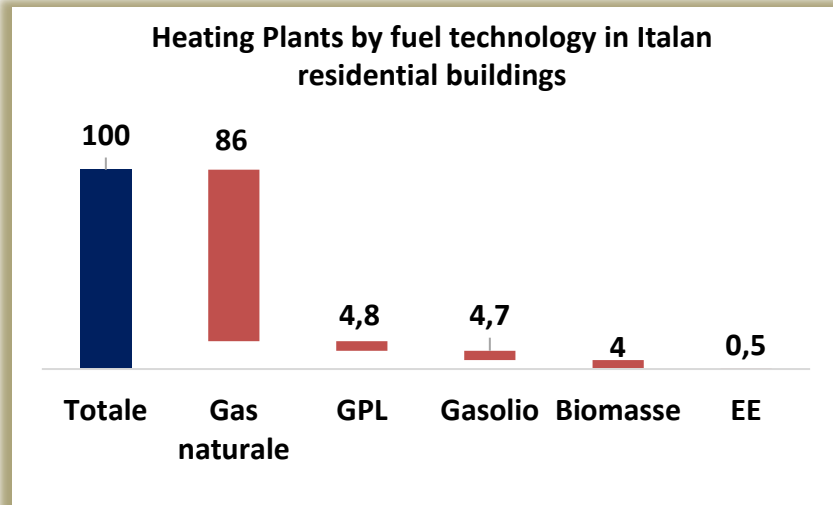
Efficiency and decarbonisation scenario in the building sector

- EU calls for 40% reduction targets of the overall polluting emissions vs. 1990
- Today the *building sector* is responsible for almost 40% of EU final energy consumption
- The EPBD – SRI Directive (June 2018) urges each Member State to tackle buildings energy performance, with solutions that consider outdoor/indoor climatic conditions and cost effectiveness.
- Among the EU Directive objectives:
 - deploy long-term property renovation strategies for a de-carbonised building sector (NZEB) by 2050
 - encourage the use of IT for the purposes of efficiency, comfort and flexibility of buildings.

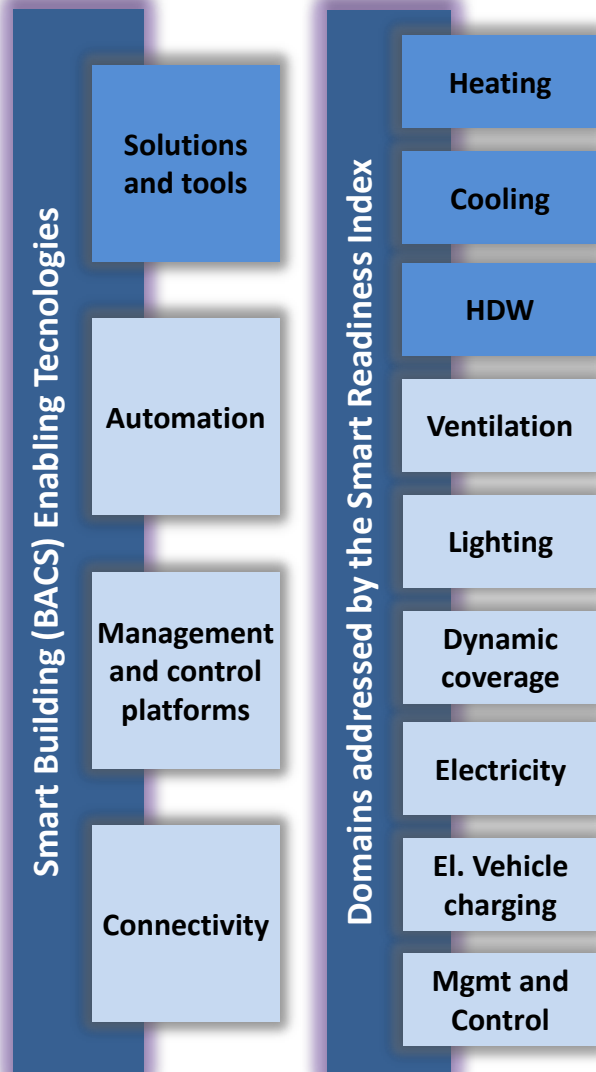
How far are we from the electrification of thermal consumption in Italy ?



<i>Emissioni PM10 (tonn)</i>	2005	2015	Var%
Industry	12.773	5.541	-57%
Heating	14.405	21.762	51%
Road transport	12.943	6.729	-48%
Other transports	3.586	1.365	-62%
Agriculture	1.249	888	-29%
Other (e.g. waste)	447	427	-4%
ITALY	45.403	36.712	-19%

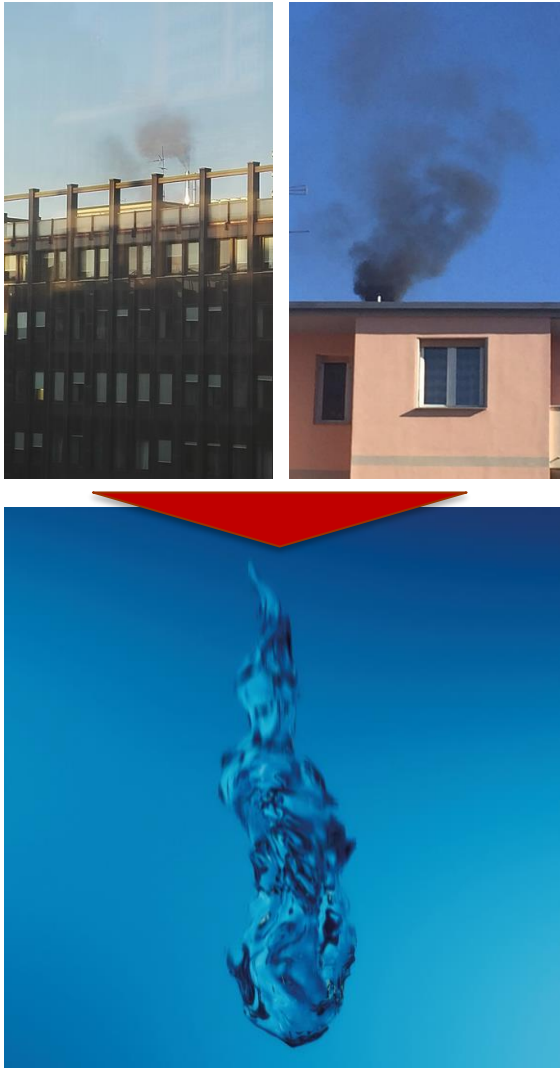


High Temperature Heat Pumps technology = electrification of heating consumption = zero emissions + digitalization



- HTHP is a proven technology, now able to produce heating at high temperature (80°C, compatible with traditional radiators), with very high performance (COP) in all climatic conditions (hydro/geothermal low enthalpy)
- The technology benefits are relevant in many respects
 - improvement of environmental and public health, thanks to the elimination of CO₂ and PM₁₀/PM_{2.5} emissions in urban areas;
 - reduction of country primary energy consumption;
 - savings on household heating bills, by approximately 50% of current expenditure;
- Besides, HTHP pave the way toward efficient and intelligent energy / organizational models (collective prosumers / energy communities) with the consequence of
 - improving the balance of the electrical system (i.e. supporting intermittent sources);
 - increasing self-consumption (avoiding charges / losses) with a perspective of remuneration for end users

Goals become reachable



- From the environmental point of view, the coverage of the residential market that could be satisfied with HTHP would lead in Italy to a *reduction of*
 - 12.8 million tons/year CO₂ net equivalent emissions (minus 14.8 million tons less in urban areas, partly offset by higher electricity production with CCGT)
 - 10% primary energy requirements in the thermal sector (today equal to about 55 Mtoe).
- From a different angle, the amount of deleted CO₂ equivalent emissions would be equal to what is achieved today with the construction of 20 GW of photovoltaics



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**Thanks
for your attention**