Evaluation of Energy Efficiency policies in Italy

Daniel Giannetti

EPATEE

1st European Peer Learning Workshop,
Paris, 3rd October 2017

Agenda

Energy Efficiency targets and results in Italy

White certificates operating data

Impacts of white certificates mechanism on economy, environment and energy bill

2020 Energy efficiency Targets

Currently the European and National legislation frameworks include **two different energy efficiency targets**:

	Energy Efficiency Target 2020		
	Description	Mandatory	%
Total EE target	Primary energy savings with respect to PRIMES 2007 reference scenario of primary energy consumption.	**No**	**-20%**
EE obligation schemes target (Art.7 EED)	Final energy savings through energy efficiency obligation schemes	**Yes**	**1,5%/y** new savings in 2014-2020 of 1,5 % of the annual energy sales with some facilitations (art 7 par. 2 & 3 EED)

Energy Efficiency Target 2020			
%	Mtoe	Period	Measures
-24 % (with respect to reference PRIMES 2007)	**-15,5 Mtoe/y** (saving in 2020 final consumption) (*)	**2011-2020**	• **White Certificates** • **Thermal Account** • **Fiscal deduction** • **EPBD** • **EC Standard & Regulation** • **Other Measures in Transport**
Up to 1,5% /y (of Final Consumption excluding transport)	**-25,4 Mtoe** (2014-2020 FC cumulated savings, corresponding to 6,75 Mtep/y in 2020)	**2014-2020**	• **White Certificates (60%)** • **Thermal Account** • **Fiscal deduction**

(*) 20 Mtoe in terms of Primary energy consumption

Main Energy Efficiency support mechanisms in Italy

	White Certificates	Fiscal deduction	Thermal Account
Energy savings target obligation	Obligation quota	Voluntary	Voluntary
Remuneration mechanism	Saving payment (Saving Certificate with variable market price)	Tax relief (65% of investment for specific EE intervention, 50% for generic building refurbishment)	Capital subsidies (around 50% of investment)
Incentive lifetime	3-10 years (*)	10 years	1-5 years
Sector involved in EE intervention	Utilities **Industry** Residential Services Transport	**Residential** Services	Residential Services/SME **Public administration**
Energy savings monitoring	Measured	Estimated	Estimated
Funding source	Gas & Electricity Bill	National Budget (tax income reduction)	Gas Bill
Total public cost (2016)	**1,4 bn (**)**	**2,2 bn (***)**	**0,04 bn (****)**
Target savings share 2016 (Art.7 EED)	**68%**	**32%**	**0%**
Policy effectiveness KPI [€/TOE, €/CO2]	**191€/TOE (**)** **56 €/CO2**	**1091 €/TOE (***)** **448 €/CO2**	**525 €/TOE** (EE) - 191 €/TOE (RES-H) **209€/tCO2** (EE) - 62€/tCO2 (RES-H)
Duration of scheme	**2005-..** (2020 last year with defined obligation quota)	**1998-..**	**2014-…** (achievement of cost: 900 M€/y)

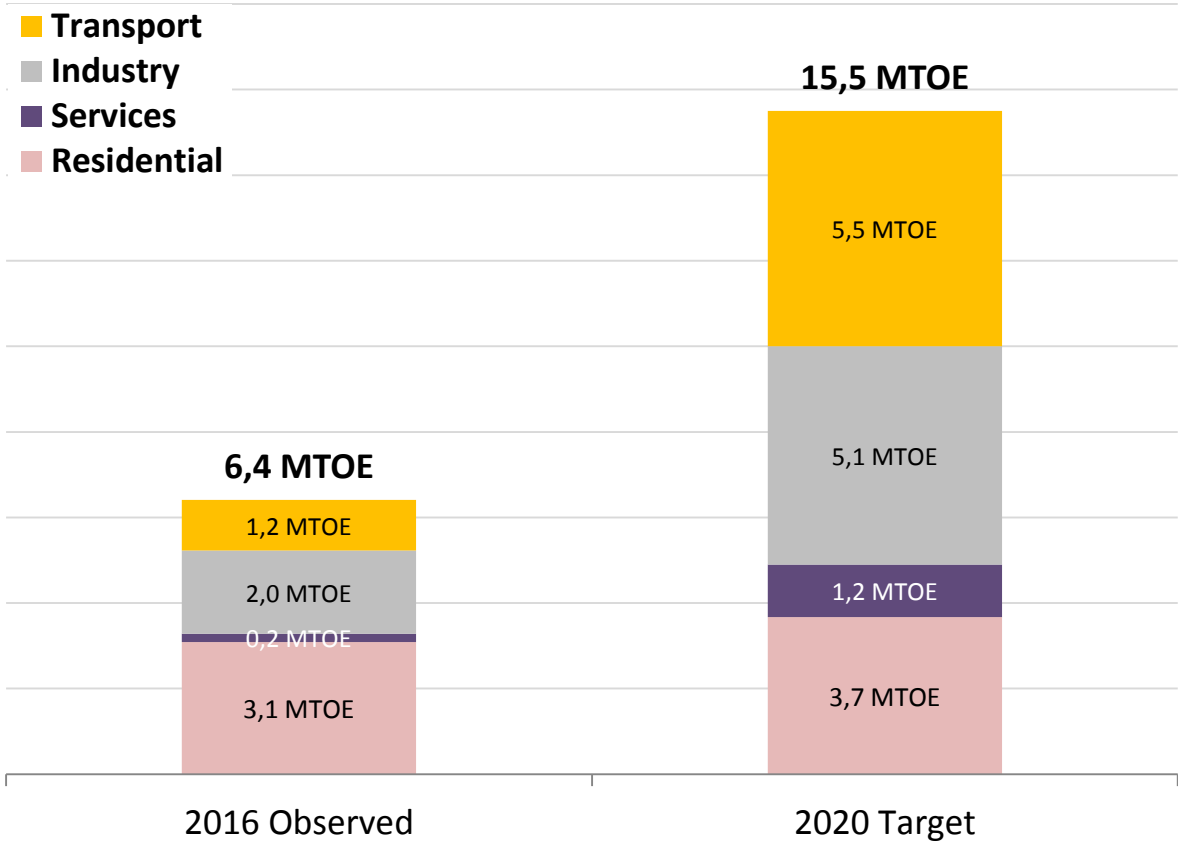
(*) Until 2017, incentive lifetime is for the most part of interventions 5 years
(**) Considering economics of the last obligation year (2016) June 2016 – May 2017
(***) Considering only 65% deduction, because 50% deduction includes also costs not related to energy efficiency interventions
(****) The public cost considering only Thermal account incentives paid in 2016

Status of national energy efficiency target

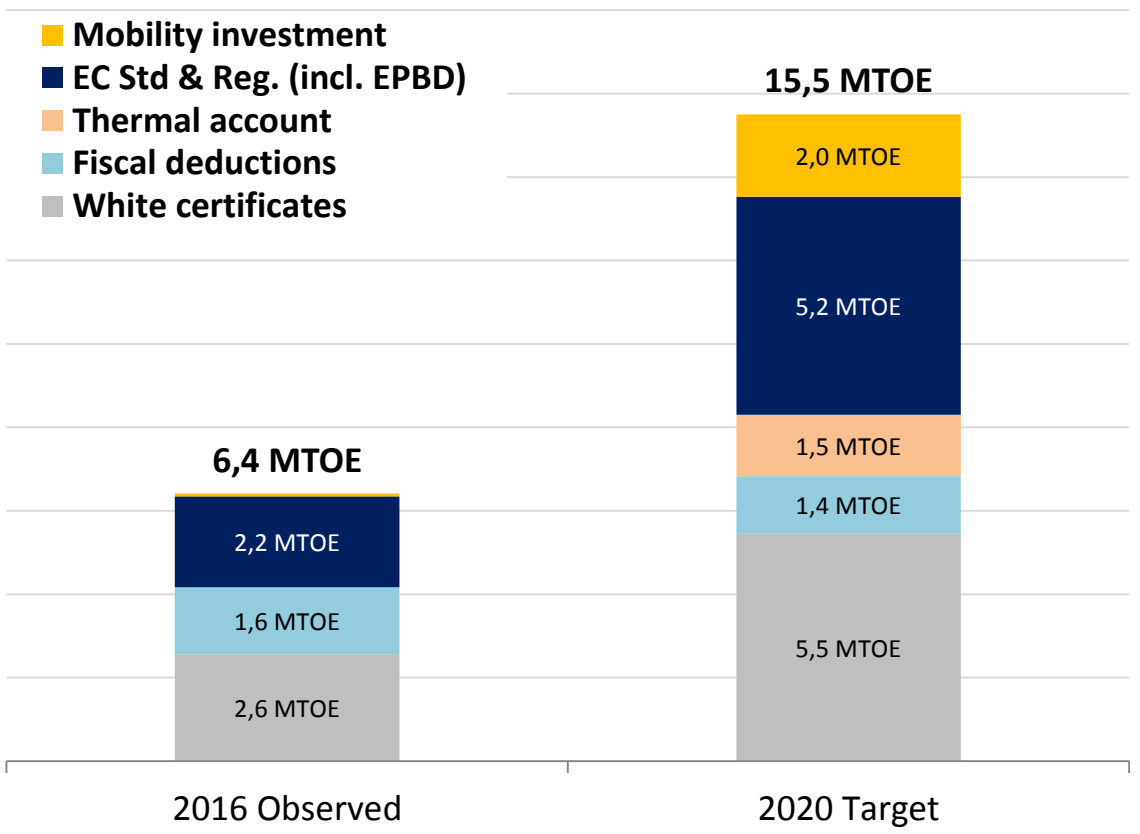
In 2016 Italy reached **41%** of the **national energy efficiency target** expected for **2020**:

- The **energy savings** assessed in 2016 (interventions 2011-2016) are **concentrated** in **residential** and **industrial** sectors while services and transport sectors are still far from the sectorial target
- **White certificates** and **Fiscal deductions** are the most **significant** energy efficiency **measures** in terms of energy **saving generated** to achieve the target (*)

National EE target per sector



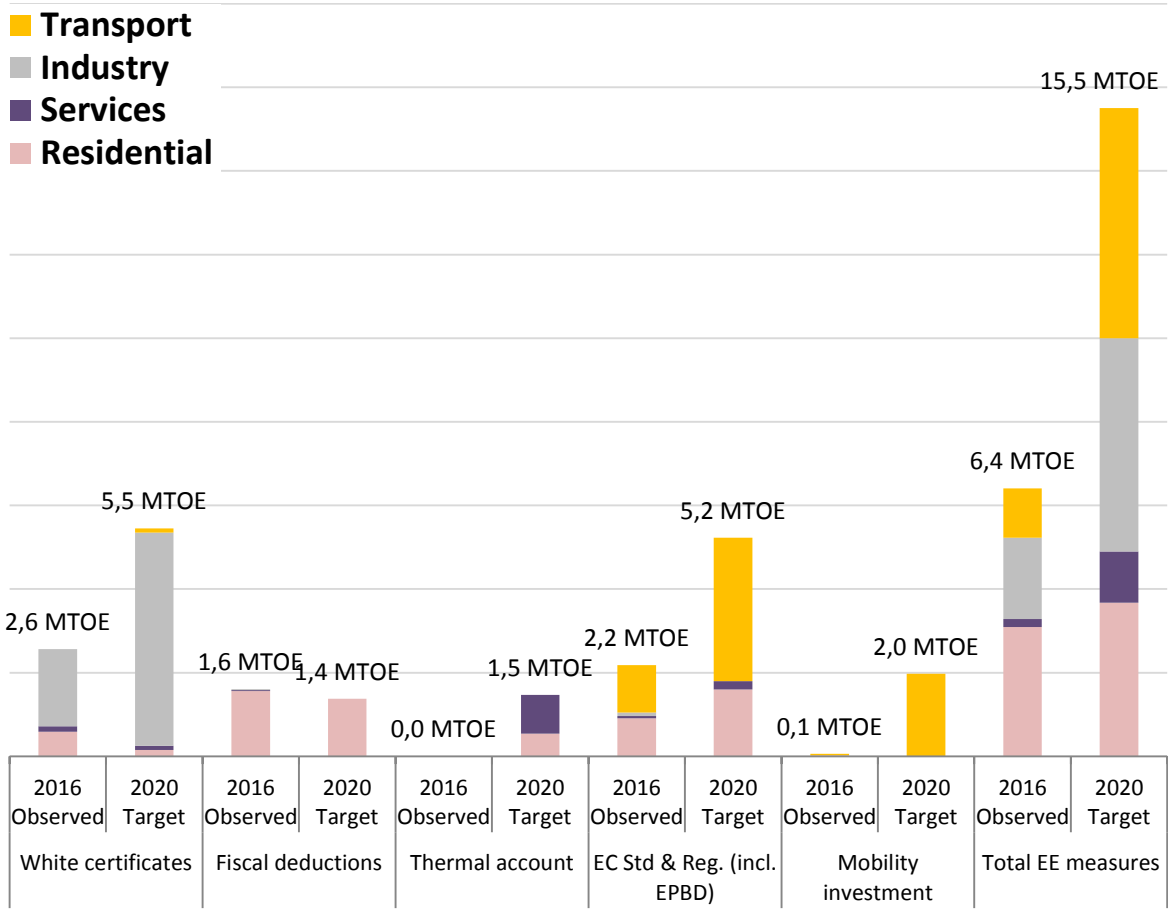
National EE target per EE measure



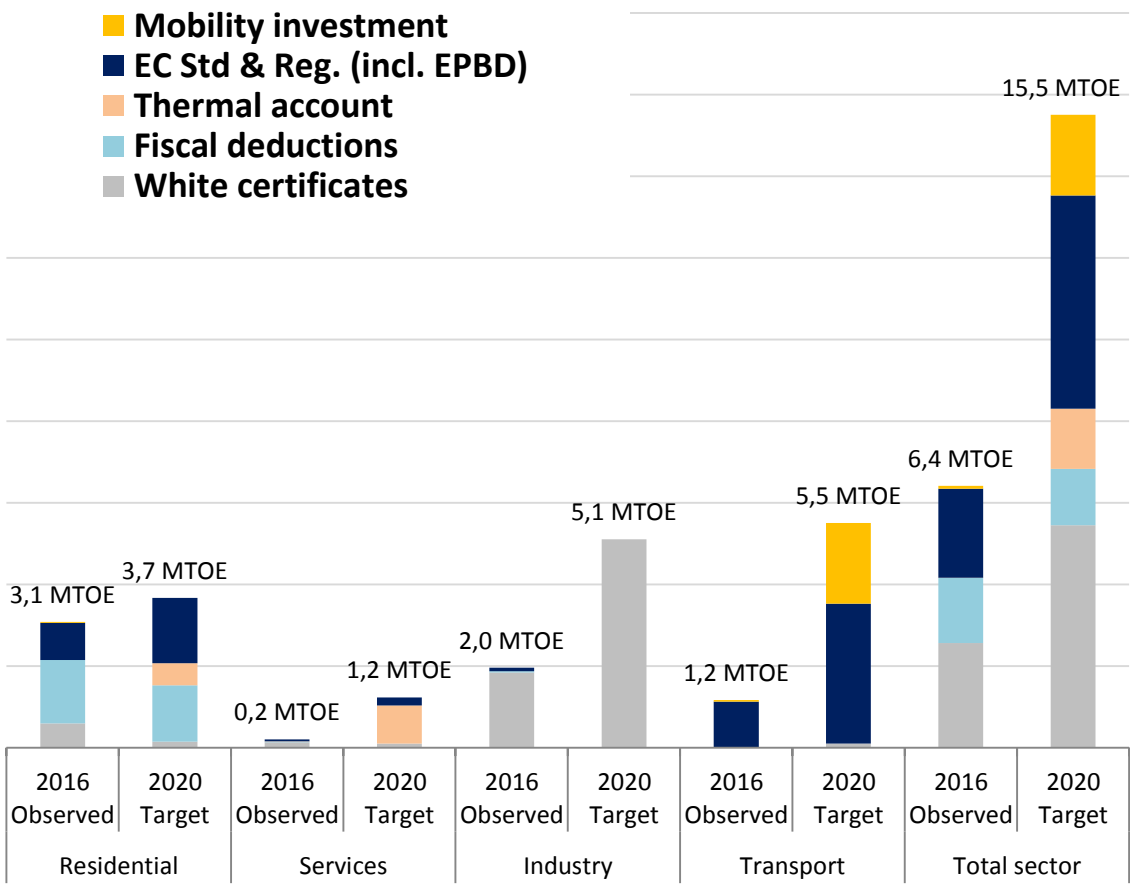
Status of national energy efficiency target by measure and sector

The national energy savings data (showed in the previous slide) in more details:

National EE target per measure



National EE target per sector

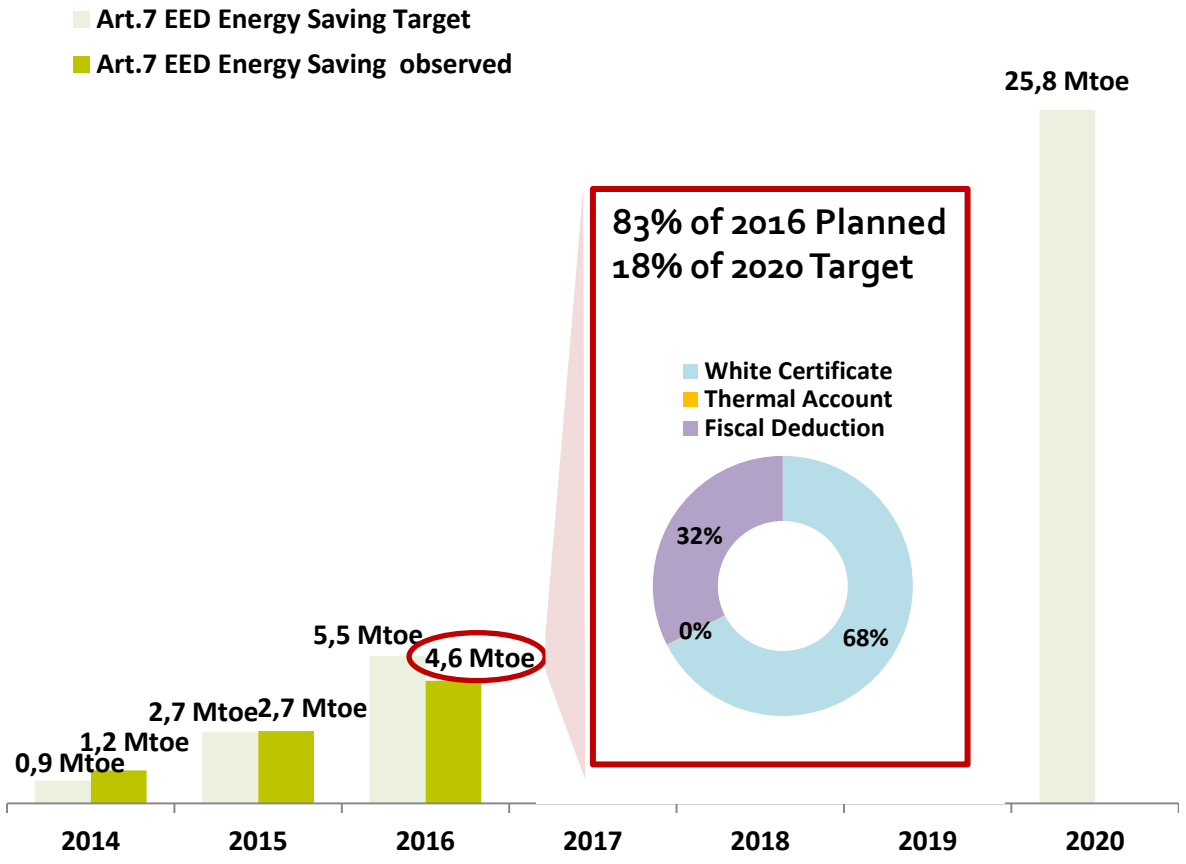


Status of energy efficiency obligation schemes target (Art.7 EED)

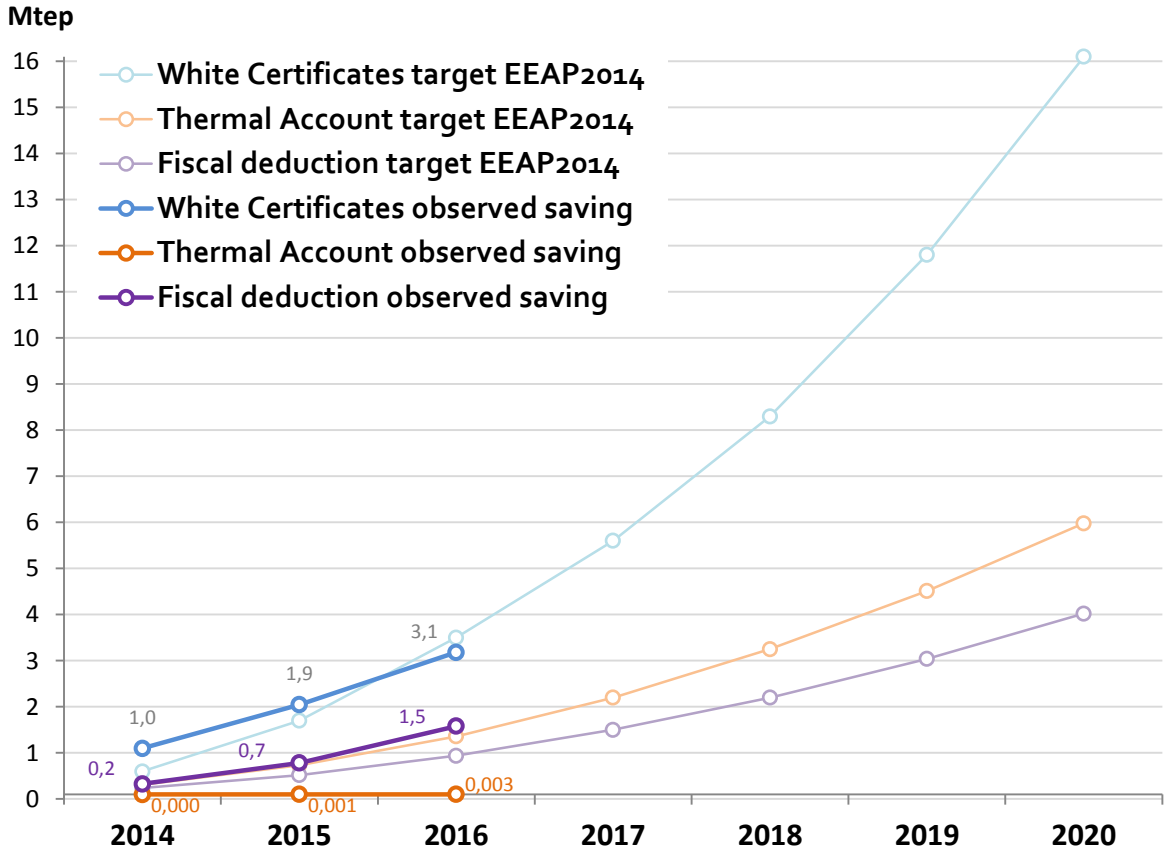
In 2016 Italy was **in line (83%)** with the **energy saving trend** defined in **EEAP** in order **to reach the 2020** energy efficiency obligation scheme **target** :

- **White certificates** covered **more than 60%** of the energy savings assessed and is **very closed to the planned saving trend**
- **Fiscal deduction** provided **more energy savings compared to expectations.** Fiscal deductions partially compensate the **Thermal Account** energy savings **gap**

Art.7 EED national target and result



Art.7 EED targets and results per energy efficiency measure



Agenda

Energy Efficiency targets and results in Italy

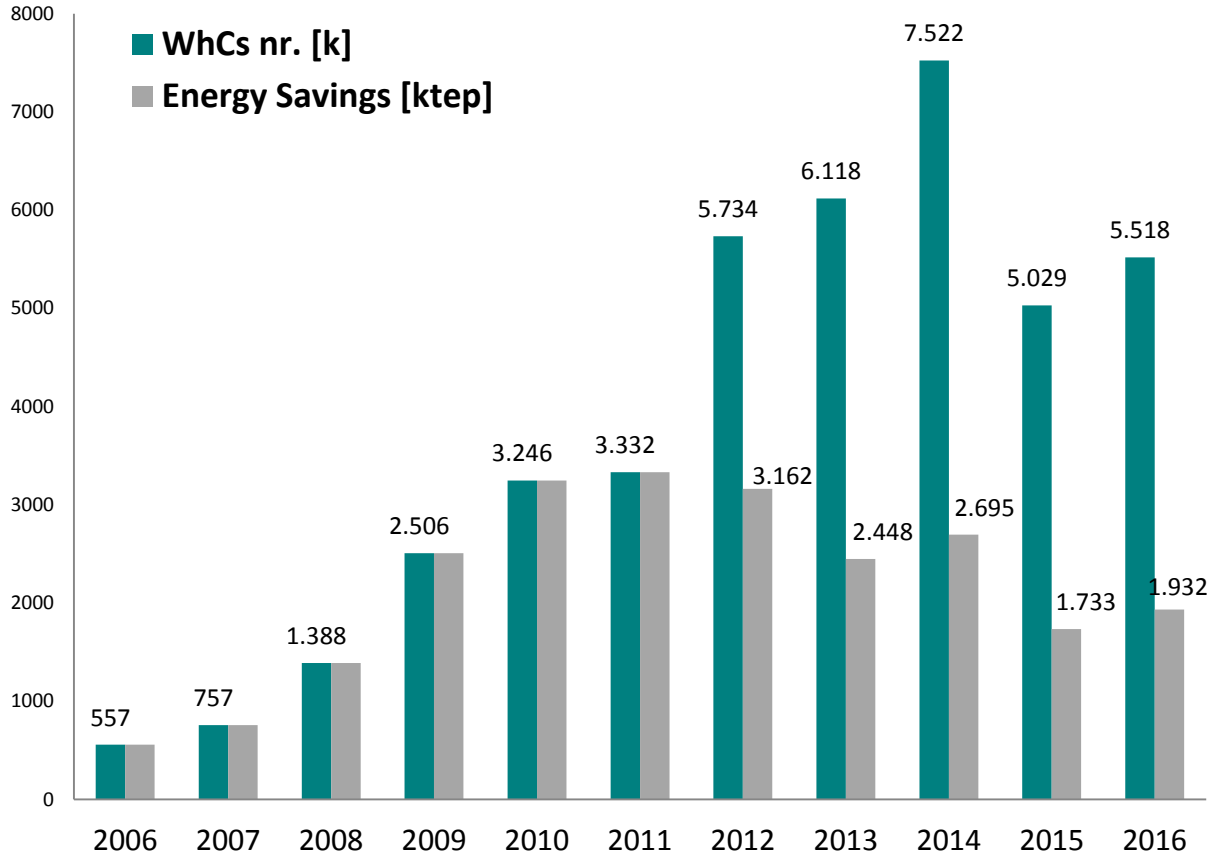
White certificates operating data

Impacts of white certificates mechanism on economy, environment and energy bill

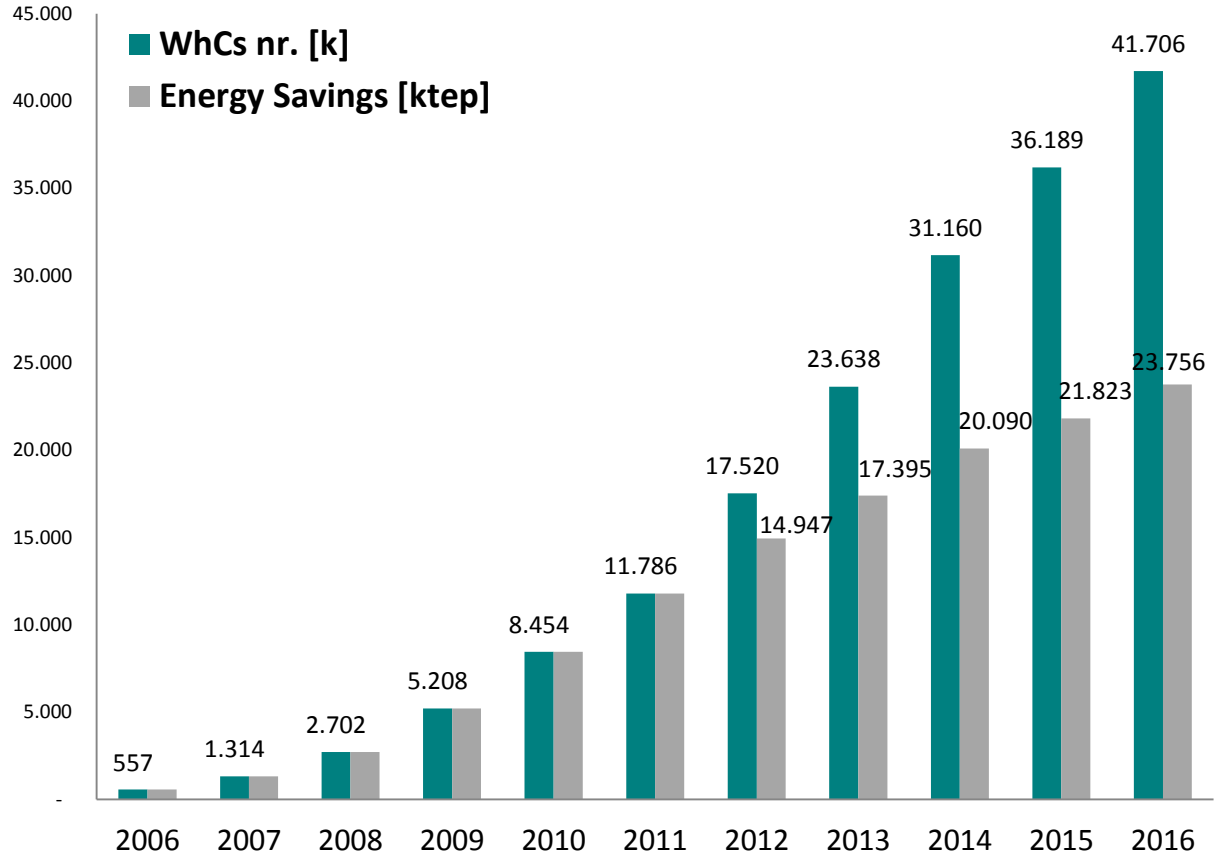
White Certificates and savings generated

- In 2016 in Italy have been issued **5,5 M of white certificates** related to **2 Mtoe of energy savings interventions**, with an **increasing rate of 10%** compared to **2015** emissions
- The **new interventions** received 0,7 M of WhC (**13%**) while the rest ~~are~~ were dedicated to interventions realized in the previous years
- The white certificates scheme **in 11 years certified 24 Mtoe of primary energy savings**

Yearly White Certificates emissions and related energy savings



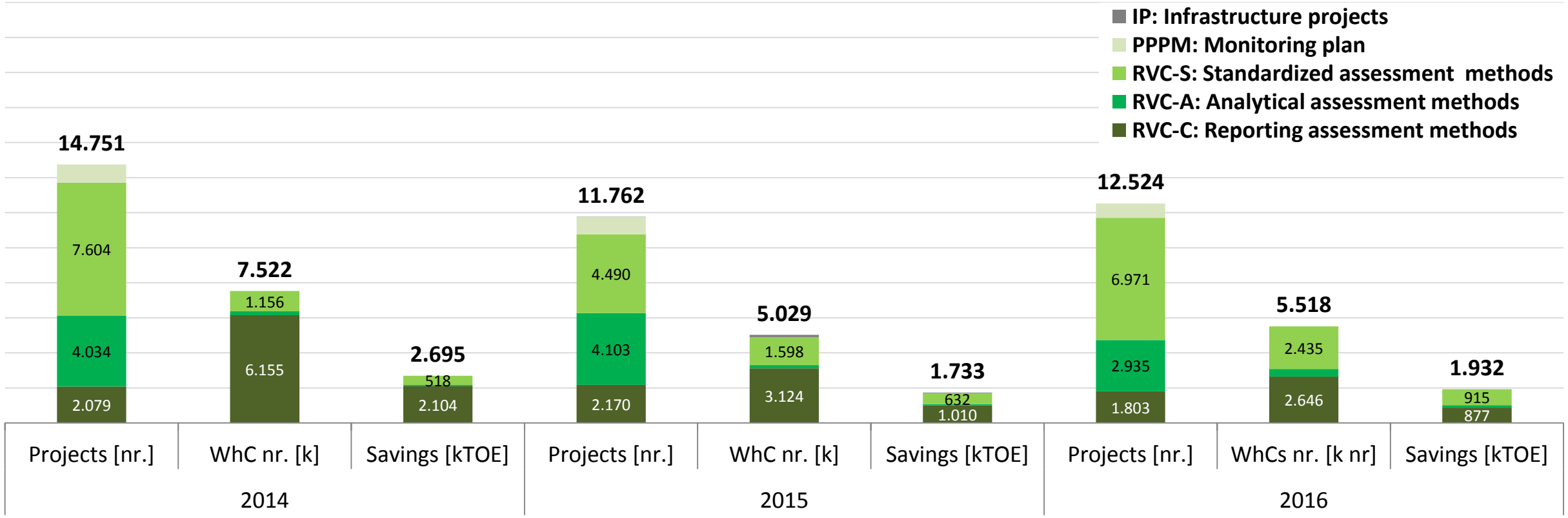
Cumulated White Certificates emissions and related energy savings



White Certificates by assessment method

- The WhCs scheme includes 3 assessing methods to calculate and verify the WhCs amount:
  - **Standardized assessment methods (RVC-S)**: without metering, considering default values for the energy savings of single installed units and taking into account corrective factors (e.g. climate zone, working hours, etc.). Method allowed only for some EE interventions (e.g. windows, lighting, etc.)
  - **Reporting assessment method (RVC-C):** requires direct measurement before and after intervention, taking into account technological baseline. The project description and measurement of energy savings proposal could be previously submitted and accepted by GSE (PPPM)
- Many of the **WhC projects** are represented by **standard assessment methods** while the **main part of WhCs** and related **energy saving** is assessed by **reporting assessment methods**

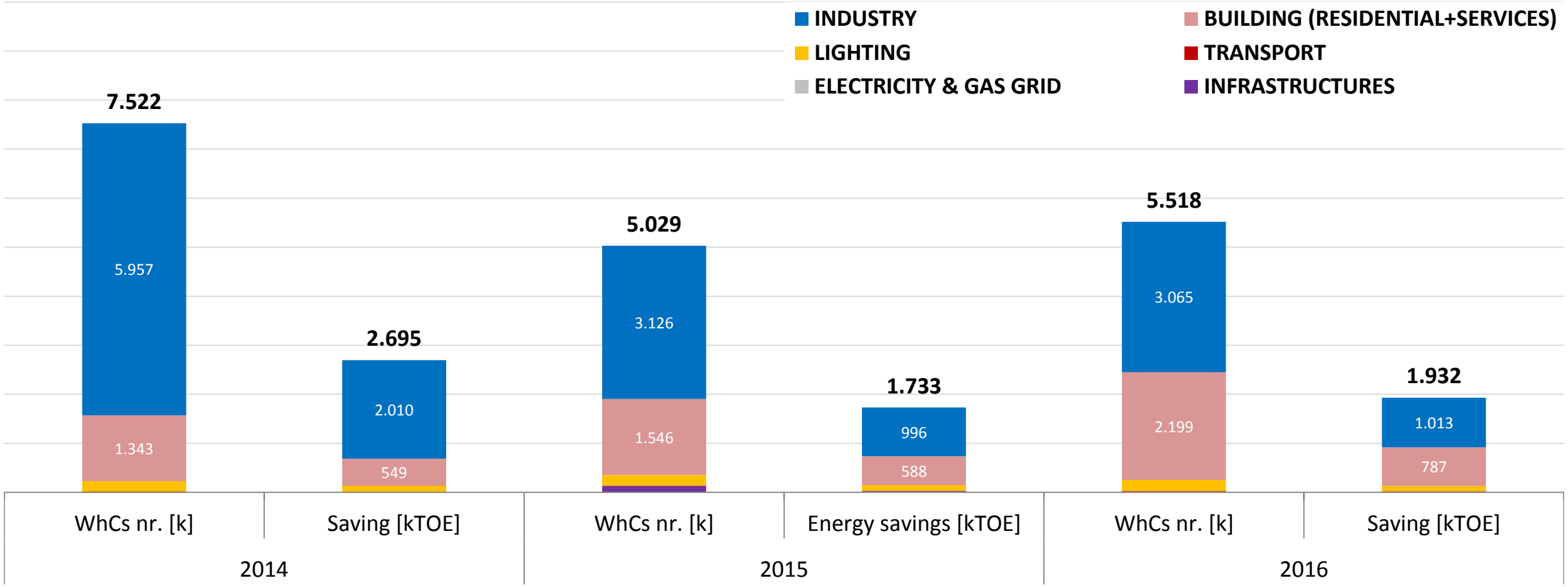
Annual amount of projects, white certificates emissions and related energy savings per EE project assessment method



White Certificates by sector

- **Most of WhC and energy savings** are-recognized to energy efficiency interventions in **industrial sector** (52% of savings in 2016)
- The **share of savings** verified **in buildings** of residential and service sectors is progressively **growing** (41% of savings in 2016)

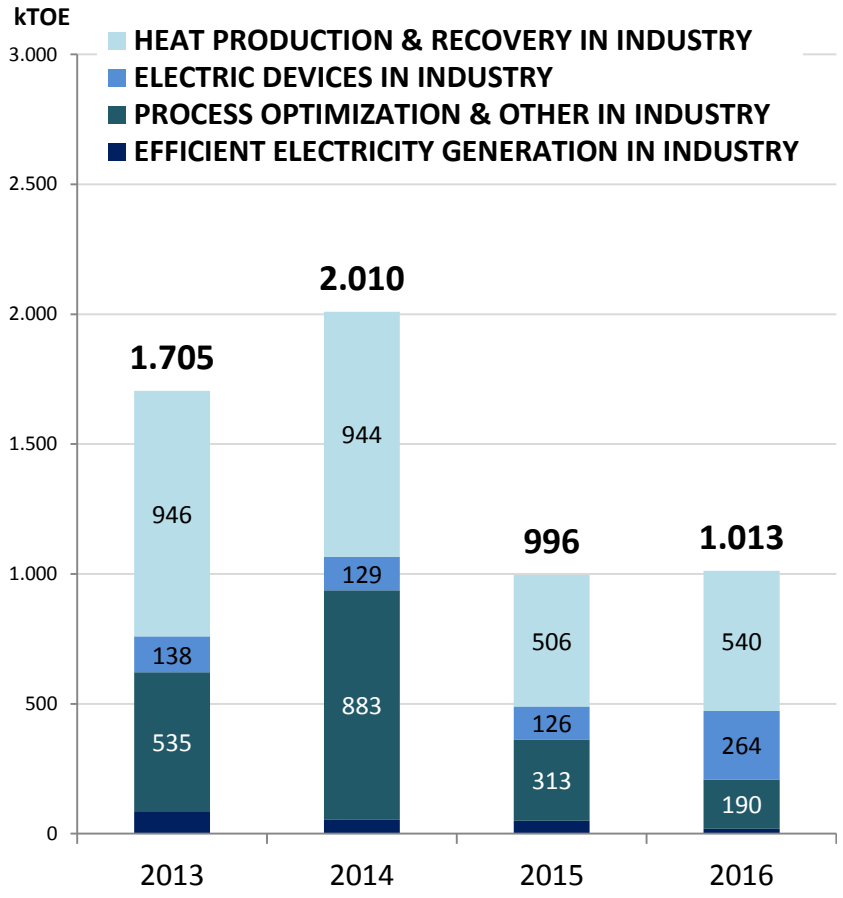
Annual amount of White certificates emissions and energy savings by sector involved in energy consumption saving



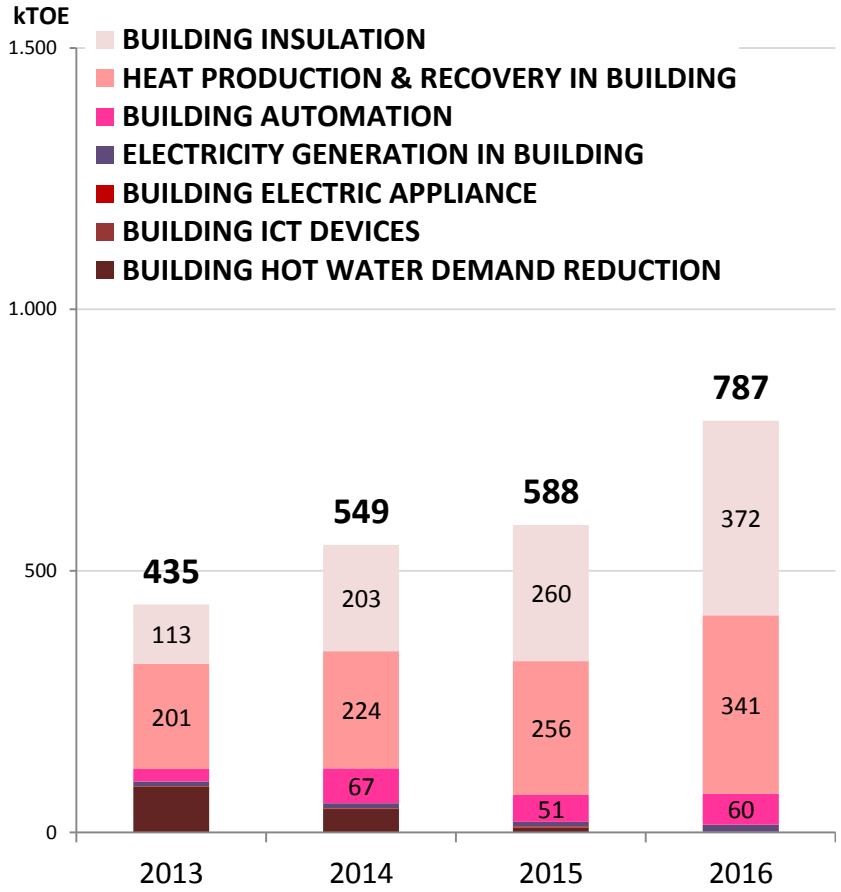
White Certificates by intervention type

- The largest part of energy efficiency interventions realized in **industrial** sector are related to **heat production and recovery** (53%)
- **Heat production** interventions and **building insulation** cover **90%** of savings supported by WhCs scheme in the **building sector**
- The main part of **lighting** interventions is represented by **retrofit of public lighting** (69%)

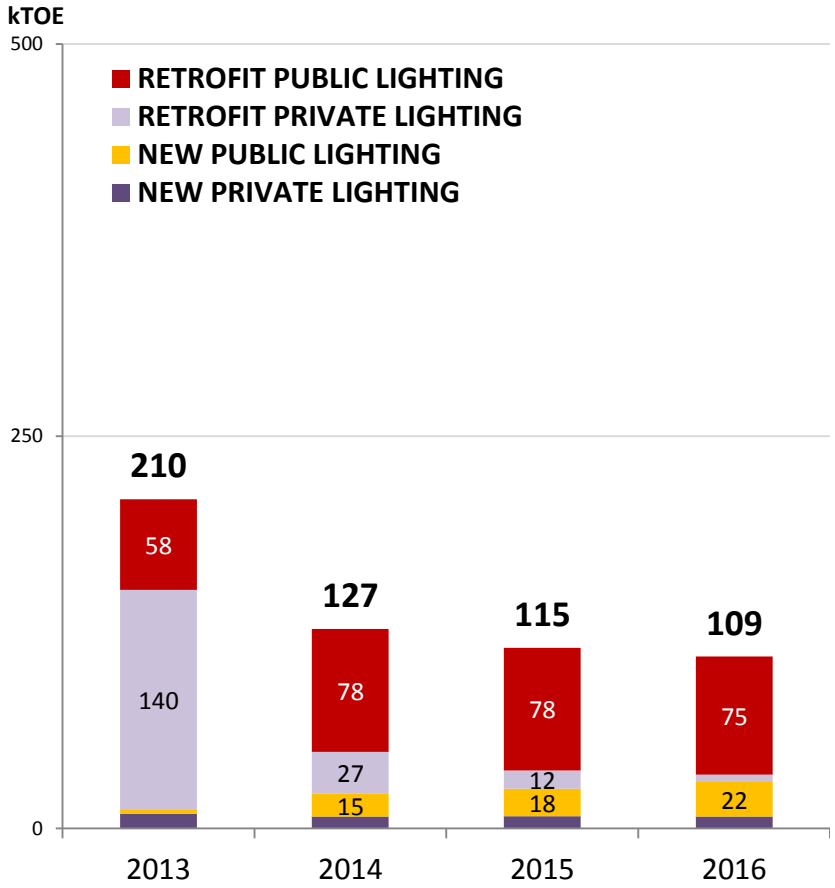
Savings by intervention type in industry



Savings by intervention type in buildings

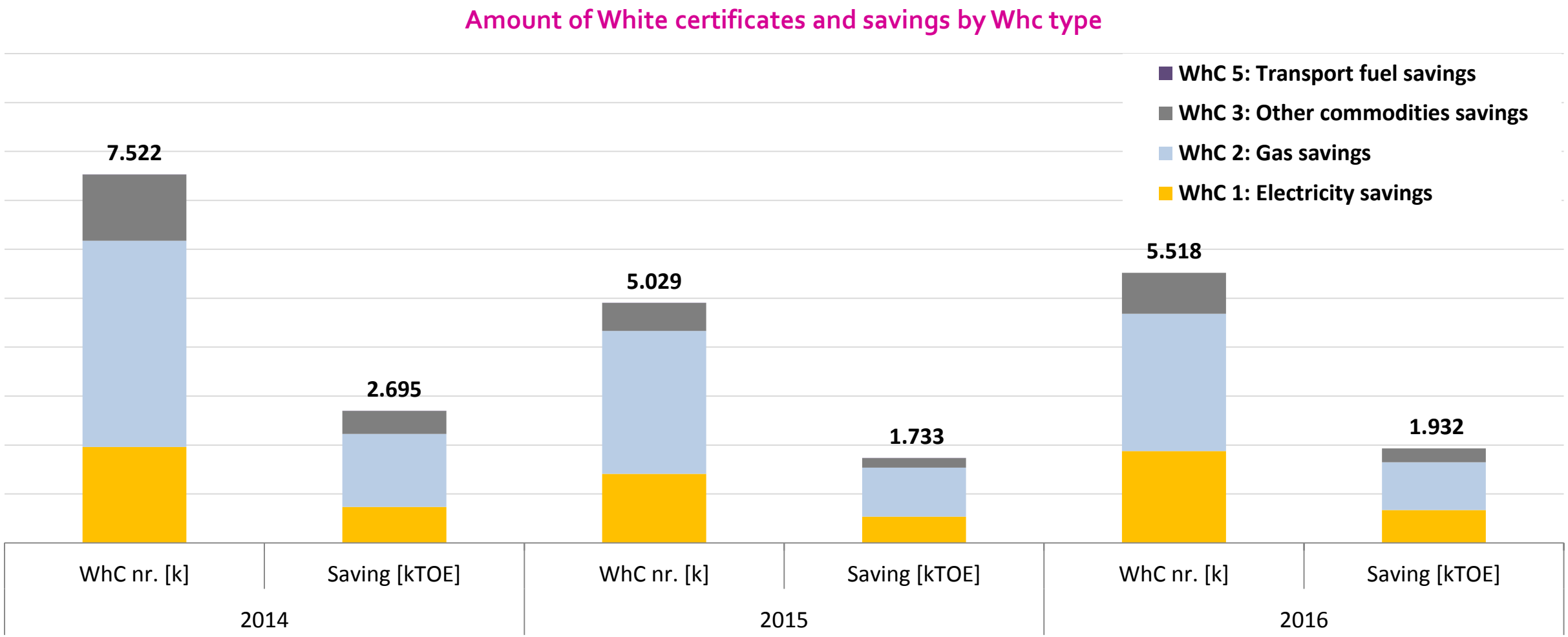


Savings by intervention type in lighting



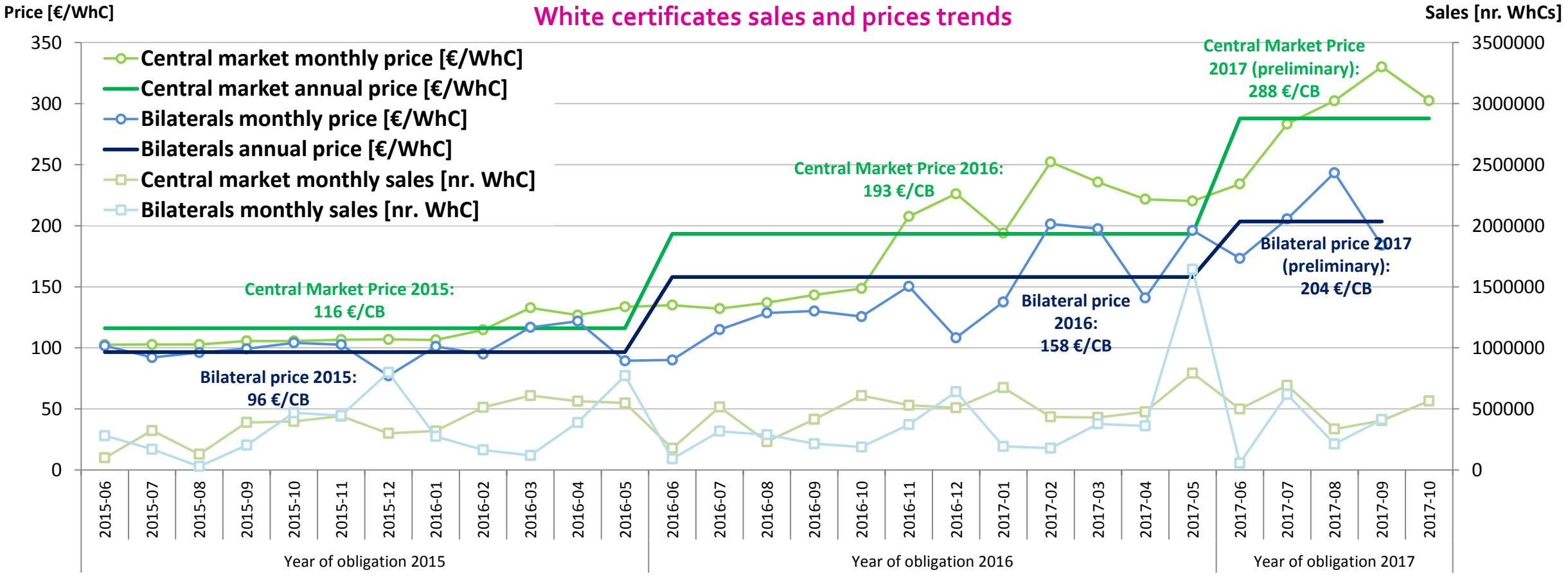
White Certificates by energy saving type

- **Half of WhC** and **energy savings** are related to energy certificate **type 2** representing **savings of natural gas** because the largest part of energy efficiency interventions supported by WhC involves heat production and recovery mainly from natural gas



Main trends of White certificates market

- **60%** of white certificate sales are **traded on the central market** and **40% by bilaterals**
- White Certificates traded into the **central market** show **prices 20% higher** than those of bilaterals, where free sales between branches of the same company occur (ESCO and DSO)
- **From 2017 the price is stably beyond 200 euro** per white certificate, after being in the range 90-110 euro/certificate for over five years
- The **WhC price** growth could be **driven** by **short market** caused by more **challenging obligation quota** and **speculative negotiations**
- Currently **it does not exist a cap mechanism** for white certificates market price



Agenda

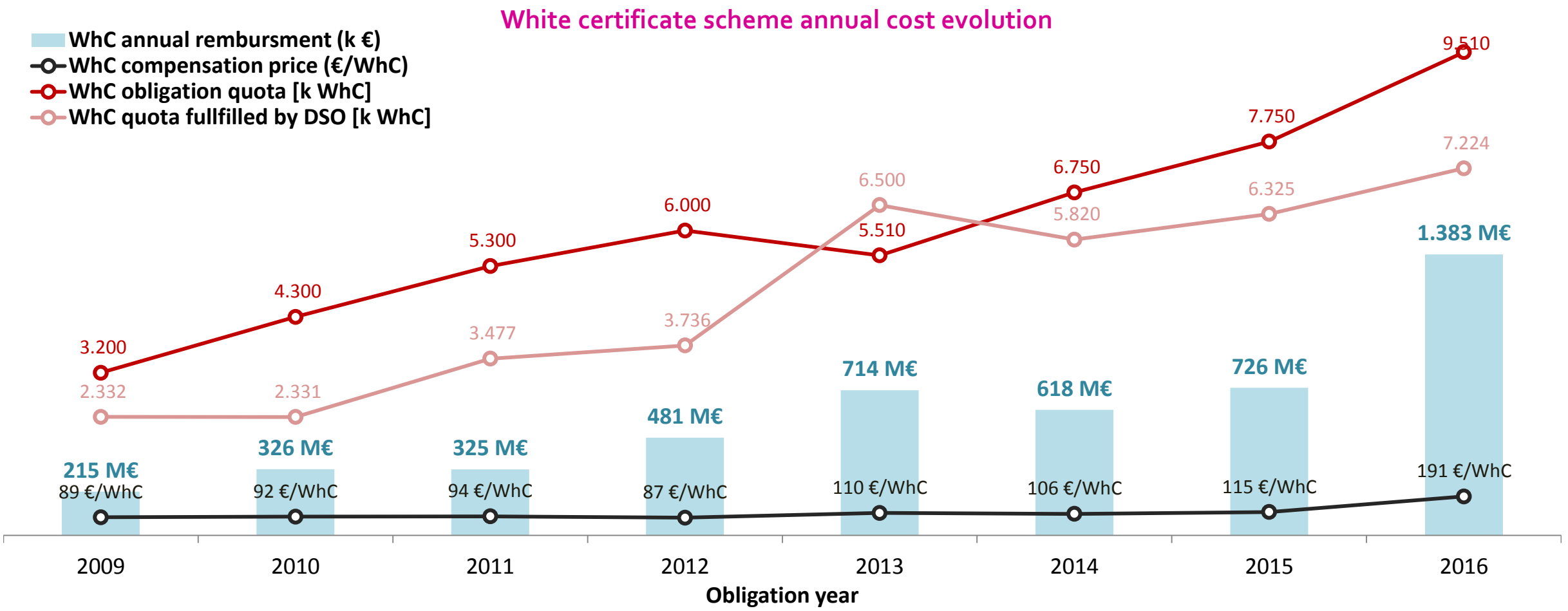
Energy Efficiency targets and results in Italy

White certificates operating data

Impacts of white certificates mechanism on economy, environment and energy bill

White certificate scheme cost

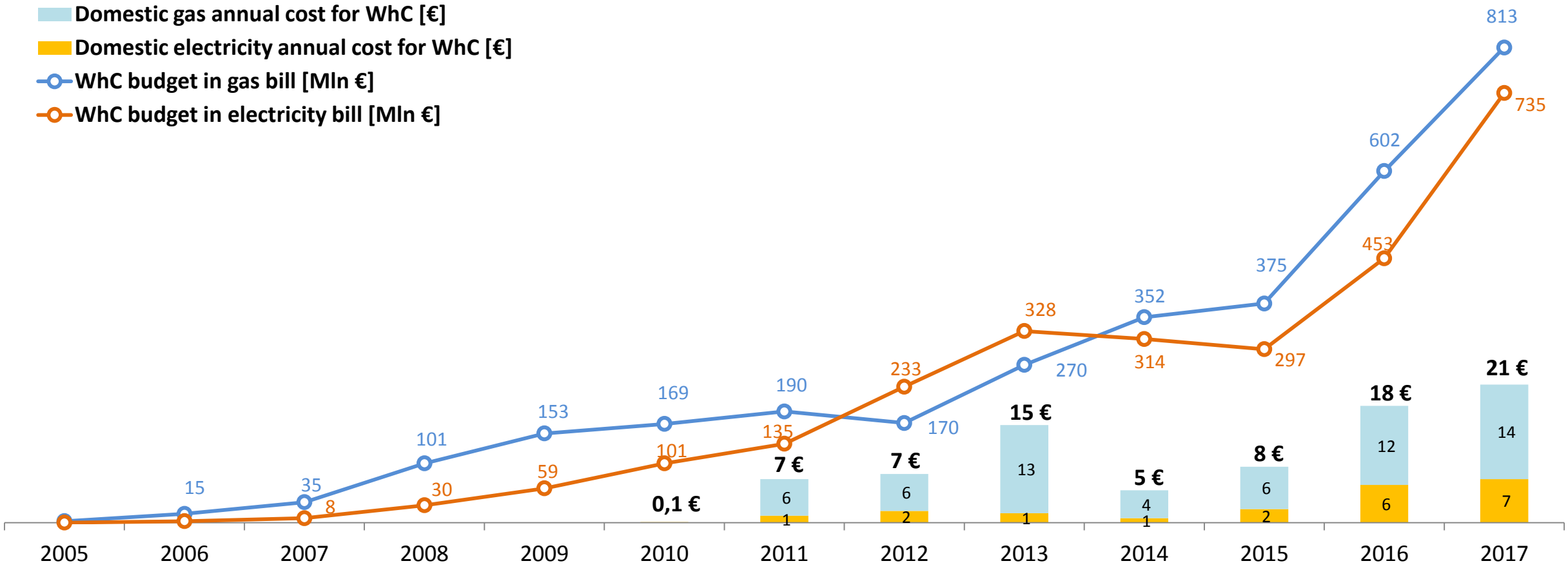
- In recent years, the **annual cost of white certificates is growing**. It overcame 1 bn/y in 2016.
- The white certificates mechanism cost is **driven** by the increasing of:
  - **obligation quota** to reach the challenging energy efficiency goals
  - white certificates **compensation price** recognized to DSO (obliged subjects) that is linked to market price



White certificate economic impact on family bill

- The total **cost of white certificates** scheme is covered by the **electricity and gas bills (UC7 and RE)**
- The **annual fee** that a **typical** Italian **household** (2700 kWh, 1400 m³) pays for the white certificate scheme amounts to **20€ per year**

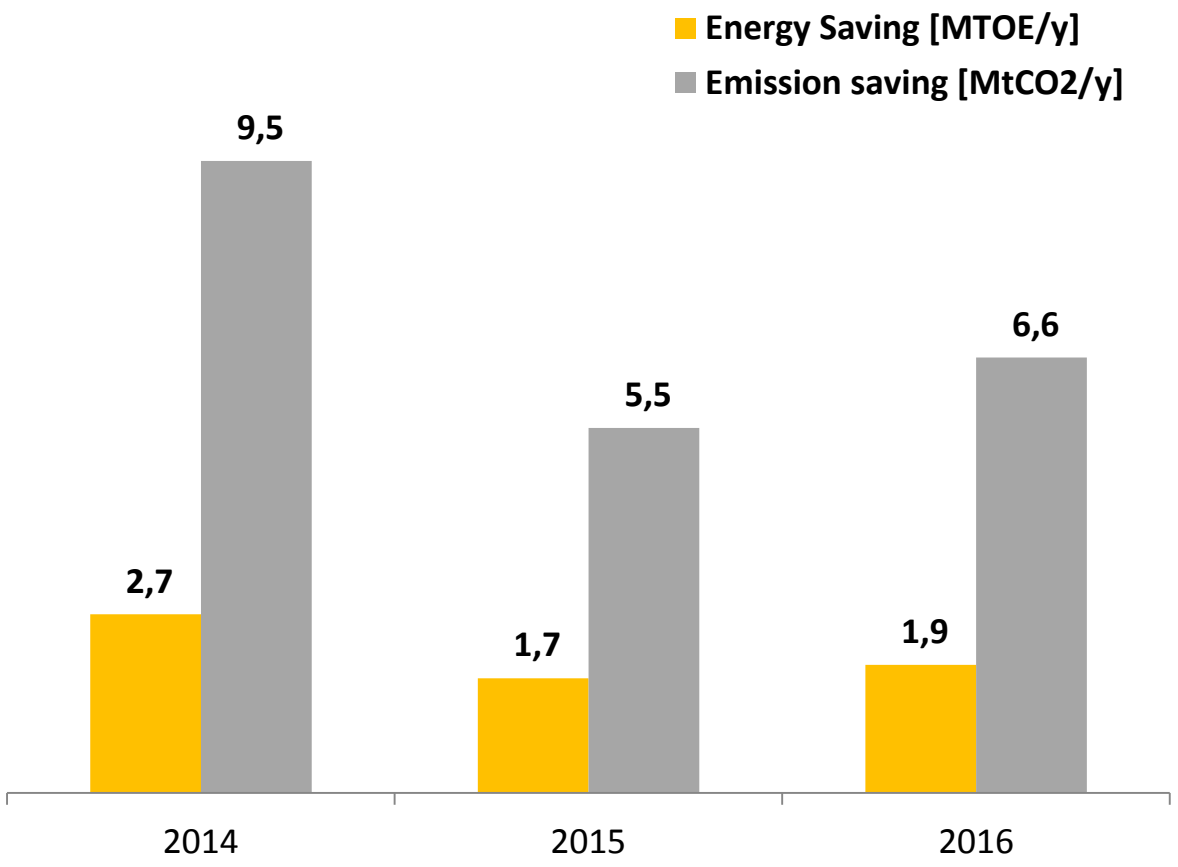
White certificates family bill expense



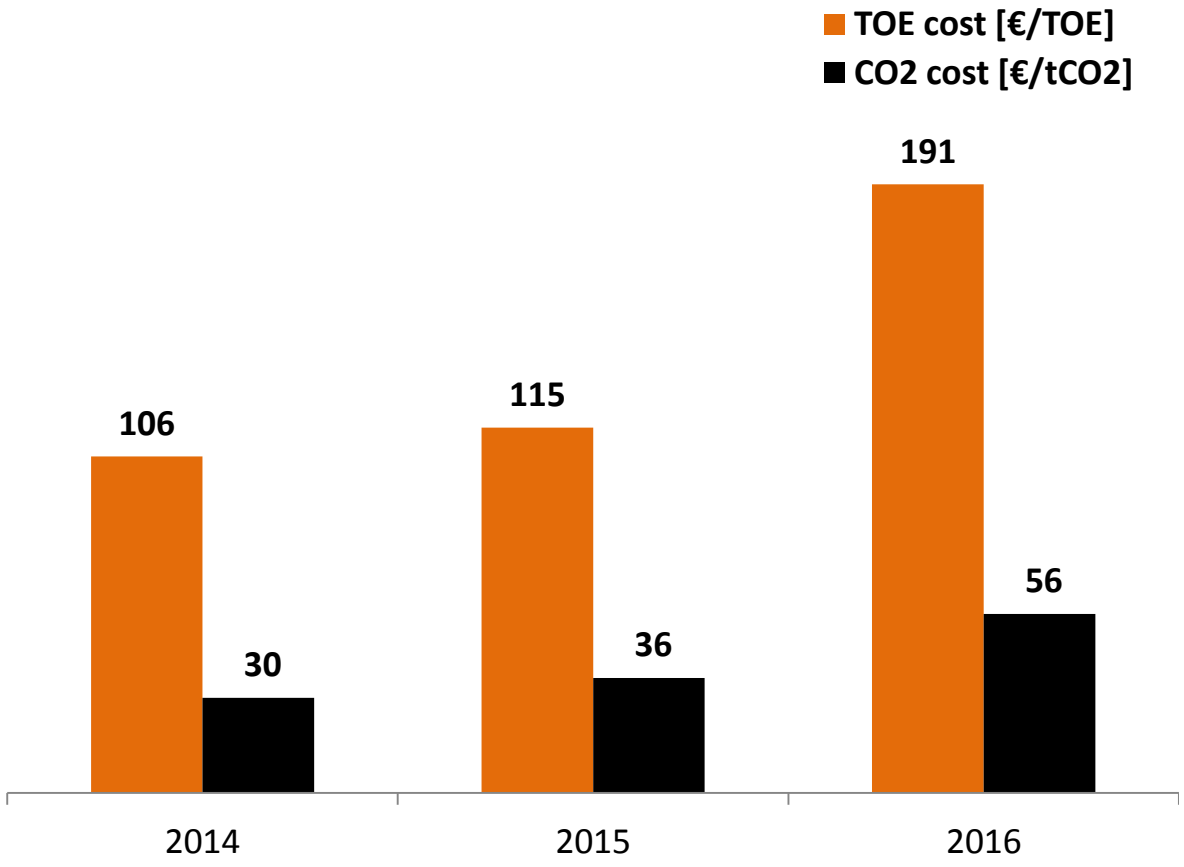
White certificate environmental impacts: Energy & GHG savings

- The energy efficiency **interventions supported** by **White certificates** enable the yearly reduction of around **2MTOE** and **7 MtCO2**
- **Primary energy and GHG saved** represents the **lowest cost/saving ratio** among **the energy efficiency scheme** currently active in Italy, although in recent years it is increasing

Energy & GHG savings related to WhCs



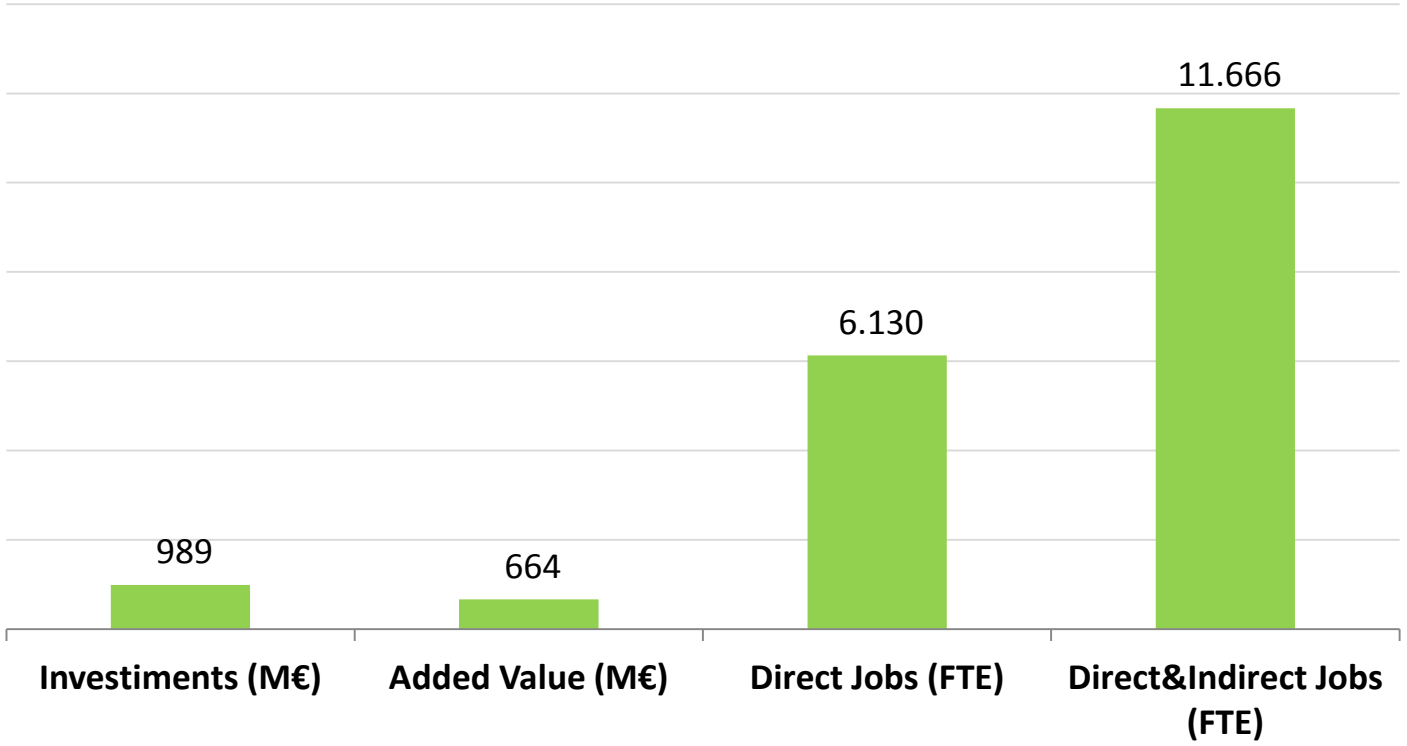
Cost evolution of energy & GHG savings



White Certificates investment and occupation

- The amount of annual investments related to the new energy efficiency **interventions** supported by **white certificates is estimated to be around 1 bn/y** with more than **10.000 (FTE)** of related **direct and indirect green jobs**

Volume estimated for investments, added value and jobs related to interventions supported by WhCs



Energy efficiency added value & jobs KPI adopted for the estimation

Direct occupation	Indirect occupation	Added Value
FTE/M€	FTE/M€	M€/M€
6,2	5,6	0,67

contacts

Thank you for your attention

daniel.giannetti@gse.it

studi@gse.it