



**ROLE OF
RENEWABLES IN
THE ENERGY
SYSTEMS OF
TOMORROW**

**KAZAKHSTAN
ENERGY WEEK**

MICHELE PANELLA

GSE
PROMOTES SUSTAINABLE DEVELOPMENT IN ITALY.
SUPPORTS RENEWABLE SOURCES AND ENERGY EFFICIENCY.

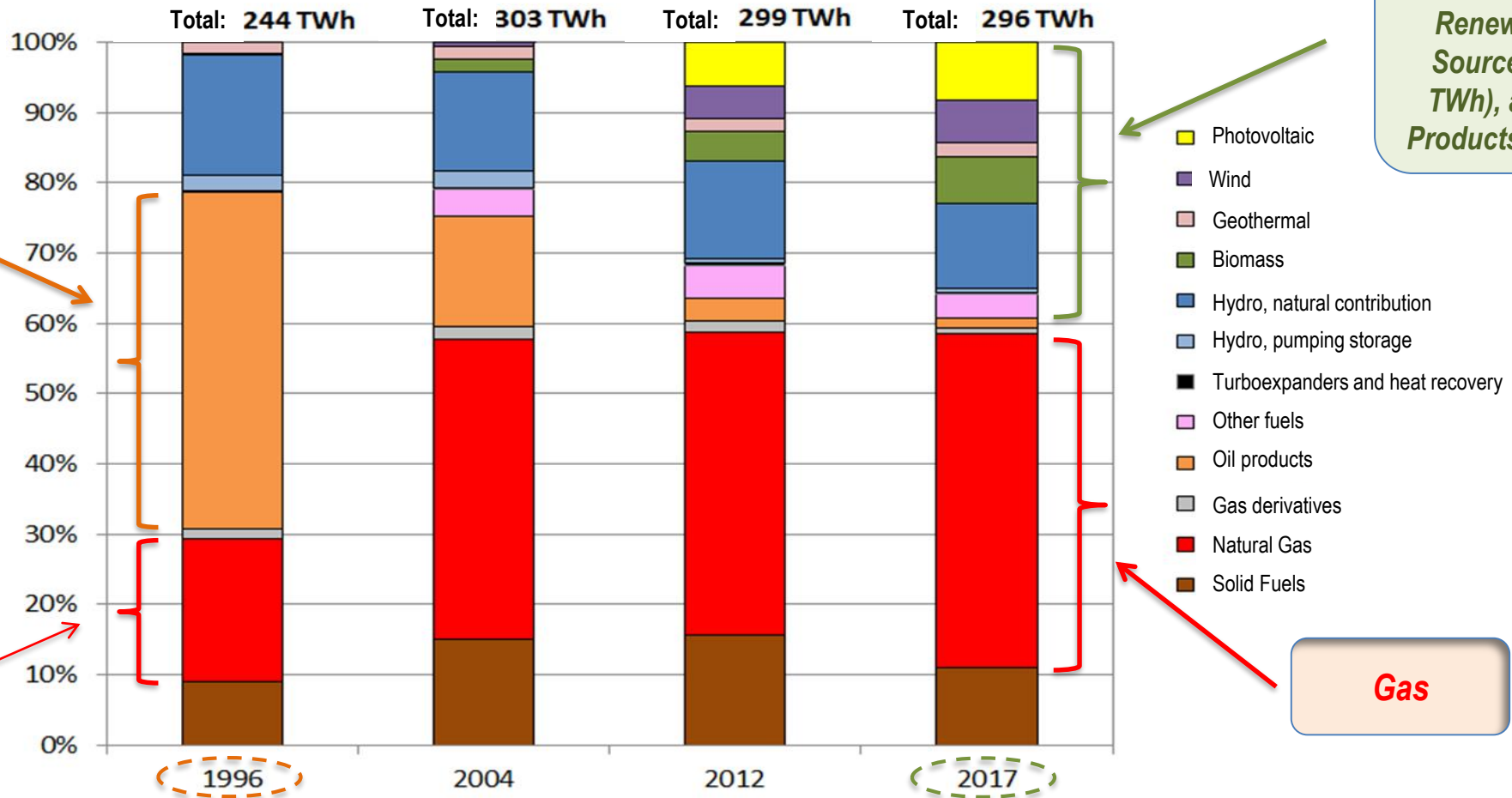
NUR-SULTAN
26.09.2019

The Italian experience in renewable energy development

EVOLUTION OF THE ITALIAN GENERATION MIX

Major presence of Oil Products for power generation: about 110 TWh

Relevant presence Renewable Energy Sources (about 115 TWh), almost no Oil Products (about 3TWh)



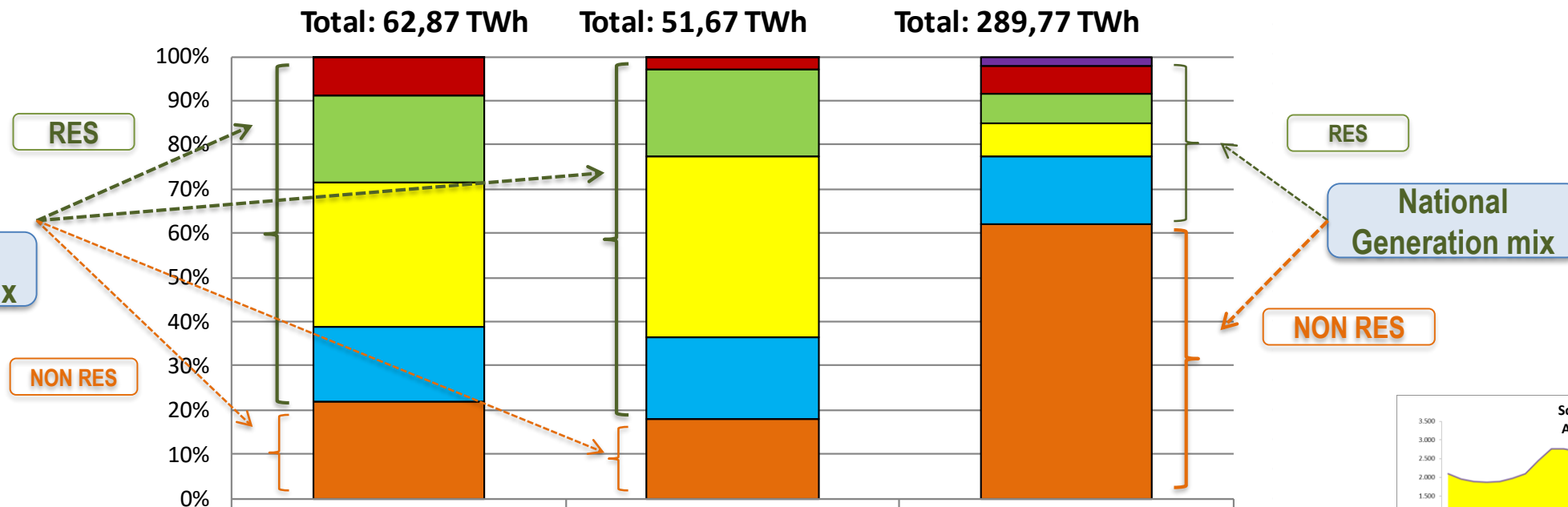
Gas

Gas

NO NUCLEAR POWER GENERATION

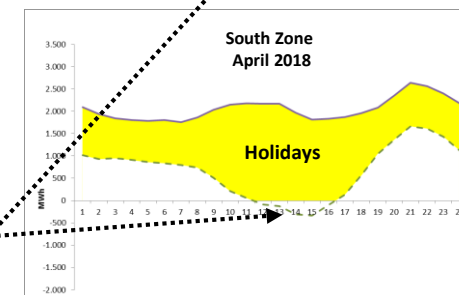
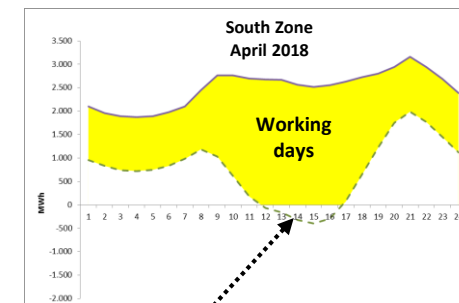
The Italian experience in renewable energy development

Strong differences between:



	GD	GD-10 MVA	ITALY
Geothermal	0.3%	0.0%	2.2%
Wind	8.6%	2.8%	6.1%
Biomass, Biogas and Bioliquids	19.8%	20.0%	6.7%
Solar	32.6%	40.6%	7.6%
Hydro	16.9%	18.6%	15.3%
Non RES	21.8%	18.0%	62.1%

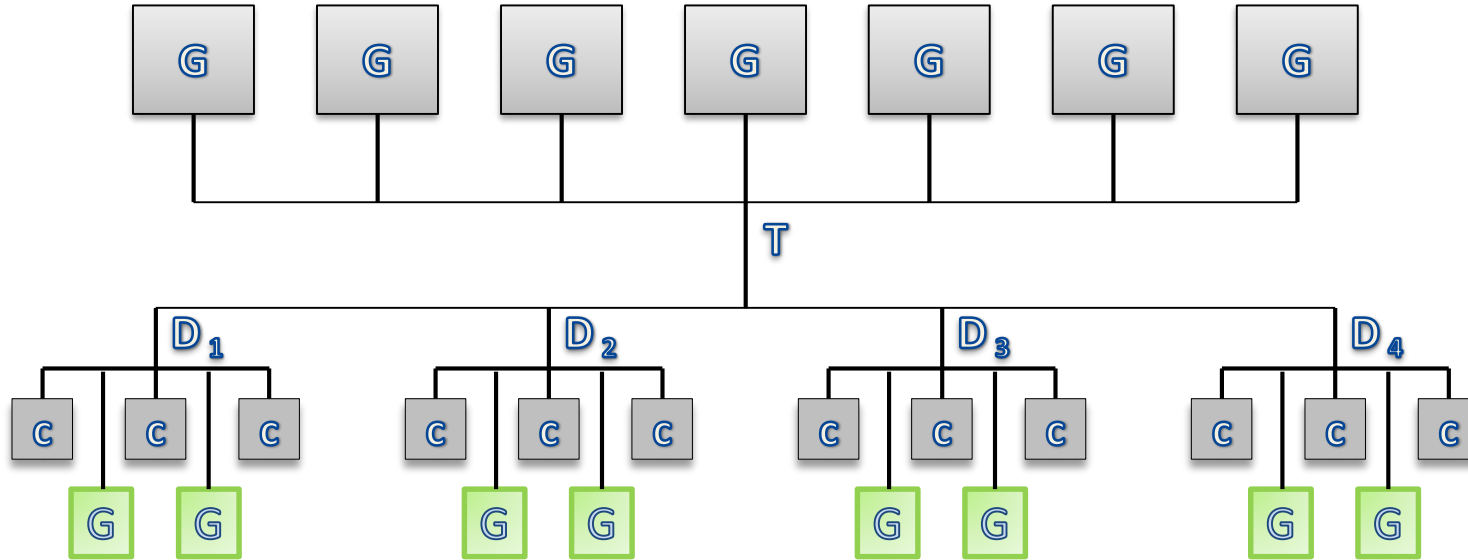
DISTRIBUTED GENERATION MIX - YEAR 2016



Energy produced but wasted!

Paradigm shift of the electrical system

...TO DISTRIBUTED GENERATION APPROACH...



➤ **Energy flows**

➤ **Generators and consumption completely separated**

Main consequences on governance and tools:

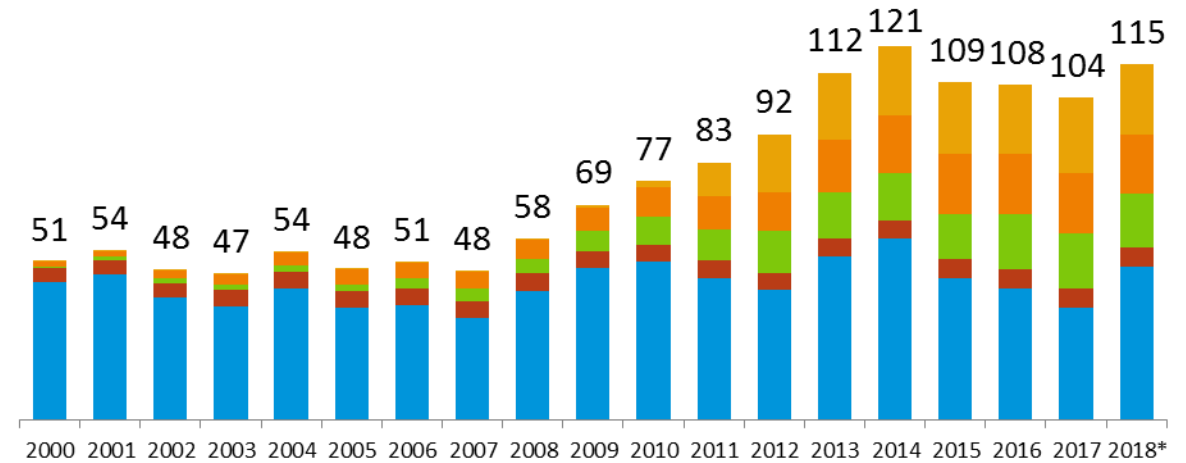
- **Ending long distances between facilities and the other activities (as well as the other sectors)**
- **Central dispatching and existence of only one (power exchange market) discussion** (availability of information)
- **Wider possibilities tariffs (peak tariffs, contracts) etc.**
- **Investment in new transport capacity and congestion management**

The Italian experience in renewable energy development

FOCUS ON RENEWABLE ENERGY DEVELOPMENT

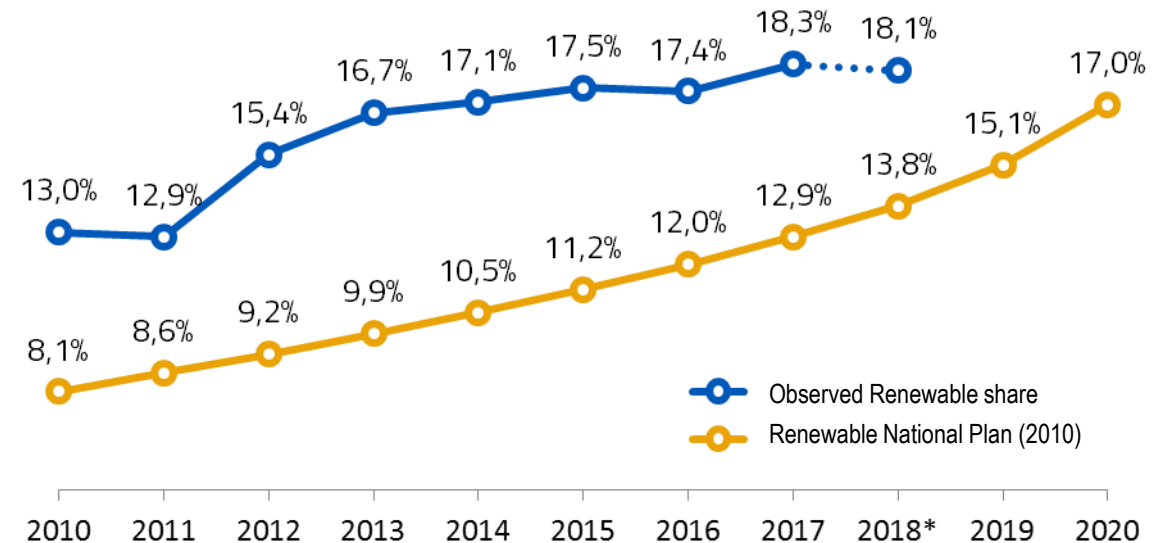
- Italy is deeply involved in the clean energy transition through the implementation of a **secure, sustainable and affordable energy system**. A variety of promotion/incentivising schemes have been deployed over the years: **Green Certificates** (old), **dispatching priority, feed-in tariffs, premium tariffs, auctions** etc.
- In 2018, **renewable energy power plants generated 115 TWh**, contributing to **34% of the electricity consumption**. **RES promotion policies** made an important contribution to these results: **67 TWh** (about 58%).
- In 2018, the **share of renewables in gross final energy consumption** was around **18%**, higher than the **2020 Italian mandatory target** set up by Directive 2009/28/EC (17%)

RES gross electricity production (TWh)



* Preliminary

RES share in gross final consumption and 2020 target



The Italian experience in renewable energy development

THE ITALIAN COMMITMENT IN RENEWABLE TARGETS National Integrated Energy and Climate Plan (main targets by 2030)

	2020 targets			2030 targets	
	EU	ITALY		EU	ITALY (NECP targets)
Renewables					
RES share in total gross final consumption	20%	17%		32%	30%
RES share in transport gross final consumption	10%	10%		14%	21,6%
RES share in gross final consumption for heating and cooling				+ 1,3% year	+ 1,3% year
Energy efficiency					
Reduction compared to scenario PRIMES 2007	- 20%	- 24%		- 32,5%	- 43%
Reduction of final consumptions through active policies	- 1,5% year (no transp.)	- 1,5% year (no transp.)		- 0,8% year (with transport)	- 0,8% year (with transport)
GHG emissions					
Reduction GHG vs 2005 for ETS plants	- 21%			- 43%	
Reduction GHG vs 2005 for non ETS sectors	- 10%	- 13%		- 30%	- 33%
Total reduction of GHG compared to 1990	- 20%			- 40%	

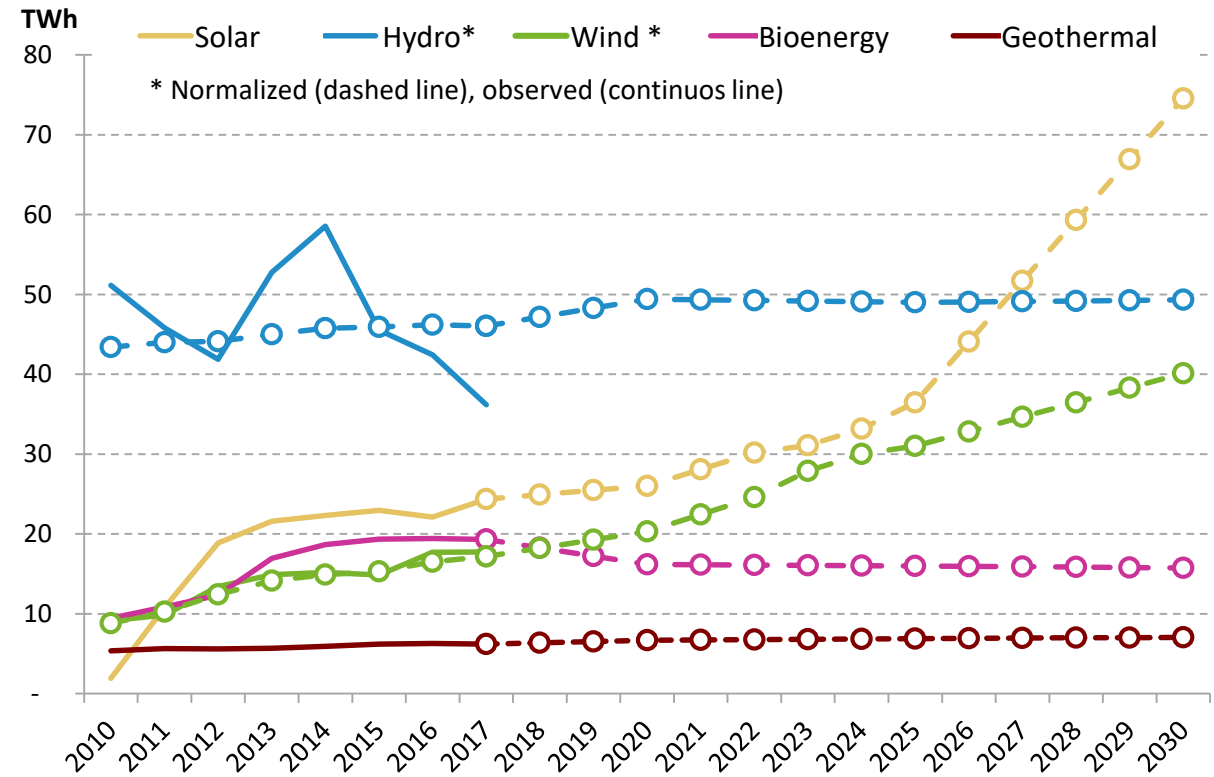
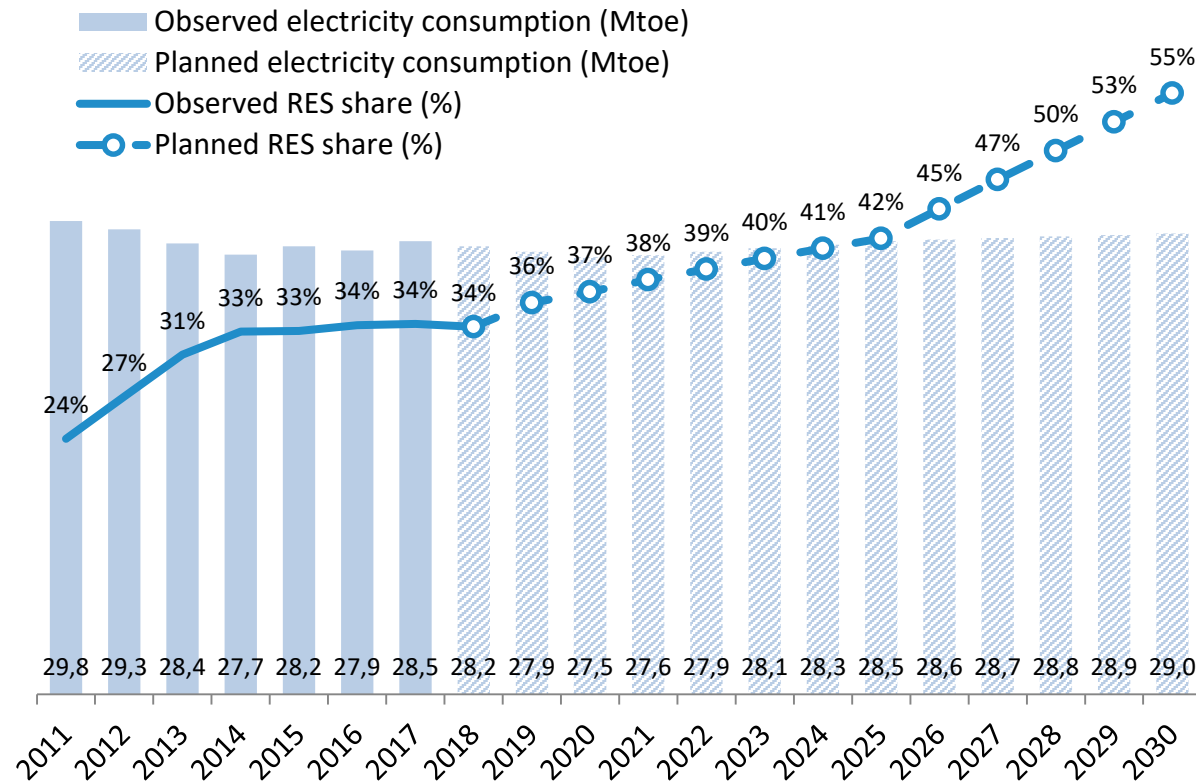
To reach the target of 30% of RES in total gross final consumption, the transport sector is expected to surpass the 14% target, reaching 21.6%

RES in Electricity sector: status and target



- In 2017 renewable electricity generation amount to 115 TWh, the RES-E mix is quite differentiated with a consolidated role of hydro (49 TWh, 43% of total RES)
- **An ambitious RES-E target of 55% (187 TWh)** has been set in **2030**, starting from the current 34% .
- Main contribution to RES growth are expected from PV **(+50 TWh, + 30 GW)**, followed by **wind (+23 TWh, +8 GW)**

RES trajectories in Electricity sector until 2030

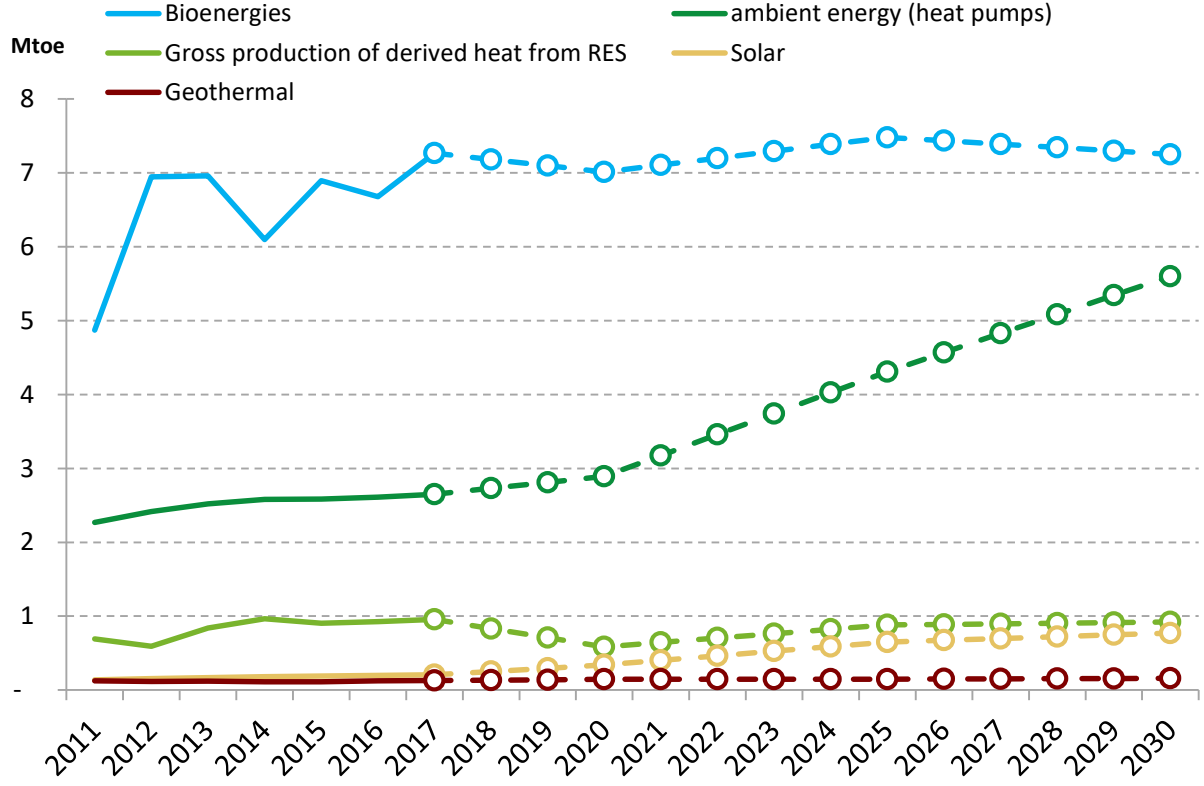
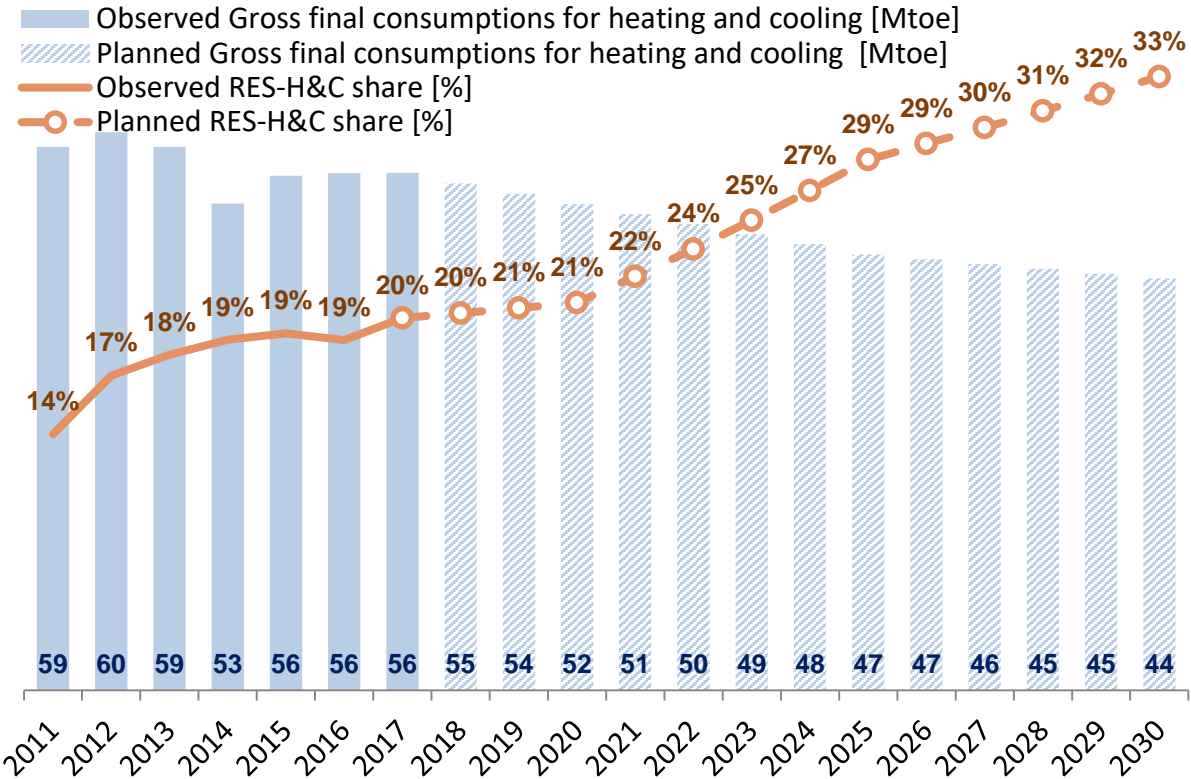


RES in Heating and Cooling sector: status and target



- Renewable in heating sector represent 20% of final consumption and is led by solid biomass with an important contribute of heat pumps
- Air quality constraints have led the NECP draft to limit biomass consumption to current levels, nevertheless new efficient biomass appliances can continue to grow without increasing total consumption
- NECP draft point out a sharp increase of ambient energy 5,5 Mtoe (Heat Pumps)

RES trajectories in Heating and cooling sector until 2030

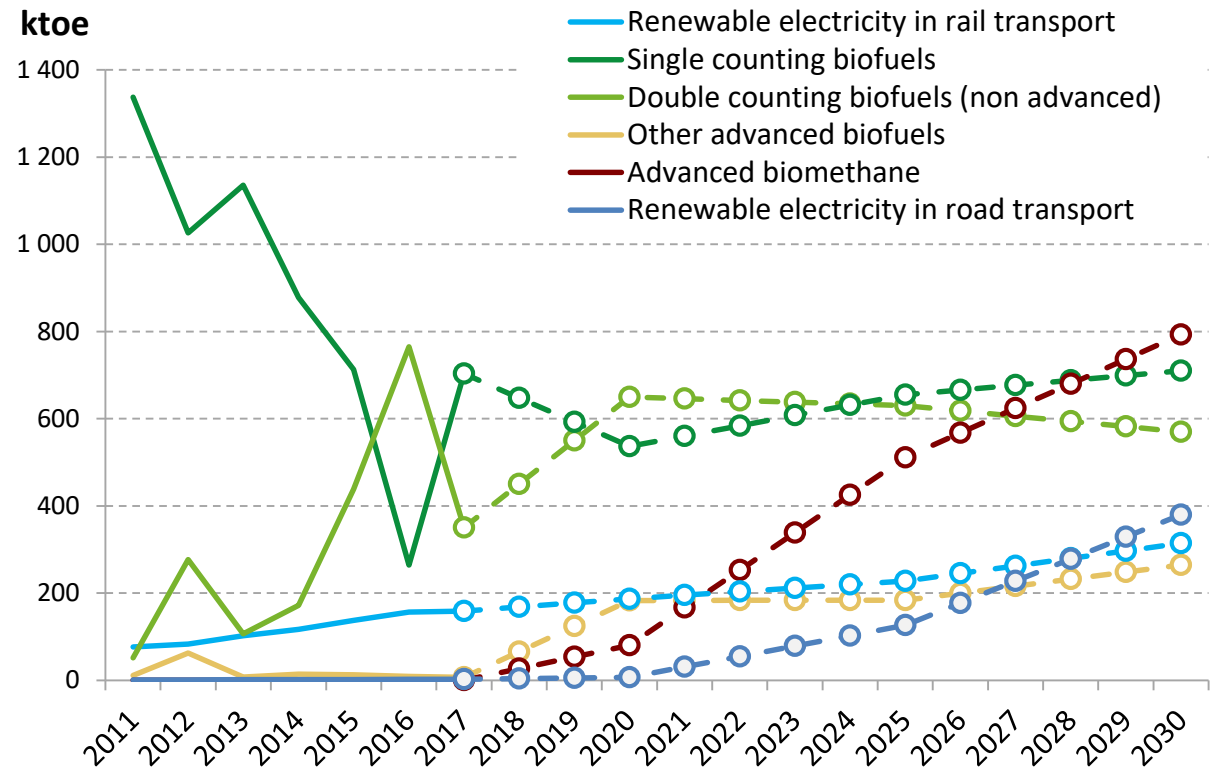
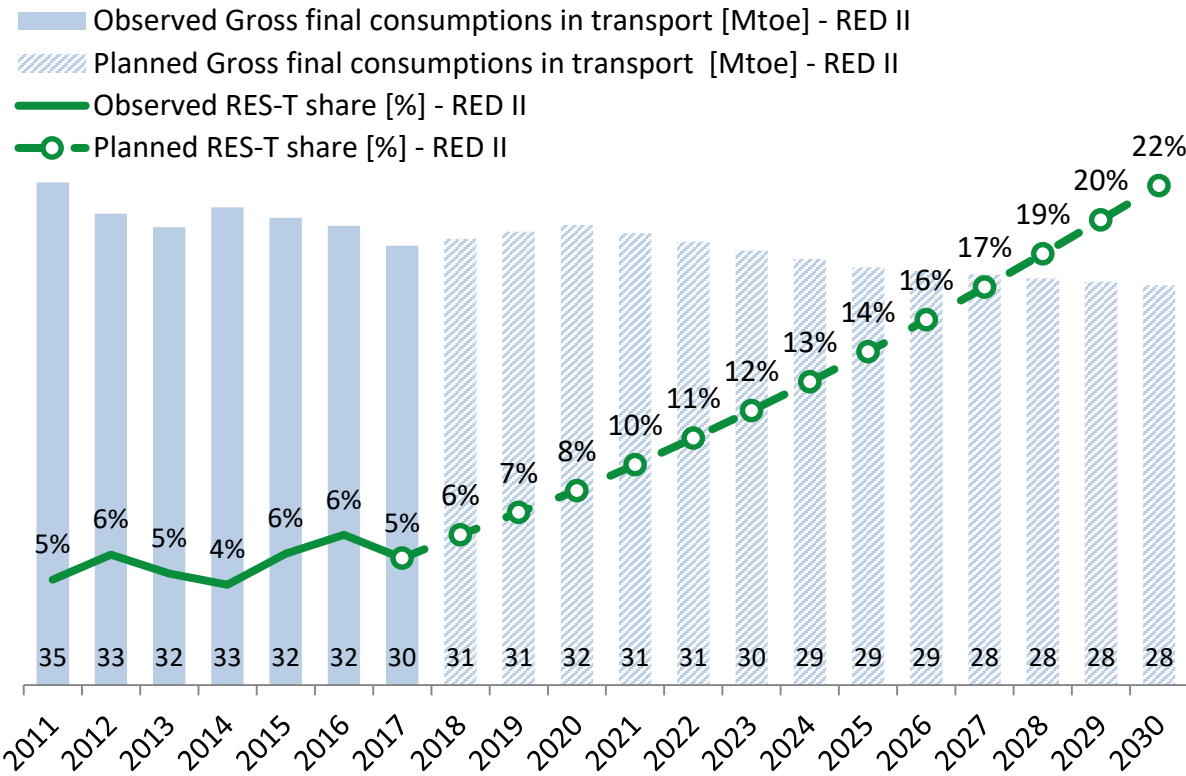


RES in Transport sector: status and target



- In **2017** the **RES share was 6,5%** with an important role of **double counting biodiesel**
- **RES share target** fixed by NECP is higher than RED II (21,6% vs 14%), **advanced biofuels** will reach around 8% (twice the RED II target) thank to the contribution of **biomethane** (planned to cover 75% of advanced biofuels);
- Strong growth of **RES electricity** consumed by **road vehicles** (up to 380 ktoe, 6 mln of electric vehicle).

RES trajectories in transport until 2030



**THANK YOU
FOR YOUR
ATTENTION**