ITALY'S NATIONAL ENERGY STRATEGY 2017

Ministero dello Sviluppo Economico

MINISTERO DELL'AMBIENTE E DELLA TUTELA DEL TERRITORIO E DEL MARE

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1.INTRODUCTION

NATIONAL ENERGY STRATEGY – Energy will drive Italy's change.

The National Energy Strategy is the ten-year plan that the Italian Government drew up to anticipate and manage the change of the national energy system: a document looking beyond 2030, and laying the groundwork for building an advanced and innovative energy model.

The document results from a participative process that involved the Italian Parliament, the Regions, and over 250 stakeholders, including associations, companies, public entities, citizens, and representatives of academia. The numerous contributions given to the process testify the priority that the public opinion assigns to energy and environmental issues.

The objective of the Strategy is to make the national energy system more competitive, more sustainable, and more secure.

More competitive: this means: aligning Italian energy prices with European ones to the benefit of both companies and consumers; opening up new markets to innovative companies; creating new employment opportunities; and fostering research and development.

More sustainable: this means: contributing to decarbonisation, in line with the long-term targets of the Paris Agreement on Climate Change; improving energy efficiency, and encouraging energy conservation to mitigate environmental and climate impacts; promoting environmentally conscious lifestyles, from sustainable mobility to wise energy usage; and confirming Italy's environmental leadership role.

More secure: this means: improving the security of energy supply, while ensuring its flexibility; and strengthening Italy's energy independence.

Here are some of the core targets of the National Energy Strategy 2017: reducing final energy consumption by a total of 10 Mtoe by 2030; reaching a 28% share of renewables in total energy consumption by 2030, and a 55% share of renewables in electricity consumption by 2030; strengthening supply security; narrowing the energy price gap; furthering sustainable public mobility and eco-friendly fuels; and phasing out the use of coal in electricity generation by 2025.

The Strategy has ambitious and complex targets. Achieving them calls for efficient public policies. However, its success also depends on day-to-day actions: guiding citizens towards responsible energy usage patterns will be imperative.

The Strategy is a gamble on the future of the energy system.
We do not lack the energy to make this gamble pay off.

Minister Carlo Calenda ***Minister Gian Luca Galletti***

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2.THE TARGETS OF ITALY'S NATIONAL ENERGY STRATEGY

Italy's National Energy Strategy 2017 (the Strategy) lays down the actions to be achieved by 2030, in accordance with the long-term scenario drawn up in the EU Energy Roadmap 2050, which provides for a **reduction of emissions by at least 80%** from their 1990 levels.

Here are the targets to be achieved by 2030 that are in line with the plan of the European Energy Union:

- **enhancing Italy's competitiveness**, by continuing to bridge the gap between Italian energy prices and costs and European ones, in a global context of rising energy prices
- **attaining Europe's environmental** and decarbonisation **targets** by 2030 **in sustainable ways,** in line with the future targets set by COP21[1]
- **continuing to improve the security of energy supply and the flexibility** of energy systems and infrastructures

[1]COP21: 2015 United Nations Climate Change Conference, also known as the Paris Climate Conference (21st Session of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC)).

ITALY'S COMPETITIVENESS

Enhancing Italy's competitiveness requires actions to narrow cost and price differentials to the benefit of all consumers, to complete liberalisation processes, and to rely on instruments that protect the competitiveness of energy-intensive industrial sectors, while preventing risks of delocalisation and safeguarding employment.

Price targets

- narrowing the gap between Italian natural-gas costs and north-European ones; this gap amounted to about € 2/MWh in 2016;
- narrowing the gap between Italian electricity prices and average EU ones; this gap was equal to roughly € 35/MWh in 2015 for an average household, and to about 25% on average for companies.

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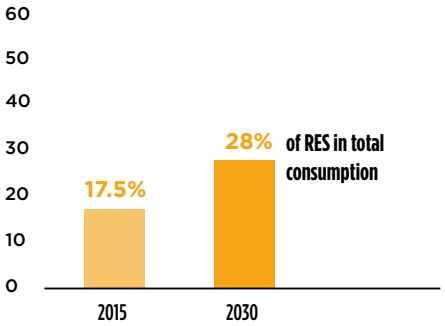
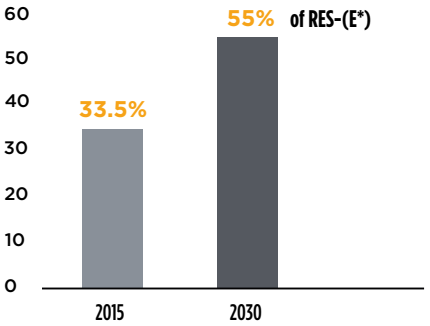
SUSTAINABLE GROWTH

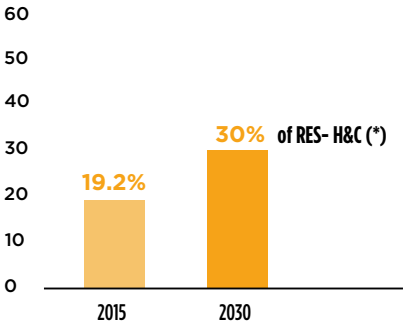
The Strategy – a centrepiece of the future Energy and Climate Plan – sets out measures to achieve sustainable growth and environmental targets, as envisaged by COP21, contributing in particular to a low-carbon economy and to the fight against climate change. Renewables (RES) and energy efficiency will contribute not only to environmental protection, but also to energy security (by reducing the dependence of the energy system) and cost-effectiveness (by favouring the reduction of costs and prices). The strategic actions are as follows:

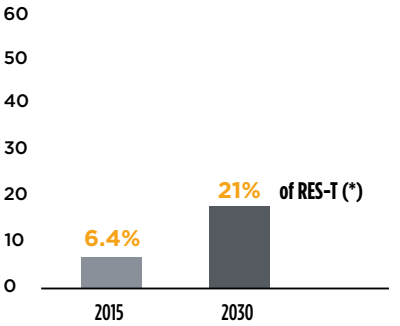
A. Further promoting the dissemination of low-emission RES.

RES targets









(*) RES-E: RES in electricity; RES-H&C: RES in heating & cooling; RES-T: RES in transport.

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SUSTAINABLE GROWTH

B. Furthering energy-efficiency projects that maximise sustainability benefits, and keeping system charges low.

Energy-Efficiency Targets

- curbing yearly energy consumption from 2021 to 2030 (**10 Mton**)
- changing sectoral energy mixes to promote the achievement of non-ETS[2] CO2 emission reduction targets, by focusing on the residential and transport sectors

C. Stepping up the decarbonisation of the energy system.

Decarbonisation Targets

- accelerating the decommissioning of coal-fired thermal power plants by 2025, based on a detailed plan of infrastructural actions

D. Increasing public resources allocated for research and development of clean-energy technologies.

Research and Development Targets

- doubling investments in research and development of clean-energy technologies: from € 222 million in 2013 to **€ 444 million in 2021**.

[2] ETS: EU Emissions Trading Scheme.

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ENERGY SECURITY

Continuously improving the security and adequacy of energy systems, as well as the flexibility of gas networks and power grids, is necessary to:

- integrate a growing amount of RES-E[3] (including distributed ones) and new players, by strengthening and fostering the evolution of networks, grids, and markets towards smart, flexible, and resilient configurations
- manage the variability of natural-gas flows and demand peaks, and diversifying supply sources, in the complex geopolitical context of the countries from which we import gas and of increasing integration of European markets
- improve the cost-effectiveness of the energy expenditure thanks to technological innovation

Contributing to creating a more competitive, more sustainable and more secure energy system, by leveraging, among others, energy efficiency and RES, generates a net positive balance also in terms of employment. Nevertheless, this process ought to be monitored and controlled, taking timely actions to retrain workers and create new jobs and skills. In this regard, the Strategy provides for detailed technical studies to promptly identify the actions needed to ensure new job and growth opportunities.

[3] RES-E: renewables in electricity.

3.THE NATIONAL ENERGY STRATEGY WITHIN THE GLOBAL, EUROPEAN, AND ITALIAN SCENARIO

THE GLOBAL SCENARIO

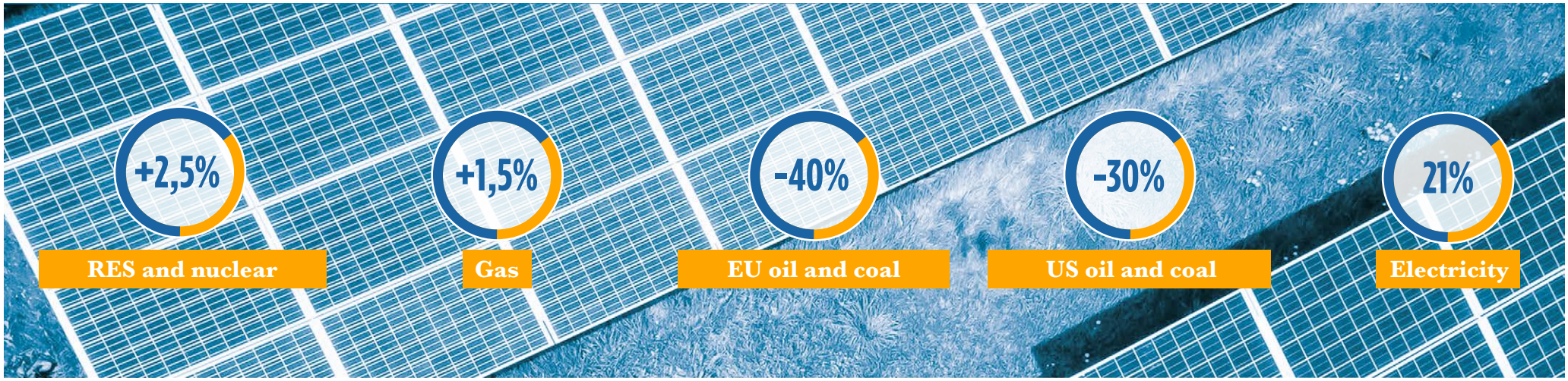
Climate change has become a central part of the world's energy context. The Paris Agreement on Climate Change of December 2015 defines a plan of action to keep global warming below 2 °C, marking a fundamental step towards decarbonisation. The United Nations 2030 Agenda for Sustainable Development envisages a new worldwide governance system to influence development policies through the fight against climate change and access to clean energy.

Global energy demand is estimated to go up (**+18% by 2030**), albeit at a slower rate (in the past 15 years +36%).

THE GLOBAL SCENARIO

The primary energy mix will have a significant evolution:

- RES and nuclear energy: **+2.5% by 2030**; the continuous reduction of the costs of RES in the electricity sector and of storage systems, together with the upgrade of grids, will sustain their continuous dissemination
- natural gas: **+1.5% by 2030**; this growth will be driven by the large demand in China and the Middle East; the global LNG[4] market will become increasingly "liquid"; LNG volumes traded will double by 2040, possibly pushing natural-gas prices down
- lower shares of oil and coal: oil production and coal demand will diminish (**-40% in the EU and -30% in the US in 2030**)
- "electrification" of demand: electricity will cover **21% of final energy consumption by 2030**



Energy efficiency will play an increasingly pivotal role:

- in 2015, in spite of the low cost of energy, the global energy intensity was up by 1.8% (about twice the average in the last decade), giving a positive contribution to reducing the increase in CO2 emissions
- the growth of RES-E will translate into higher investments in flexible electricity infrastructures to guarantee quality, adequacy and security of power systems

[4] LNG: Liquefied Natural Gas.

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THE EUROPEAN SCENARIO

In 2011, the European Commission's Communication "Roadmap to a low carbon economy in 2050"[5] established that greenhouse gas (GHG) emissions should be cut down by **at least 80% by 2050** from their 1990 levels, to ensure competitiveness and economic growth in the energy transition, and to meet the Kyoto Protocol pledges.

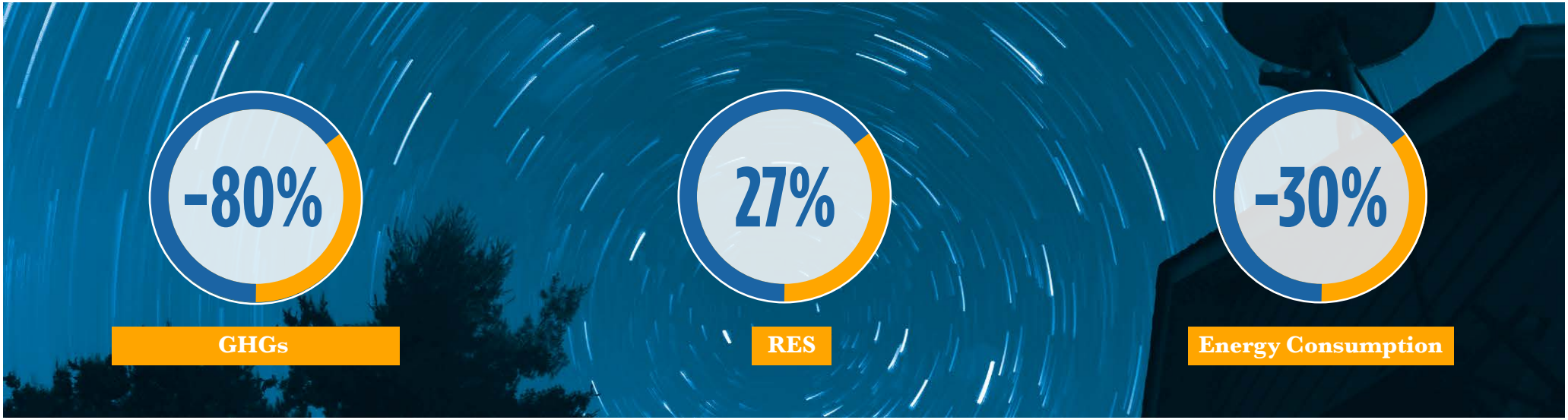
In 2016, the Commission presented its "Clean Energy Package"[6], consisting of legislative proposals to develop RES and the electricity market, to improve energy efficiency, and to define the governance of the Energy Union, with the following targets by 2030:

- **27%** RES share in EU energy consumption
- **30%** reduction of EU primary and final energy consumption

The National Energy Strategy 2017 will be incorporated into the Energy and Climate plan that Italy is expected to submit to the European Commission by 2018 as a contribution to achieving the common European targets.

[5] COM/2011/0112 final/COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS - A Roadmap for moving to a competitive low carbon economy in 2050.

[6] COM(2016) 860 final/COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE, THE COMMITTEE OF THE REGIONS AND THE EUROPEAN INVESTMENT BANK - Clean Energy For All Europeans.



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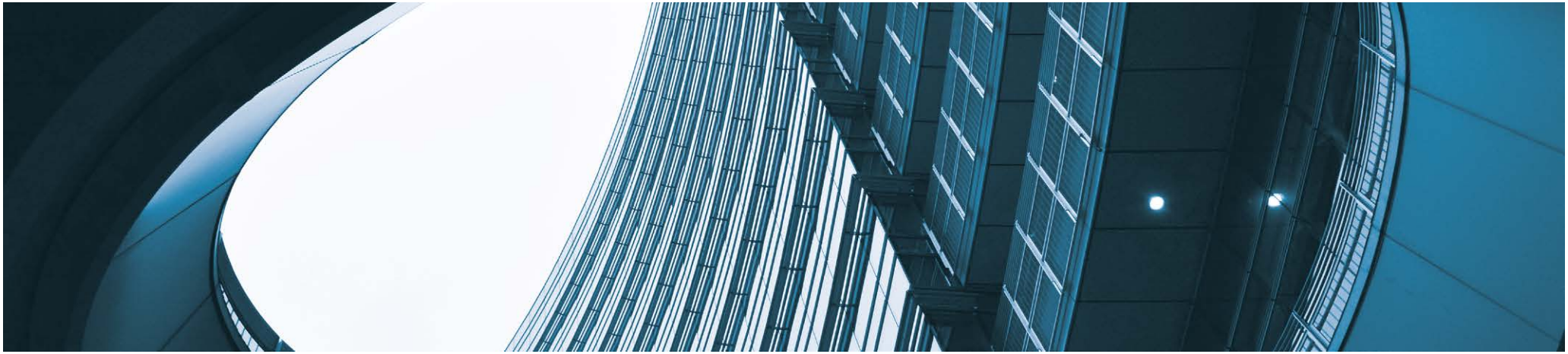
THE STARTING POINT FOR ITALY: RESULTS AND CHALLENGES

In 2016, in a global context of economic recovery and low prices of raw materials, Italy proceeded on its path to strengthen its environmental sustainability, reduce its greenhouse gas (GHG) emissions, and improve the efficiency and security of its energy system.

Results

- RES covered 17.5% of gross final energy consumption
- energy efficiency continued to grow: the GDP energy intensity dropped by 4.3% as compared to 2012
- Italy's dependence on foreign supply sources continued to fall: energy imports were down by 7 percentage points versus 2010
- there remains an energy cost gap between Italy and the EU, which puts Italy at a disadvantage



Future Challenges

- pursuing the growth of RES in an efficient way, while holding down system charges
- strengthening its energy efficiency policy, especially in non-industrial sectors, primarily construction and transport
- ensuring energy security by diversifying supply sources
- protecting the industrial sector and retrofitting infrastructures for sustainability

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4.THE PROCESS OF CONSULTATION

The National Energy Strategy 2017 arose from a wide participative process, which involved all the public and private stakeholders of the sector, during both its preliminary stage and the public consultation proper. What emerged was a broad consensus on the need (in accordance with European long-term targets) for accelerating the process to making the Italian energy system increasingly environmentally sustainable, paying the utmost attention to repercussions on prices and supply security, and to the environmental impacts of new technologies and of the energy transition itself.

Pre-consultation

- **2** parliamentary hearings and consultations with the Regions
- **5** workshops with international environmental protection and health experts
- **40** direct meetings with:

trade associations
companies
regulatory and oversight authorities
public entities engaged in the energy sector
transmission system operators of electricity and gas networks

Public consultation on the draft of the Strategy posted on the websites of the relevant Ministries

- **251** complete contributions received from:

14% citizens
25% companies
28% trade associations
24% environmental associations and consumers
10% academia, public authorities and research companies

- **838** thematic contributions
- **9,700** views of the dedicated web page of the Ministry

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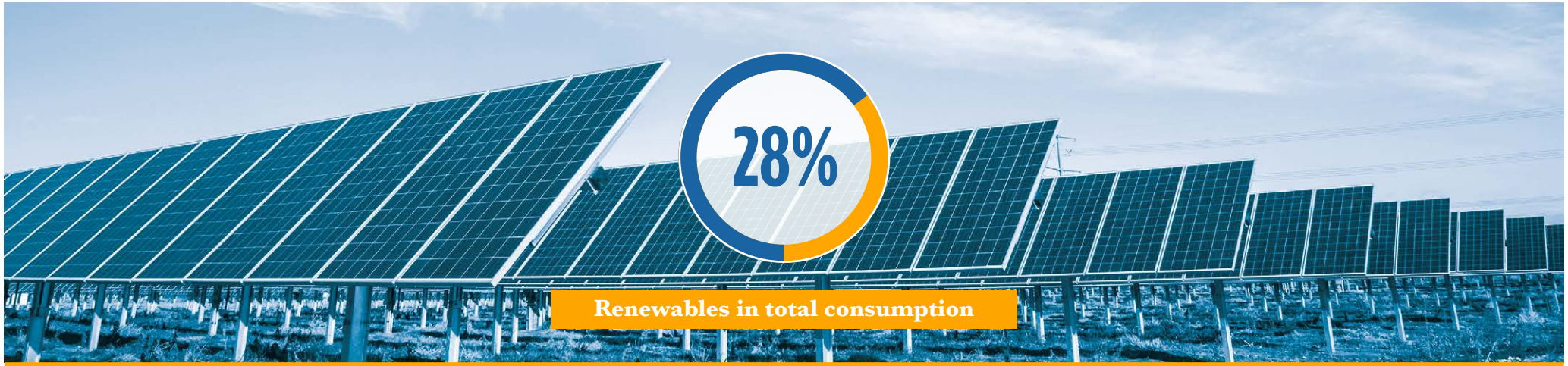


5.PRIORITIES OF ACTION

RES

RES deployment in Italy can decrease not only emissions, but also energy dependence and, in the future, the gap between Italian electricity prices and European average ones.

Reconciling energy targets with landscape conservation is a critical issue for the country. This issue concerns, above all, RES with the highest residual potential still to be tapped, i.e. wind and solar photovoltaic. As landscape conservation is a mandatory requirement, the Strategy promotes the revamping and repowering of wind, hydro and geothermal power plants, assigns priority to brownfield sites, and allocates a greater number of resources for RES and energy efficiency enhancements.

To date, Italy has already achieved its RES targets by 2020, with an RES penetration of 17.5% in total energy consumption in 2015 vs. a 17% target to be reached by 2020. The target of a **28% share of RES** in total energy consumption by 2030 is ambitious but feasible. This RES share will be broken down as follows:

- **55% of RES-E by 2030** (33.5% in 2015)
- **30% of RES-H&C by 2030** (19.2% in 2015)
- **21% of RES-T by 2030** (6.4% in 2015)

RES

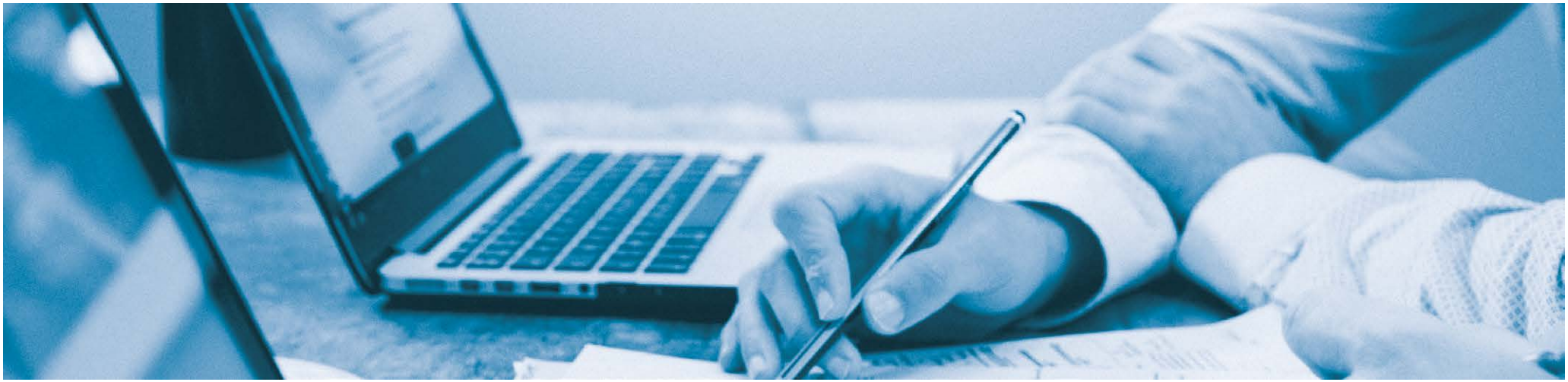
RES-E

From now to 2020: promoting new investments, by granting incentives for power generation, placing more reliance on competitive auctions, taking a neutral approach to technologies with similar cost structures and levels in order to stimulate competition, and resorting to diversified support schemes for small-scale power generation and innovative technologies.

After 2020: RES support schemes will evolve towards market parity, i.e. from direct incentives for power generation to enabling policies and regulatory simplification.

Actions

- long-term contracts for large-scale power generation; promotion of self-consumption for small-scale power generation
- streamlining the permitting process for repowering wind and hydro plants
- maintaining existing power generation from bioenergy sources, without distortions to the agricultural sector chain
- increasing hydro power generation with innovative projects in existing large-scale plants



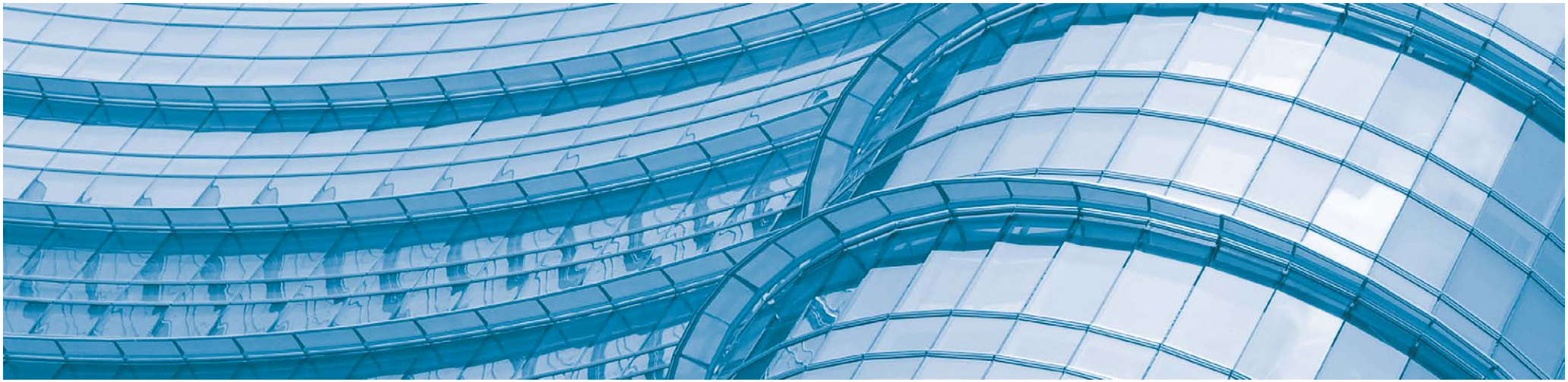
RES

RES-H&C

Thanks to their high efficiency, heat pumps are bound to play a key role in achieving the target. By contrast, biomass facilities (traditionally very widespread in Italy) will have to mitigate their emissions, and guarantee high environmental quality. Furthermore, the potential of district heating in urban and non-urban areas will be harnessed in efficient ways.

RES-T

In line with European legislation and regulations, Italy will have to promote the transition towards fuels having low lifecycle GHG emissions and low land use (advanced biofuels). The global market of electric cars is expected to experience a strong expansion in the long run, in the light of RES andenergy efficiency targets.



ENERGY EFFICIENCY

In further reducing energy consumption (by 1.5% per year under the EU Energy Efficiency Directive[7]), reliance will be made on improving technologies and adopting increasingly effective instruments in order to prevent marginal costs from rising.

By reducing energy demand, energy efficiency will provide a cross-cutting contribution to lowering emissions and securing energy supply.

Italy's performance in terms of energy efficiency is excellent vis-à-vis the one of other European countries.

The target of the Strategy in this area is to foster low energy-consumption initiatives having the best cost/benefit ratio, so as to **achieve 30% of energy savings by 2030** with respect to their trend in 2030, and give impetus to the Italian energy efficiency industry (e.g. construction of energy-efficient buildings and installation of energy-efficient facilities).

Energy savings

[7] Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC.

ENERGY EFFICIENCY

Actions

Residential Sector

- revising, strengthening and confirming the tax deduction scheme for energy-efficiency investments (so-called “Ecobonus”)
- putting the energy-efficiency fund into operation, and setting aside a reserve for energy-efficiency loan guarantees
- furthering the evolution of minimum performance standards

Transport sector

- Strengthening sustainable local mobility to reduce urban traffic, and supporting the modal switch to smart mobility (car sharing, car pooling, smart parking and bike sharing), cycle and pedestrian mobility, as well as local public transport

- improving the energy and environmental efficiency of the national stock of cars. Measures to develop eco-friendly mobility rest on a technology-neutral approach, allowing the target to be reached at the least cost to citizens. These measures include local energy, environmental, and pollutant emission requirements, as well as plans for building infrastructures for intermodal transport

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ENERGY EFFICIENCY

Service Sector

- adopting measures to promote energy renovation of buildings, in particular of public buildings
- adopting new minimum performance standards for public buildings

Industrial Sector

- strengthening and streamlining the white certificates scheme
- promoting the energy efficiency of SMEs, by renewing schemes for co-funding energy audits and energy management systems

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DECARBONISATION

The Strategy aims to speed up the decarbonisation of the energy system, starting from the use of coal in power generation, and to progressively introduce measures spanning the entire energy process, thereby achieving significant environmental and health benefits, and contributing to the attainment of European targets.

Hence, the Strategy requires a political commitment to phasing out coal-fired thermal power plants by 2021. Doing so under security conditions makes it imperative to implement the plan for managing the growing share of RES-E in a timely manner, to supplement it with additional specific actions on infrastructures, plants and facilities, and to agree on a plan for revamping current sites and converting them into innovative power-generation hubs.

A special Steering Committee ("cabina di regia") will actively monitor the implementation of the overall Strategy.

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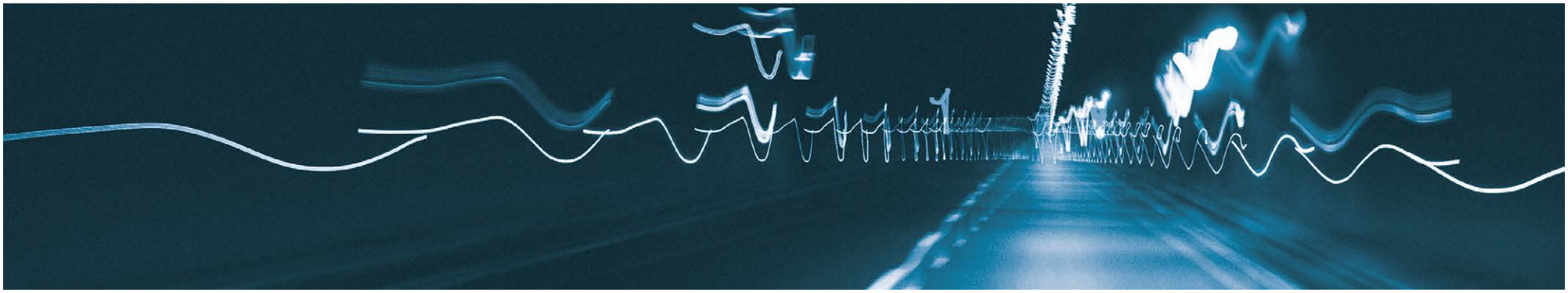
ENERGY SECURITY

In a context of increasing complexity, the power system should not only be flexible, but also and above all reliable in terms of:

- adequacy in order to cover electricity demand
- security in order to respond to changes in its status of operation, without violating its operation limits
- resilience in order to predict, accommodate, adapt to and/or rapidly recover from extreme events

The Power System

The Strategy has set the target of providing the power system with innovative instruments and infrastructures, in order to: guarantee its adequacy and capability of meeting security standards; guarantee its flexibility, thanks also to technological breakthroughs, in a context of growing penetration of RES; promote its resilience to extreme weather events and contingencies; and shorten the timescales of and streamline the permitting process and the implementation of projects.



Actions

- launching the capacity market in 2018 to guarantee system adequacy, maintaining the still necessary gas-fired capacity (with priority to flexible capacity), and integrating new resources into the market (cross-border renewable-energy power-generating units, storage systems, active demand side)
- further strengthening interconnections with neighbouring countries
- increasing the capacity of storage systems
- implementing grid projects to integrate renewables, and increase the resilience of the system

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ENERGY SECURITY

The Natural-Gas System

With the growth of RES, natural gas will continue to play a key role in the energy transition, as it will represent a back-up resource for the power system. However, the gas market will be more uncertain and volatile.

Therefore, the Strategy deems it vital to: diversify supply sources, by optimising the use of the existing infrastructures, and develop new connection infrastructures; improve the flexibility of supply sources, by strengthening gas pipelines and the peak-demand security margin; and coordinate national contingency plans, including mutual support between EU countries.

Actions

- promoting the construction of new gas import pipelines by private parties, in accordance with market principles, in order to diversify supply sources and routes
- holding auctions (instead of using tariffs) for LNG regasification services. in order to make the use of Italian gas terminals more attractive
- converting local networks of distribution of LPG[8] and propane-air mixtures in Sardinia to natural gas from regasified LNG; developing them by connecting them in crementally to small-scale LNG storage terminals; and using LNG to implement the first pilot project of Sulphur Emission Controlled Area (SECA) for maritime traffic in Sardinia.

[8] LPG: Liquefied Petroleum Gas.

ENERGY MARKETS: ELECTRICITY, GAS AND OIL

Electricity and Gas Markets

The target of narrowing the gap between Italian final electricity prices and European ones will be achieved through the reduction of the average cost of power generation from RES, the convergence of power generation mixes across European countries, the natural-gas cost alignment, the full liberalisation of final markets, and the progressive reduction of system charges

Actions

- completing the harmonisation of European rules governing the single electricity market, and the reform of the ancillary services market, to boost the energy transition and reduce the costs of ancillary services
- accelerating the full participation of distributed generation and consumers – also via aggregators – in energy and ancillary services markets; increasing the capabilities of communication and management coordination between or among system operators
- streamlining procedures for supporting self-generation of electricity from RES or high-efficiency co-generation, and the new energy communities
- adopting a new tariff scheme for system charges, as well as reduction of system charges (estabilished to grant RES incentives) paid by energy intensive companies, so as to recover important competitiveness margins, and relaunch growth and employment
- aligning the price of Italian natural gas with the one of the more liquid and more competitive north-European hubs, and removing the current distortions in the Italian market arising from natural-gas transit pipelines from northern Europe
- introducing some operators as market maker in the natural-gas exchange to contribute to the liquidity of the system
- revising system charges for companies with a high consumption of natural gas or using it as a raw material
- fully liberalising the retail electricity and gas markets, in line with the roadmap of the Italian law on competition and markets , in order to place consumers at the centre of the new energy model
- strengthening measures to fight energy poverty and reforming the current scheme of discounts on energy bills for low-income or large households and for the disabled (so-called “social bonus”)

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ENERGY MARKETS: ELECTRICITY, GAS AND OIL

Oil market and Logistics

The demand for oil products shrank progressively from 2005 to 2015, leading to the conversion of refineries into biorefineries and storage systems.

The target in this area is to decrease primary consumption of oil products by **13.5 Mtoe by 2030** as against its 2015 levels.

Actions

- promoting the conversion of other refineries into biorefineries, given the demand for advanced biofuels
- intensifying the fight against illegality in the distribution of oil products
- developing market platforms for supplying logistic services and oil products
- progressively revising existing tax incentives for fuels, which are environmentally detrimental

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RESEARCH AND INNOVATION – GOVERNANCE AND REGULATION

Research and Innovation

On a global scale, Italy is among the promoters of Mission Innovation - a global initiative resulting from COP21 to launch leading-edge clean-technology (clean-tech) projects - and committed to doubling the value of public resources allocated for investments in clean-energy research and development by 2021.

The progressive transition towards low-emission models requires substantial efforts in supporting technological evolution, as well as research and development of new technologies. The Strategy aims to strengthen public support and create conditions to attract private investments, with the goal of contributing to developing technological concepts that can sustain the energy transition at reasonable costs, and offer business and employment opportunities.

Actions

- doubling investments in clean-energy research and development: from € 222 million in 2013 to **€ 444 million in 2021**.

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RESEARCH AND INNOVATION – GOVERNANCE AND REGULATION

Governance and Regulation

Energy is a cross-cutting issue, which requires a resolute action of coordination among the various parties involved (Central Government, Regions, scientific institutions) and cooperation with the energy regulator.

Moreover, policies in the energy sector should be integrated with those in other sectors, so as to take a consistent approach, capture possible synergies, and offer new business opportunities.

This is the reason why the Strategy provides for the setting-up of a special Steering Committee. The members of the Committee, coordinated by the Ministries of Economic Development and of the Environment, are representatives from the Ministries of Economy, Transport, and Cultural Heritage, as well as from the Regions; periodical consultations with local governments are also planned.

Additionally, to ensure transparency in monitoring the implementation of the Strategy, the Government will have to present a yearly report to the Parliament on the status of implementation of the Strategy, and on the actions taken to achieve its targets, as well as to undertake a participative process of revision of the Strategy every three years.

The Strategy also sets forth actions to streamline and rationalise the energy system, with a view to obtaining significant reductions in the costs of RES technologies, while abiding by the legislation and regulations on environmental, land and sea protection.

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