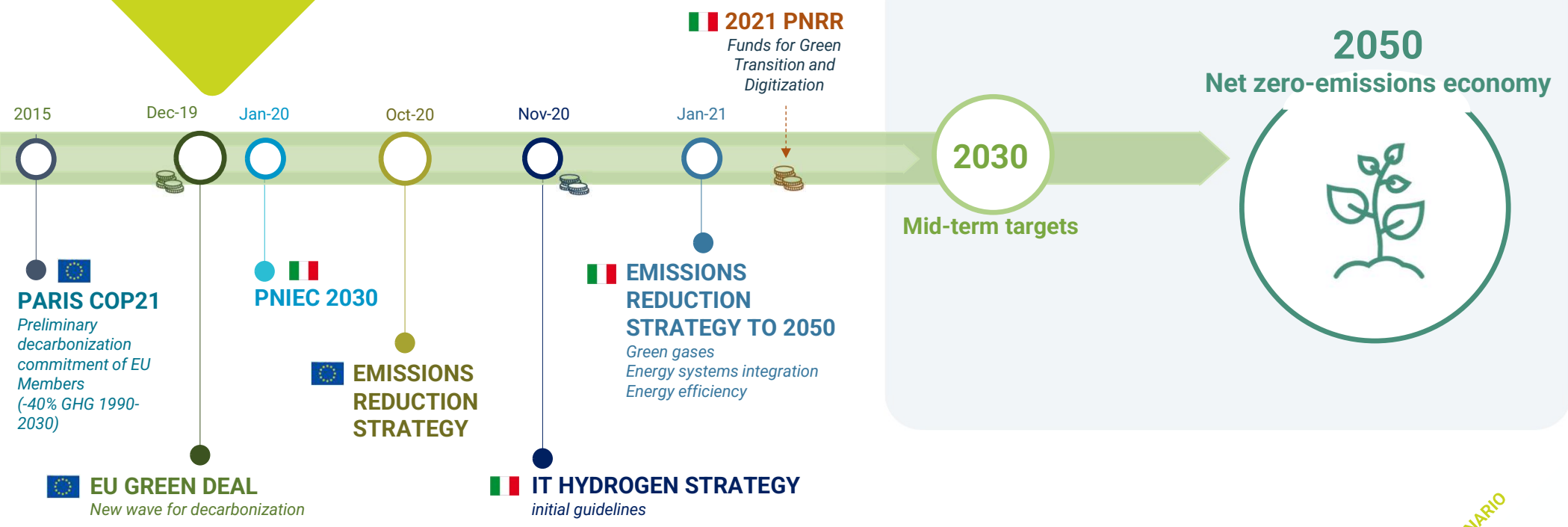
Maria Carmela Macrì

Head of Legal Affaires

IBA SEERIL
Biennial Conference
Milan, 16.05.2022

ENERGY TRANSITION
KEY MILESTONES

EU committed to a carbon neutral economy by 2050 both politically and economically



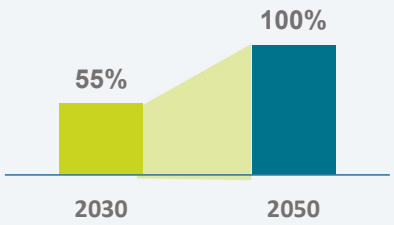
SCENARIO

ENERGY TRANSITION AT THE CORE OF EU POLICIES

€175-290bn a year of incremental investments necessary to reach decarbonization goals

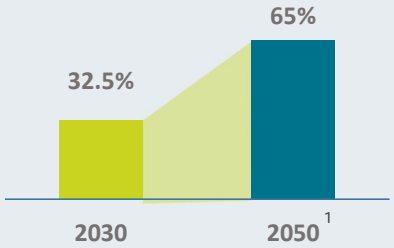
Contribution of all sectors is paramount

CO2 emissions cut
vs 1990



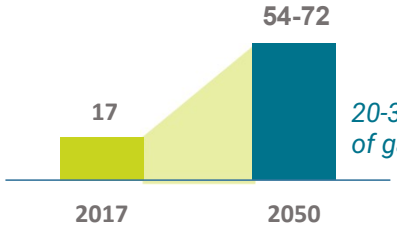
The EU is preparing a package of initiatives to reduce CO2. A general revision of gas market legislation is also targeted

Energy Efficiency
vs 1990



Ongoing revision of the European Energy Efficiency Directive

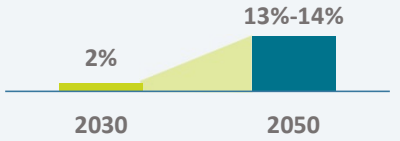
Biomethane
consumption
MTOE



20-30% of gas demand

The revision of the gas market legislation includes how to facilitate the uptake of renewable gases

Hydrogen in EU energy mix
~ 500 GW electrolysis capacity by 2050



Hydrogen may be transported via repurposed natural gas pipelines and / or newly built pipelines

SCENARIO

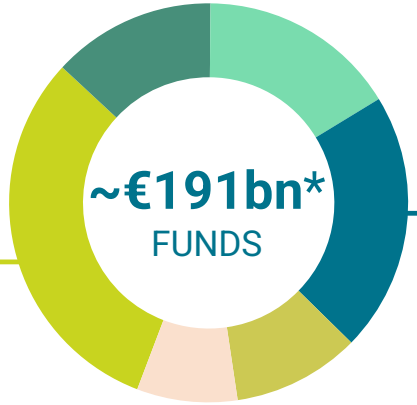
Source: EU Commission; Energy efficiency data on 2050 is based on IEA scenario

ITALIAN PNRR
RESOURCES
AVAILABLE

Energy transition is a tool to support economic recovery Italian PNRR to make new resources available

Infrastructures for Sustainable Mobility, €25.4bn

Education and Research, €30.9bn



Green Revolution and Ecological Transition, €59.5bn

of which:
Hydrogen €3.6bn <
Biomethane €1.9bn <
Energy efficiency €15.4bn <
Water €4.4bn <

Digitisation, Innovation, Competitiveness, Culture, €40.3bn

of which:
> Transition 4.0 €13.4bn
> High tech content investments €0.3bn

Health €15.6bn

Inclusion and Cohesion €19.8bn

SCENARIO

** Resources being allocated through the Recovery and Resilience Facility, additional €30.6 billion funded through the Complementary Fund for a total amount of funds of €222bn;*

IMPLICATIONS FOR GAS SECTOR OF EU ACTIONS

ENERGY TRANSITION

Gas to account for 20% of 2050 European energy consumption	**Green gases production should rapidly increase** to meet decarbonization target
Gas mix to include **green hydrogen (33%)** and **biomethane/ blue hydrogen / e-gases (67%)**	Gas infrastructures should be able to **manage dynamic changes of gas blending**
Gas infrastructures strategic to ensure **efficiency of the energy system**	**Entire gas value chain** including both T&D and storage needs to evolve
Investments needed to **guarantee flexibility**, through gas and electric systems integration	**Gas and electric** infrastructures should be able to **cooperate effectively ("sector coupling")**

SCENARIO

GAS NETWORKS
KEY ROLE IN ENERGY TRANSITION

Enable a cost-effective decarbonisation, balancing short-term and long-term needs of energy markets

ALREADY DEVELOPED,
STABLE AND WIDE-SPREAD INFRASTRUCTURE

~2mln km of pipelines
2,000 gas DSOs and 45 gas TSOs

ACCELERATOR IN THE DEVELOPMENT OF RENEWABLE AND LOW CARBON GASES

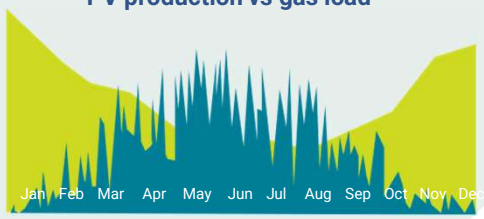
NATURAL GAS

BIOMETHANE

HYDROGEN

STRATEGIC ROLE FOR FLEXIBILITY AND SECURITY OF SUPPLY OVER TIME AND SPACE

Schematic annual profile of PV production vs gas load



EU Taxonomy Regulation

The EU Commission is defining a regulatory framework on the Taxonomy of Sustainable Finance and sets disclosure obligations for energy operators

OBJECTIVE → definition of an **eco-sustainable investment** in a unique way to unify disclosure, in order to direct investments towards sustainable projects and activities.

An **eco-sustainable activity** contributes to one or more of the following **environmental objectives**:

- Climate change mitigation
- Adaptation to climate change
- Sustainable use and protection of water and marine resources
- Transition to a circular economy
- Pollution prevention and reduction
- Protection and restoration of biodiversity and ecosystems

Does not harm any of the above objectives (DO NO SIGNIFICANT HARM PRINCIPLE).
Respects minimum safeguards requirements.
Complies with the technical screening criteria set by the Commission

DISCLOSURE OBLIGATION → the regulation implies disclosure obligations for financial (for their allocation strategy) and non-financial operators (ratio % of taxonomy compliant investments, revenues and opex)

Timeline

2014	Non-Financial Reporting Directive (2014/95/EU)
June 2020	Taxonomy Regulation (EU) 2020/852 (entry into force July 2020)
April 2021	Climate Delegated Act (EU) 2021/213 for activities meeting the criteria of climate change mitigation & adaptation (mandatory from 2022)
June 2021	Disclosure Delegated Act (EU) 2021/2178 on the content & presentation requirements of the compulsory disclosures for financial statements
2021 reporting	Disclosure obligation for eligible activities applies in 2022 for 2021 results (revenues, opex, capex)
2022	Disclosure obligation for aligned activities applies in 2023

EU Taxonomy Regulation

The **Taxonomy work process** can be divided into **classification** and **reporting** sections. The process starts by creating a **list of economic activities** and **assessing Taxonomy-eligibility**. The Taxonomy activities are linked to the NACE codes in the Taxonomy system.

If an economic activity is included in a delegated act, i.e. Taxonomy-eligible, it means that this activity can make a substantial contribution to one or more environmental objectives under the Taxonomy Regulation.

If the company's economic activity is eligible, you shall continue to **assess the alignment** of the economic activity **with the Taxonomy requirements**.

Finally, you need to define the key performance indicators by economic activity, combine the financial data with the classification data, and disclose the results.

In 2022, the Taxonomy classification and reporting requirements are limited as **companies shall only disclose the share of Taxonomy-eligible and Taxonomy non-eligible economic activities** in their turnover, CapEx and OpEx.

In 2023, the companies are required to disclose **the proportion of their turnover, CapEx and OpEx associated with economic activities that qualify as environmentally sustainable** according to the classification requirements and the technical criteria (**Taxonomy-aligned economic activities**).

Companies shall report information as part of their non-financial statement following Non-Financial Reporting Directiv
(2014/95/EU).

EU Taxonomy Regulation

An example of reporting Taxonomy-aligned activities in 2023

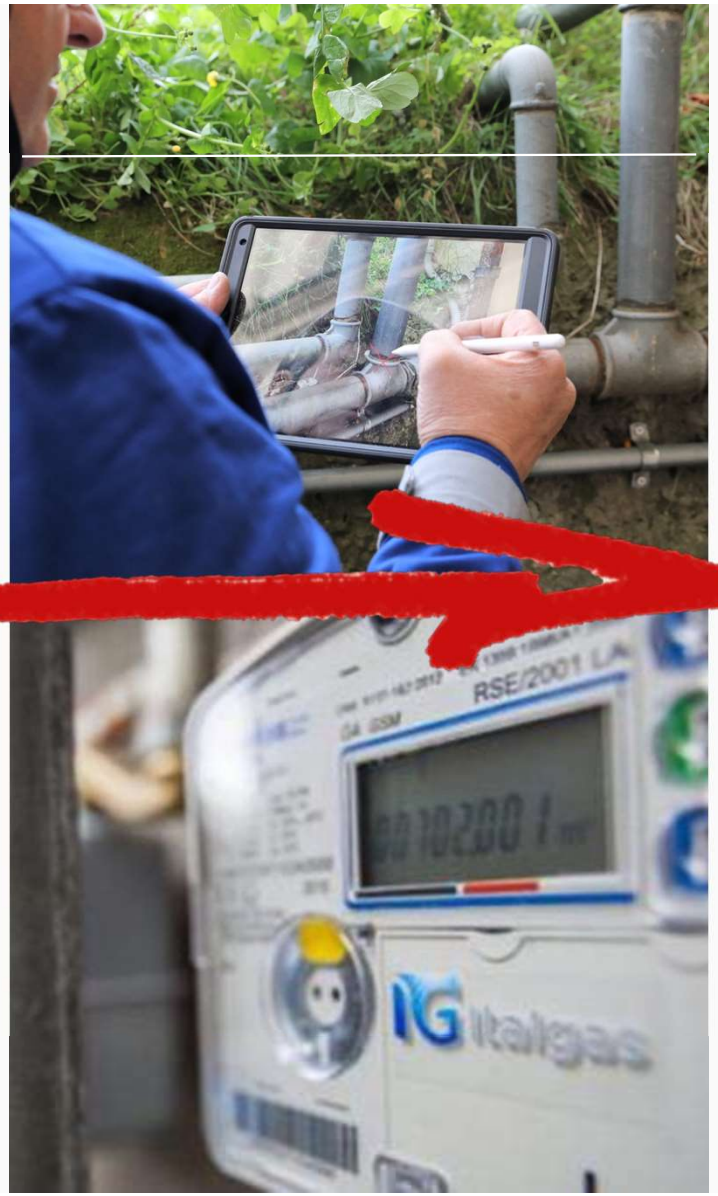
Undertaking - all

Taxonomy-eligible activities(A)

Activities	Codes	Turnover	Turnover-% year 2022	Turnover-% year 2021	Substantial contribution, %						DNSH						
					Climate Change Mitigation	Climate Change Adaptation	Water and Marine	Circular Economy	Pollution Prevention	Biodiversity	Climate Change Mitigation	Climate Change Adaptation	Water and Marine	Circular Economy	Pollution Prevention	Biodiversity	Minimum safeguards
Taxonomy-aligned (A.1)																	
Construction of new buildings, Contributing	68.2	15 000,00 €	3%		100%	0%	0%	0%	0%	0%	Y	Y	Y	Y	Y	Y	Y
Manufacture of renewable energy technologies, Enabling		50 000,00 €	10%		100%	0%	0%	0%	0%	0%	Y	Y	Y	Y	Y	Y	Y
Taxonomy-aligned (A.1), total		65 000,00 €	13%														
Not Taxonomy-aligned (A.2)																	
Manufacture of other low carbon technologies,Enabling	25.11	10 000,00 €	2%														
Not Taxonomy-aligned (A.2), total		10 000,00 €	2%														
Taxonomy-alignment not assessed (A.3)																	
Taxonomy-alignment not assessed (A.3), total		0,00 €	0%														
Taxonomy-eligible activities (A.1+A.2+A.3)		75 000,00 €	15.00%														
Taxonomy-non-eligible activities (B)		425 000,00 €	85.00%														
Total (A+B)		500 000,00 €															

SMART GAS NETWORKS

Challenging Transformation



Linear Business

- One type of gas (natural gas)
- Single counterpart (TSO)

Analog Network

- Work on-site Operations
- Lack of real monitoring

Asset Management

- Reti e impianti non strumentati
- Day by Day Maintenence (by law)
- Straordinary Maintenance (on call)

Circular Business

- Various types of different renewable and low carbon fuels (biogas, biomethane, H_2, e-gas)
- Flexibility energy flow.
- Several counterparts (TSO, green gas producers)

Digitalised Network

- Real-time Monitoring
- Remote Comand & Control

IoT Management

- *full digital* Infrastructure
- Big Data, Advanced Analytics
- Predictive Maintenance

Becoming a major player in the energy transition through digitalization

Commitment towards a law carbon economy

Repurposing or retrofit of gas networks for distribution of renewable and low-carbon gases.

Construction or operation of distribution pipelines dedicated to the transport of hydrogen or other low-carbon gases.

Reducing net greenhouse gas emissions

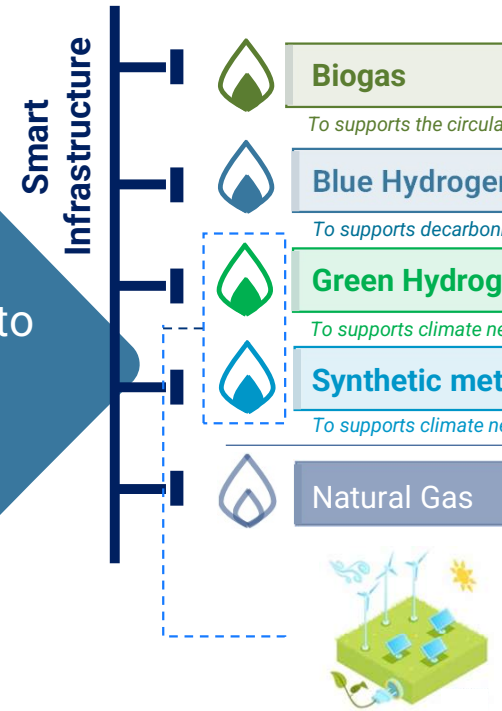
Energy efficiency

Renewable and low carbon gases

Introduction

Italgas is committed to enable increasing share of renewable gases in its network as essential initiative to achieve the net-zero emissions scenario and to promote the development of circular economies

Leveraging potential of renewable gases to reach climate neutrality



According to Italian Long-Term Strategy for GHG Reduction, 25-30% of electricity deriving from RES overgeneration will be used for H2 production

Italgas initiatives

1. **Testing the entire network to evaluate network compatibility with hydrogen and hydrogen blending** and assess the level of investment required for hydrogen injections
2. Development of a **hydrogen showcase**, from energy production to final uses, to test the entire hydrogen value chain
3. Support and facilitation of **connection to the gas distribution grid of biomethane production unit**

Smart Grid
Introduction

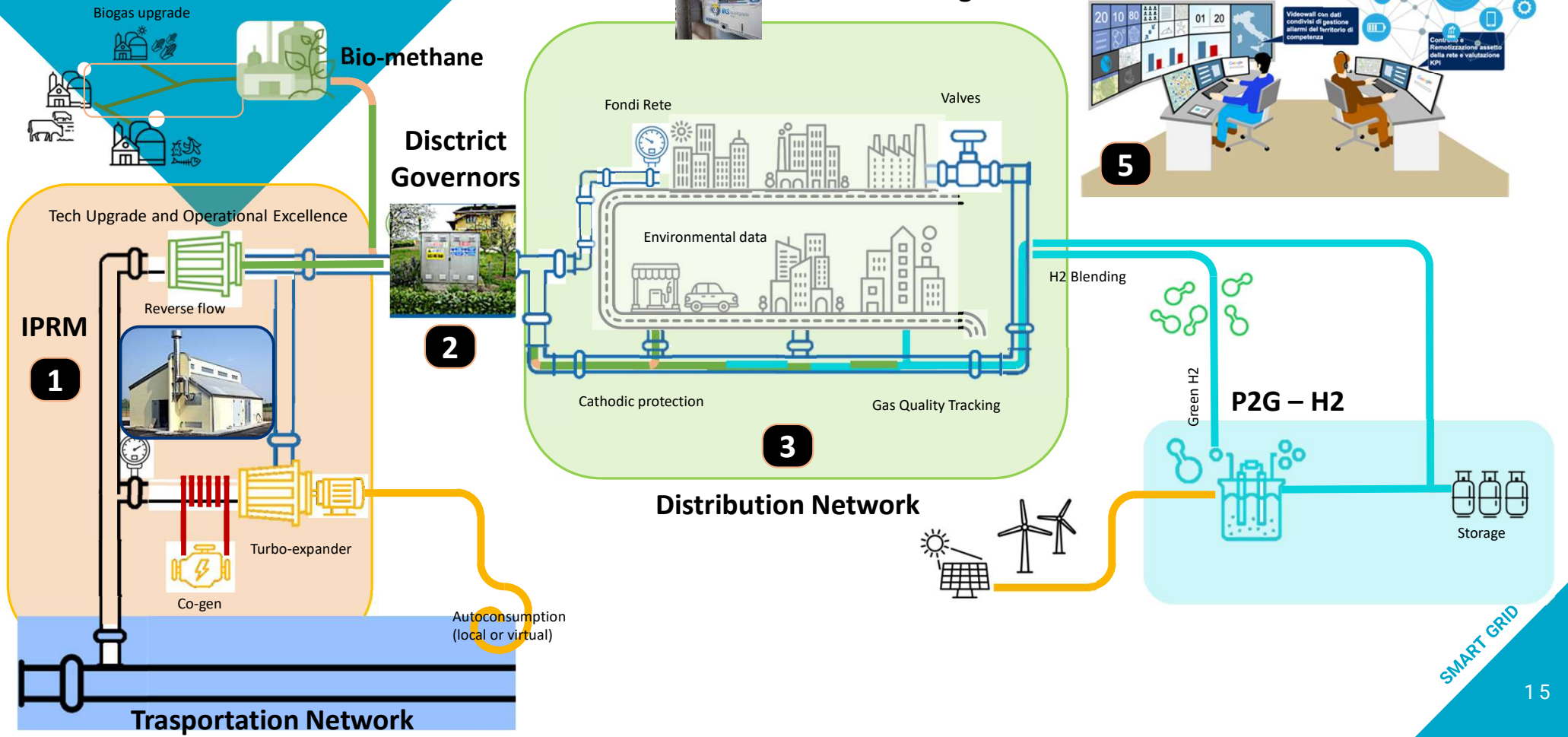
~€5 bln capex over the plan period for network upgrade, repurposing, digitization and technological innovation/R&D. Leveraging on big data will allow a more efficient network management (e.g. a step towards predictive maintenance) and will facilitate grid adaptation to any kind of gas

Smart Grid as key enabler for energy transition

Digitization will benefit the system in multiple ways

- More accurate updated consumption data enables proactive behaviors and predictive maintenance
- Efficiency gains result in significant savings for the system
- Safer operations foster service continuity
- Crucial for reaching EC ambitious decarbonization targets
- Enabler for injection of renewable and low carbon gases

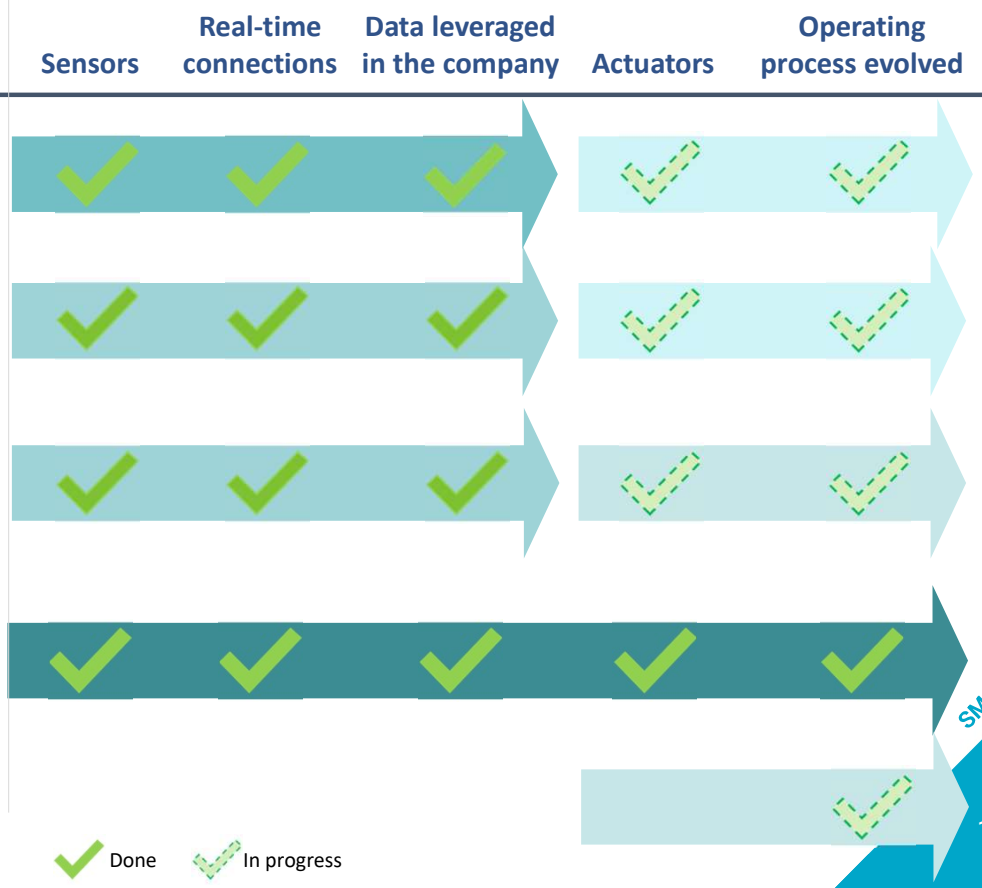
4.0 IoT-enabled smart grid



The roadmap for network IOT-ization

Extended digitization to all possible digitizable network points in order to collect the larger number of information

ASSETS	Extended digitization[1] 2021 - 2027	Plan Capex
1 **IPRM** (Gas Chromatography (GC) systems)	~900 (~900)	~€140mln
2 **Disctrict Governors**	~6,000	~€350mln
3 **Distribution Network** (Gas Chromatography (GC) systems) (Network End Points) (Shut Off Valves)	Entire Network (2,904) (9,594) (2,367)	~290mln
4 **Smar Metering Gas**	3.6mln	~€500mln
5 **Control rooms**	17	~€4.5mln



Note: included Toscana Energia.

Research & Development

Technical innovation is pursued also leveraging on internal R&D. Over the Plan Period Italgas plans to set up several research projects to scout potential network improvements

Revamping of the **Italgas LAB**

~€ 12 mln

€2mln for equipment &
~€10 for building relocation & upgrade

Power to Gas project and **Renewable gases testing** in Sardinia

~€ 21 mln

Design new **Italgas SMART METER**

~€ 8 mln

Other **Innovation projects**

~€ 5 mln

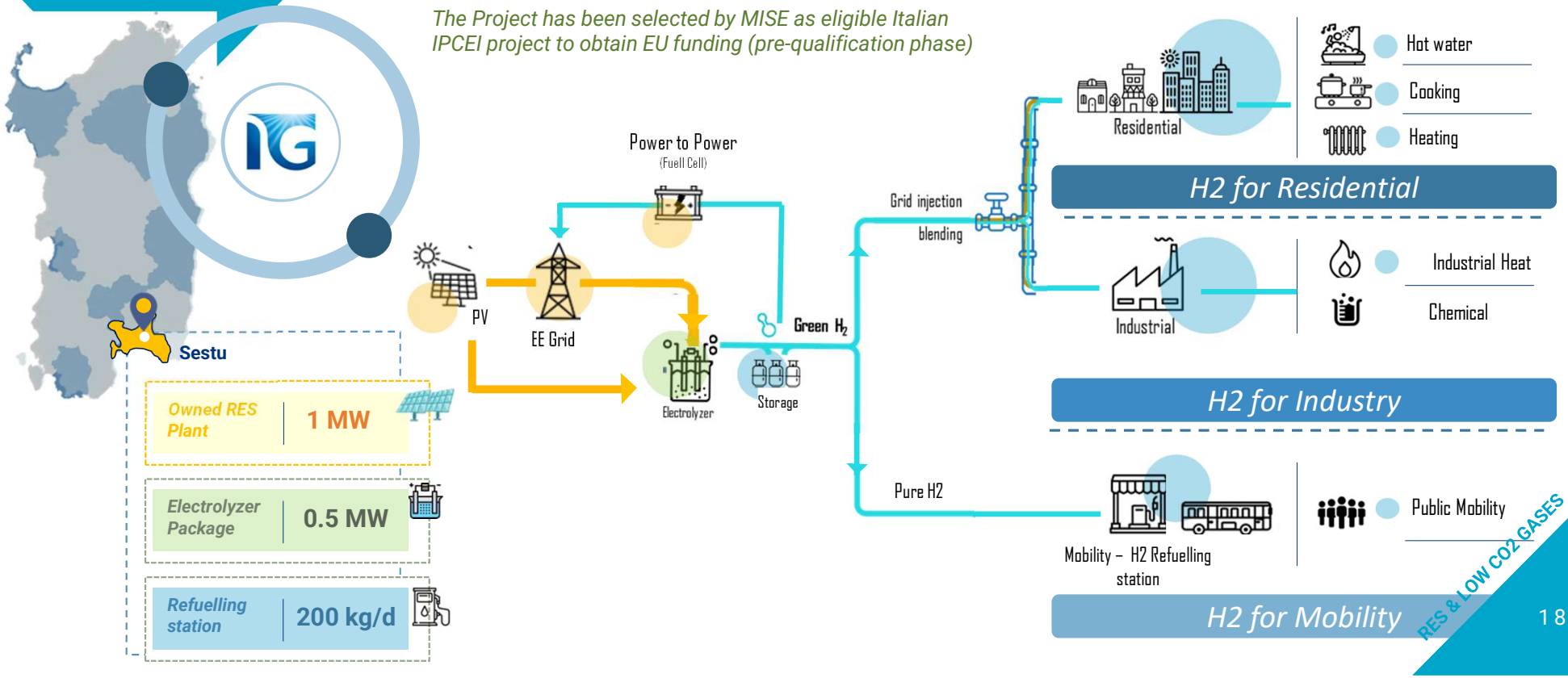
~€46mln related to R&D projects

Italgas P2G Project

The Italgas H_2 Showcase

In Sardinia Italgas has launched an *end-to-end* H2 project aimed at testing the entire *green hydrogen* value chain from the production by RES source to several final uses: blended with natural gas for residential and industrial uses, and pure H2 for public mobility

The Project has been selected by MISE as eligible Italian IPCEI project to obtain EU funding (pre-qualification phase)



Emissions reduction & Energy Efficiency

Introduction

Italgas has planned a set of combined initiatives to reduce impact of its operations on climate change

Selected high impact initiatives inside the Group…

Emissions reduction

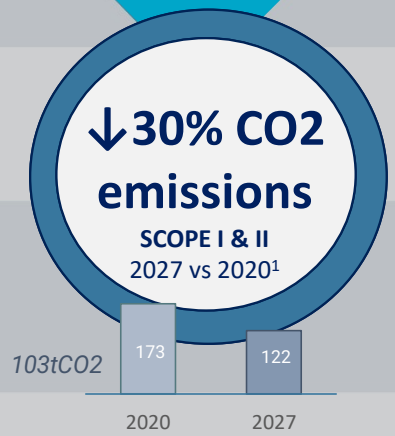
Energy efficiency

GHG reduction, decarbonization of operations and energy efficiency are priorities for Italgas to let the gas infrastructure evolve towards a future clean energy systems and to develop initiatives also outside the company

Decarbonization of operations

…And externally, promoting energy efficiency though the Group ESCO

Decarbonization of operations



Decarbonization of operations is a key element in the Company business development. A number of initiatives are planned to achieve ambitious targets

Reduction of gas leakages

Reduction of fugitive emissions through full deployment of Picarro technology and data analytics. Thanks to preliminary results and data collected through Picarro and dedicated resources the Company is able to roll out a more effective integrated planning of leak detection

Reduction of gas industrial consumption

Reduction of CO2 emissions due to gas industrial consumptions of the Group. The target is mainly achieved renovation and substitution of heating systems of gas pre-heating plants

Reduction of gas civil consumption

Reduction of CO2 emissions due to civil consumptions of the Group buildings. The target is mainly achieved through initiative of building renovation and energy efficiency.

Reduction of vehicles energy consumption

Reduction of CO2 emissions due to civil consumptions of the Group buildings. The target is mainly achieved through a combination of initiatives to evolve the company fleet. This includes acquisition of bifuel, trifuel and hybrid vehicles

\+ *Certification of electricity consumption from RES and auto-consumption from PV, turbo-expanders and co-gen units*

Note: (1) Considering an equal organic perimeter

Improve energy efficiency

Reduction of gas industrial consumption

Reduction of gas pre-heating consumption through installation of advanced gas pre-heating optimization systems

Reduction of net EE civil and industrial consumption[2]

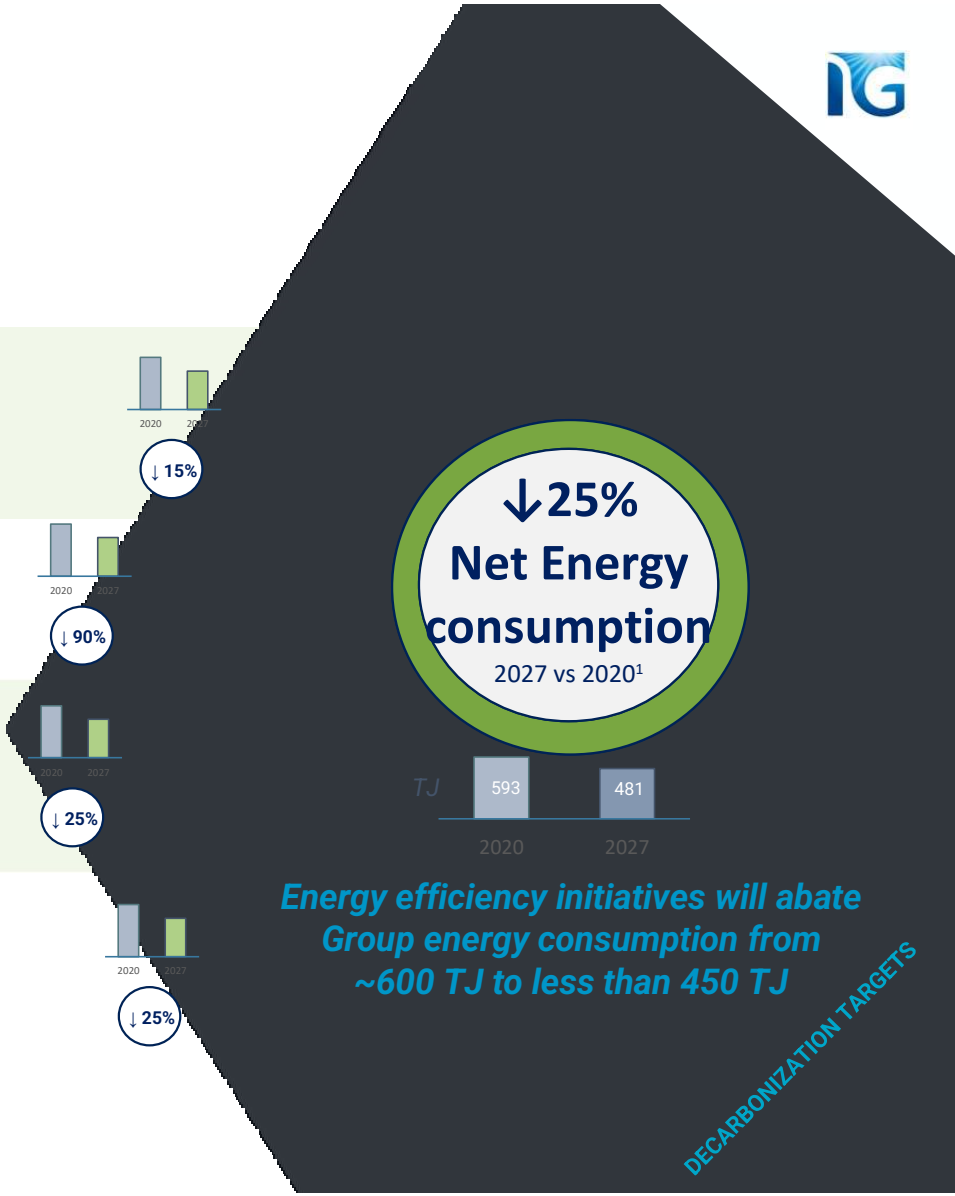
Reduction of net EE civil and industrial consumption thanks to cogeneration and turbo-expanders projects, allowing energy auto-production

Reduction of gas civil consumption

Reduction of energy consumption of the Group buildings through initiative of building renovation and energy efficiency.

Reduction of vehicles energy consumption

Reduction of the energy consumption of the Company fleet though a combination of initiatives to evolve the company fleet. This includes acquisition of bi-fuel, tri-fuel and hybrid vehicles



Note: (1) Considering an equal organic perimeter (2) Reduction estimated on the sole Italgas Reti perimeter

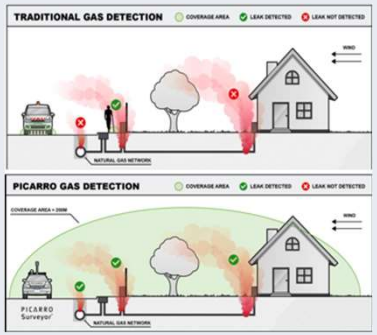
Reduction of Gas Leakages

Picarro has transformed our ability to detect, control and reduce methane emissions

The technology

The «surveyor» collects many different environmental parameters to run an innovative calculation algorithm.

The calculation takes into account both wind speed and vehicle's speed, GPS position, methane and ethane measurements.



The fleet

Currently **21** Surveyor fleet spread across Italy (+ 2 ready for delivery)

#2 JEEP Plugin Hybrid 4x4
#1 JEEP Compass Plugin Hybrid 4x4
#2 JEEP Wrangler Rubicon
#4 JEEP Renegade
#10 FIAT Panda VAN or 4x4
#3 FIAT Panda *jolly*
#1 Boat

...we are on the journey towards
predictive maintenance

*+ **67** Backpack*

Plan emission reduction

Thanks to data collected with Picarro over the network analysed though a mathematical model, Italgas has reviewed its leak inspection program in order to achieve the maximum performance in detection at the benefits of the entire system.

Key initiatives to improve leak detection:

- Focus on **super emitters** (<5% of leaks = ~50% of the total emissions)
- **Reduction of intervention timing** compared to those required by ARERA (repair and localization)
- Crossed actions to reduce leak rate (historical data analysis, predictive maintenance mathematical model, advanced LDAR, massive pipeline replacement program)

Value recognitions

Sustainability in culture and processes

Our continuous effort to integrate sustainability in corporate culture and value chain is recognized by several institutions

FTSE4Good

MSCI

Dow Jones Sustainability Indexes

CDP
DRIVING SUSTAINABLE ECONOMIES

ECPI

standard ethics