# Green Bond Project (post issue) ISSUED 2019-MATURITY 2029 (ISIN XS2065601937)

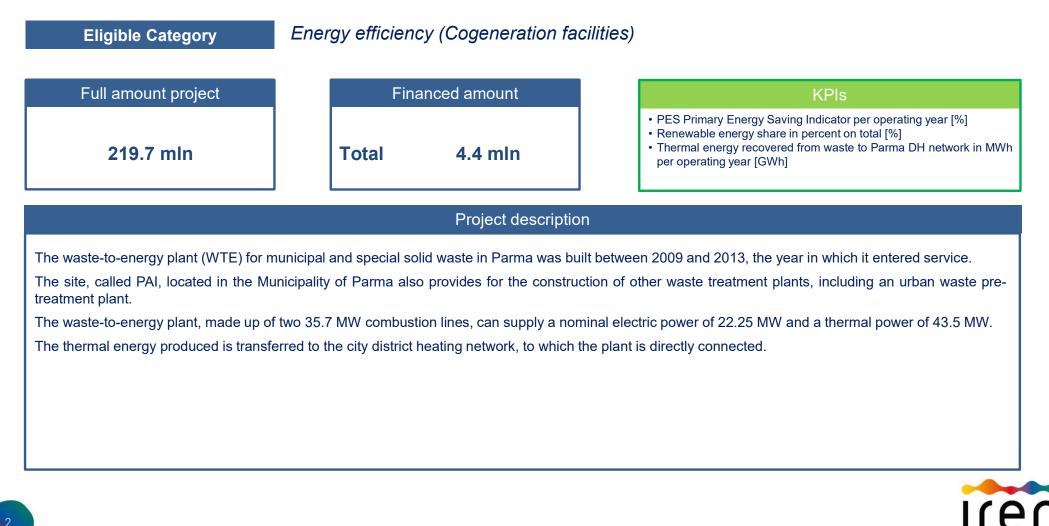
March 2021

### Waste to energy plant for heat production in Parma

1 WASTE MANAGEMENT BU

Ref.: project 1-ISIN XS1704789590





# Waste to energy plant for heat production in Piacenza Ref.: project 2-ISIN XS1704789590 Energy efficiency (Cogeneration facilities) **Eligible Category** Full amount project Financed amount **KPIs** • PES Primary Energy Saving Indicator per operating year [%] Renewable energy share in percent on total [%] • Thermal energy recovered from waste to Piacenza DH network in 14.5 mln Total 8.9 mln MWh per operating year [GWh] **Project description** The project involves the construction of a cogeneration section at the existing solid waste-to-energy plant located in Piacenza. The current state consists of two combustion lines (input 22.7 MW each) that feed a steam cycle with a 11.6 MW condensing type turbine. In order to strengthen the urban district heating in the city of Piacenza, the city network is expected to be extended and connected to the existing waste-toenergy plant with its consequent modification in order to recover the thermal energy necessary for heat distribution. irer ISIN XS2065601937-FINAL 2020

2 WASTE MANAGEMENT BU

#### **Development of separate waste collection services**

3 WASTE MANAGEMENT BU Ref.: project 3-ISIN XS1704789590



 Eligible Category
 Waste management efficiency and recycling (Waste collection and sorting upgrades)

 Full amount project
 Financed amount

 79.4 mln
 Total
 19.7 mln

 Sorted waste collection hubs [N]
 Sorted waste collection hubs [N]

 Yours of waste collection hubs [N]
 Yours of waste collection hubs [N]

#### **Project description**

The project concerns the development of separate waste collection through:

#### 1) TRANSFORMATION OF THE SORTED WASTE COLLECTION SYSTEM

- TORINO: transformation of the separate collection system in Torino with the extension of home collection. IREN has implemented a progressive transformation of waste collection services to the door-to-door model, with prodromal methods for the application of punctual pricing.
- EMILIA: Anticipating the regional planning, in the territories of the Emilian municipalities served by Iren, the Group has implemented a progressive transformation of waste collection services from the road model to the door-to-door model, with prodromal methods for the application of punctual pricing. The situation of the interventions is diversified in the 3 provinces,

#### 2) COLLECTION HUBS IN THE EMILIA AREA

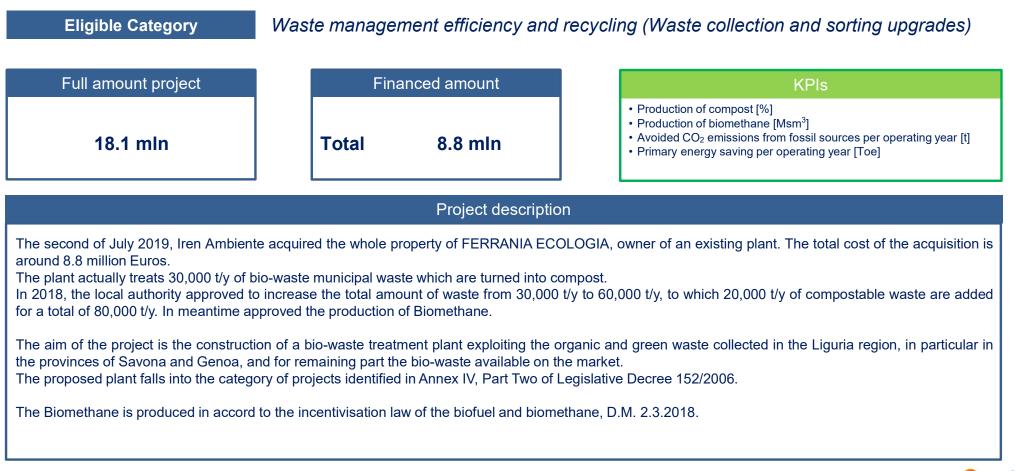
It is a capillary computerized system used for the registration of incoming users and for the control of volumes in order to set mass balances. With a special badge, registration is carried out, then through a guided path on the touch-screen monitor, all the information relating to the transfer operation is entered. This allows you to activate prize competitions for citizens.



# Biowaste recovery to produce compost and biomethane - Ferrania (SV)

**4 WASTE MANAGEMENT BU** 



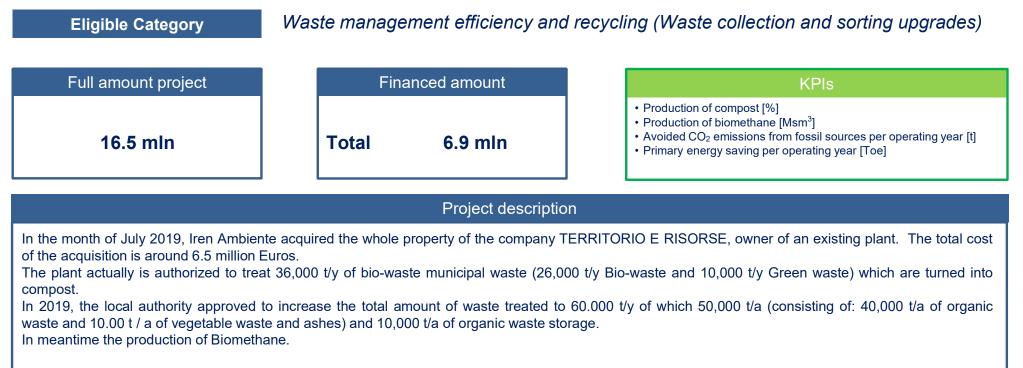




# Biowaste recovery to produce compost and biomethane – Santhia (TO)

5 WASTE MANAGEMENT BU

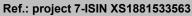




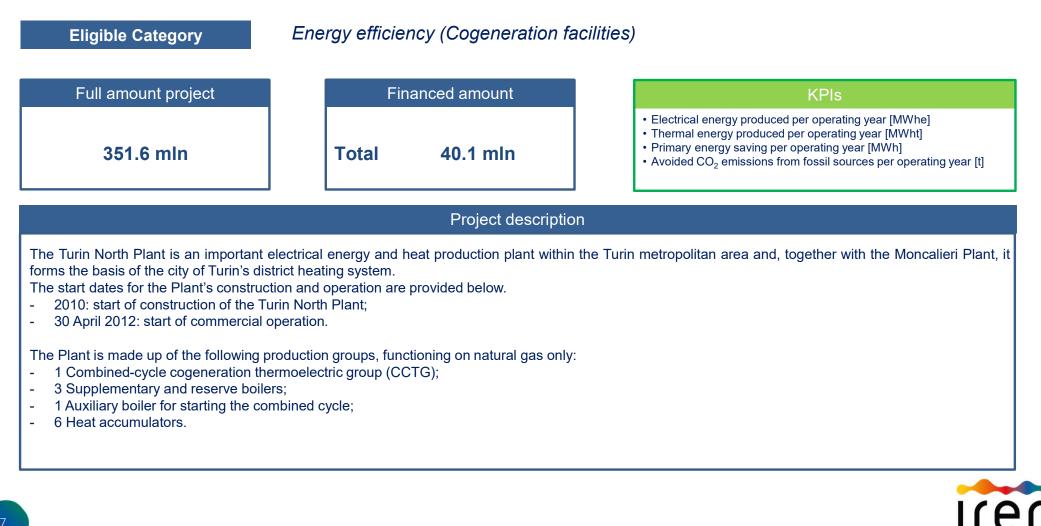
The aim of the project is the construction of a bio-waste treatment plant exploiting the biowaste and green waste collected in the Piemonte region, in particular in the provinces of Vercelli, Novara, Verbano Cusio Ossola and Alessandria, and for remaining part the bio-waste available on the market. The proposed plant falls into the category of projects identified in Annex IV, Part Two of Legislative Decree 152/2006. The Biomethane is produced in accord to the incentivisation law of the biofuel and biomethane, D.M. 2.3.2018.



## **Cogeneration plant Torino Nord**







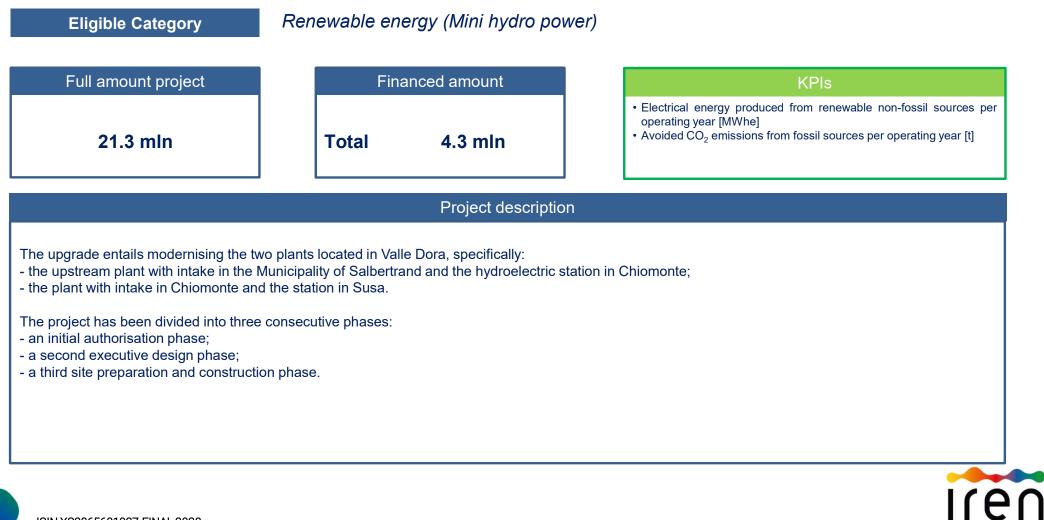
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# VDE hydroelectric plant (Chiomonte-Susa) Repowering project

#### 7 ENERGY BU Ref.: project 9-ISIN XS1881533563



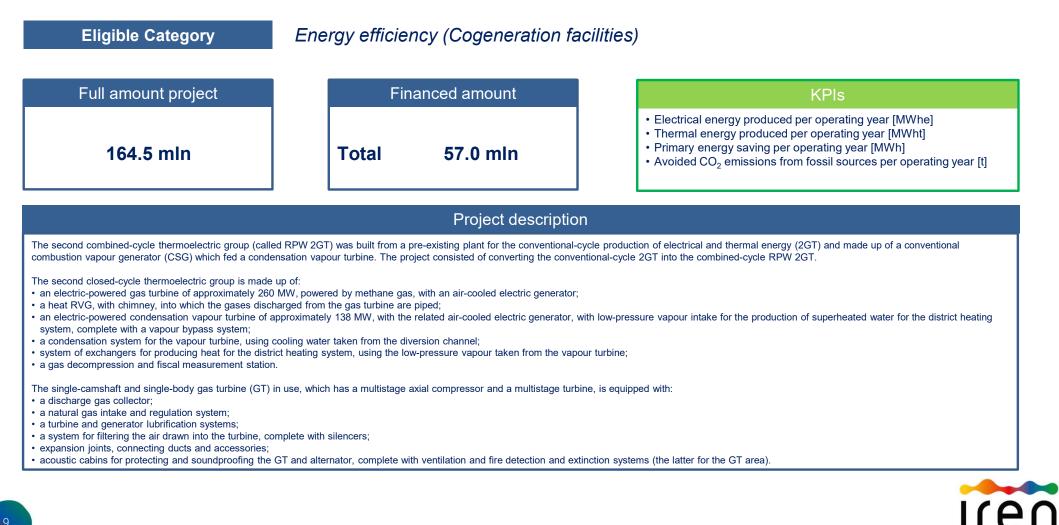


### **Cogeneration plant Moncalieri–GT2 RPW**

#### 8 ENERGY BU

Ref.: project 10-ISIN XS1881533563





#### **Eligible Category** Energy efficiency (Energy distribution and management) Full amount project **Financed** amount **KPIs** • Primary energy saving per operating year [MWh] • Avoided CO<sub>2</sub> emissions from fossil sources per operating year [t] 17.6 mln 13.0 mln Total **Project description** Since 1986, the public lighting service in Turin has been managed by the Iren Group; the plant consists of around 98,000 lighting points, the total luminous flux is 1,530 million lumens. The electricity network that powers the light centers extends for 2,800 km, the total electrical power is 18,900 kW. The project was divided into two phases. The first phase, started in 2015 and concluded in 2017, led to the replacement of approximately 53,000 public lighting points, equal to 53% of the lighting fixtures in the city, with LED lights, with important benefits on the economic and environmental front. The territory of Turin was divided into five lots, about 11,000 appliances for each lot. The efficiency and reliability of the new LED lamps guarantee a reduction of over 50% in the electricity consumption of the plants affected by the intervention. The new LED lamps installed with a color temperature of 3,000 and 4,000 kelvin emit a pleasant white light and moreover the luminaires have a greater control in the emission of the luminous flux, offering a greater luminous coverage of the streets and increasing the perception of safety for the citizens who travel through them. Furthermore, the new lighting fixtures with LED technology do not contain polluting substances and, by not producing light scattered upwards, they also reduce light pollution. The second phase of the project, during the start-up phase, involves intervention in the following areas:

· lighting systems for the main city underpasses and high-power lighting devices

· traffic light systems.

The replacement of approximately 900 high-power lighting fixtures and 3,500 fixtures in the city underpasses (Bramante, Lingotto, Mortara, Oddone, Repubblica, Rivoli, Spezia) is expected, as well as 13,000 traffic lights and 414 traffic light regulators. The efficiency and reliability of the new LED lamps guarantee a reduction of approximately 50% in the electricity consumption of the public lighting systems affected by the intervention and of about 85% of the consumption of the traffic light systems. The replacement plan, which will involve all the city districts at the same time, started in 2019 and for public lighting has completed in 2020 and for traffic light systems will be completed by 2022.



**ENERGY BU** 

9

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Torino LED (I and II phases)

#### **Eligible Category** *Energy efficiency (Energy distribution and management)* Financed amount Full amount project **KPIs** • Avoided CO<sub>2</sub> emissions from fossil sources per operating year [t] Primary energy saving per operating year [Toe] 45.8 mln 19.8 mln Total **Project description** The energy efficiency project produces positive impacts in terms of reducing electricity and thermal consumption, thanks to the activities developed in 3 areas of intervention: 1) Public lighting of the Municipality of Fidenza. Redevelopment and energy efficiency of the city's public lighting system: replacement of 6,174 lighting fixtures with others with new LED technology; rebuilding of electrical panels; remote control implementation on electrical panels; City smart interventions: electric car charging stations, event communications boards, etc. 2) Technological renewal of thermal power stations of municipal buildings in Turin: energy pre-intervention redevelopment diagnoses and Energy Performance Certificates; installation of high efficiency boilers and thermostatic valves in 264 municipal buildings; EPC contracts to guarantee efficiency gains. 3) Interventions to improve the energy y efficiency of technological systems • Teatro Regio: replacement of 10 AHU fan motors; centralized cooling and heat recovery with the installation of 4 latest-generation refrigeration units and replacement of the cooling towers; thermal power plant regualification: installation of 6 condensing thermal groups of 840 kW; building management system. • Municipality of Grugliasco: insulation of the opaque building envelope: replacement of windows and doors; installation of a new heat recovery building air conditioning system; installation of an energy supervision system; local re-lamping (replacement of existing lamps with LED technology elements); installation of a new photovoltaic system. ILEU ISIN XS2065601937-FINAL 2020

Smart solutions

**ENERGY BU** 

#### **Improvement of Genova plants**







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# **Eligible Category** Waste water treatment (Wastewater treatment plant upgrades) Financed amount Full amount project **KPIs** • Treated population equivalent (potential) [N] • Analytic parameters (Abb % BOD, Abb % COD, Abb % SST, Abb % Ntot, Abb % Ptot) [%] 4.6 mln Total 0.7 mln **Project description** The project includes interventions on different plants: 1. Monchio purifier: replacement of two imhoff pits (I level) with a last generation MBR plant 2. Vestola purifier: replacement of an imhoff pit (I level) with a biodisk (II level) plant 3. complete revamping of the purification plant located in the Municipality of Sorbolo (PR) iren ISIN XS2065601937-FINAL 2020

#### **Improvement of Parma plants**

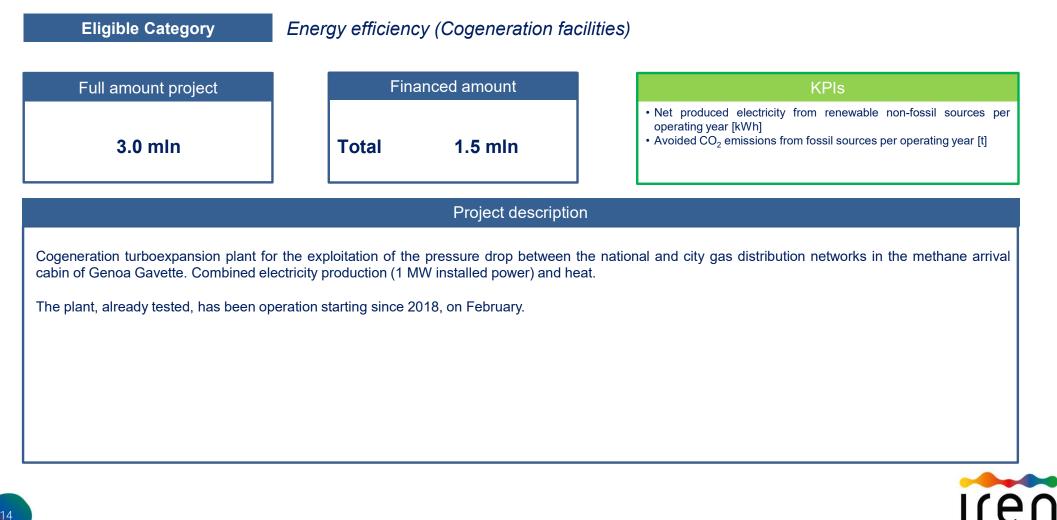
**NETWORKS BU** 12 Ref.: project 20-ISIN XS1704789590



### Cogeneration turboexpansion plant "Celsius"

**NETWORKS BU** 13

Ref.: project 21-ISIN XS1704789590



### Investments in sewage and waste water plants (Emilia and Liguria)

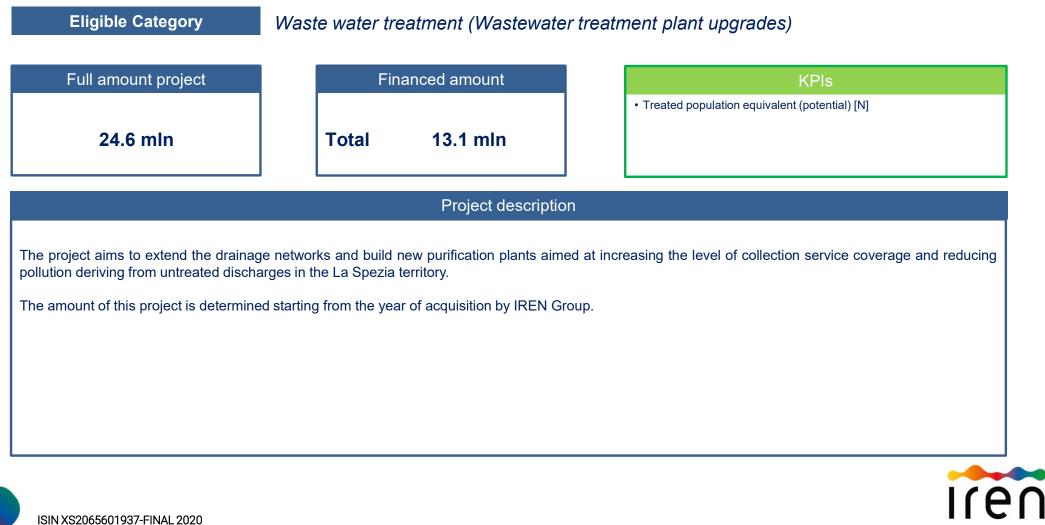
14 NETWORKS BU Ref.: project 15-ISIN XS1881533563



### Investments in drainage and purification (La Spezia - Liguria)

**NETWORKS BU** 15

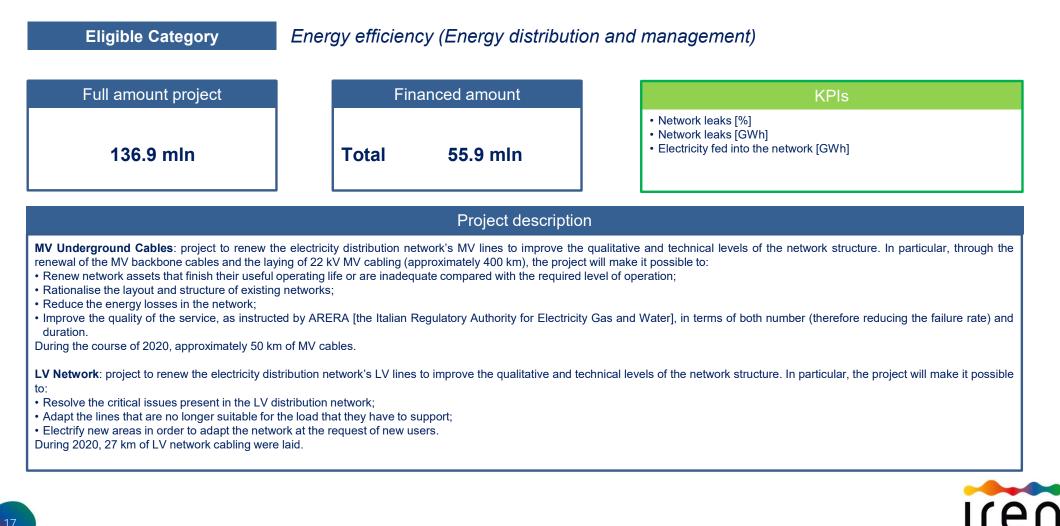




#### **Electricity distribution investments**

#### 16 **NETWORKS BU** Ref.: project 16-ISIN XS1881533563

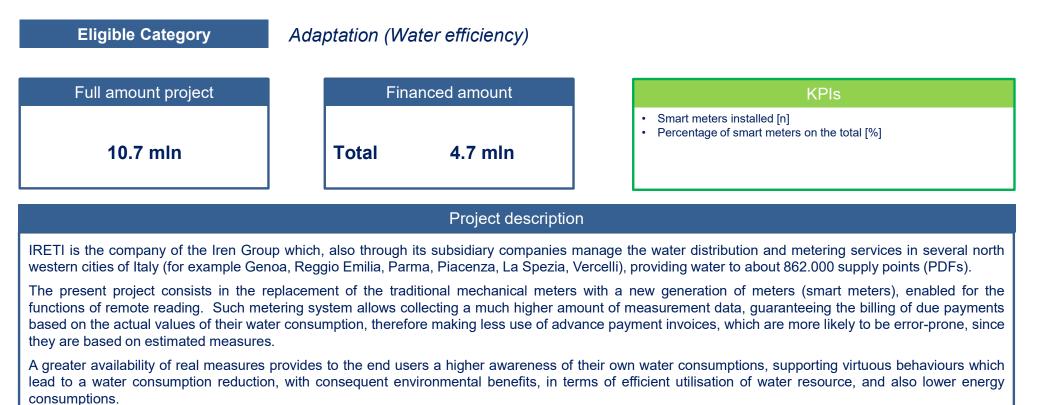




# Water distribution Smart Metering (Emilia, Liguria and Piemonte)

17 NETWORKS BU





Another related environmental effect is the reduction of measurement data collected "in the field" by operators, with a reduction in consumption of fossil fuels and related CO2 and other harmful emissions.



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#### Gas distribution Smart Metering (Emilia and Liguria) **Eligible Category** Energy efficiency (Energy distribution and management) Full amount project **Financed** amount **KPIs** Smart meters installed [n] • Percentage of smart meters on the total [%] 102.5 mln 45.9 mln Total **Project description** IRETI is the company of Iren Group that manages the gas distribution and metering services in several north western cities of Italy (for example Genoa, Reggio Emilia, Parma), providing gas to about 750.000 supply points (PDRs or Points of Delivery). Promoted by Del. n. 575/2012 of ARERA (Authority for Regulation of Energy, Networks and Environment), the present project consists in the replacement of the traditional mechanical meters with a new generation of meters (smart meters), enabled for both the functions of remote reading and remote management. Such metering system allows collecting a much higher amount of measurement data, guaranteeing the billing of due payments based on the actual values of their gas consumption, and improving the management of payment delay, as well as the service transfer or switching procedures, based on the actual measurement data, as well as remotely deactivate the supply due to customer arrears. A greater availability of real measures provides to the end users a higher awareness of their own gas consumptions (see Directive 2012/27/EU), supporting virtuous behaviours which lead to an energy consumption reduction, with consequent environmental benefits. Another related environmental effect is the reduction of measurement data collected "in the field" by operators, with a reduction in consumption of fossil fuels and related CO2 and other harmful emissions.

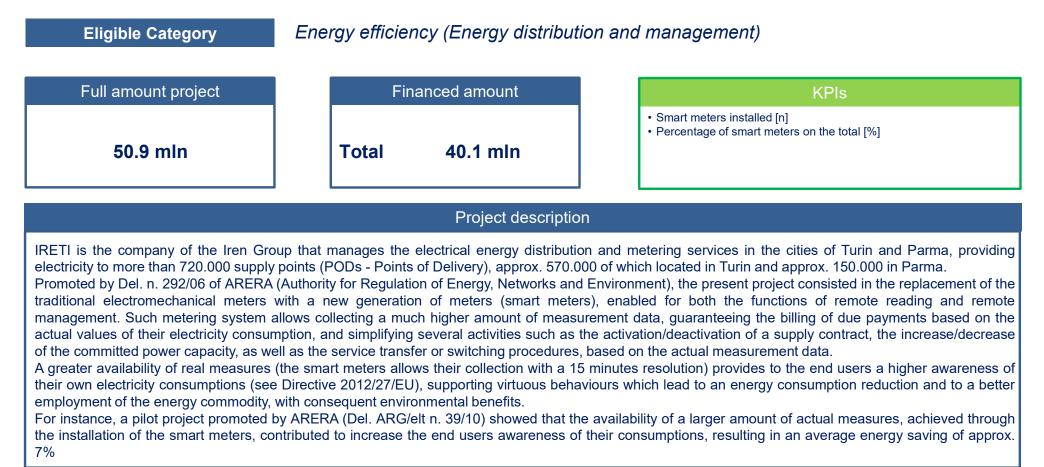
**NETWORKS BU** 

18

# Electricity distribution Smart Metering 1G (Torino and Parma)

**19 NETWORKS BU** 





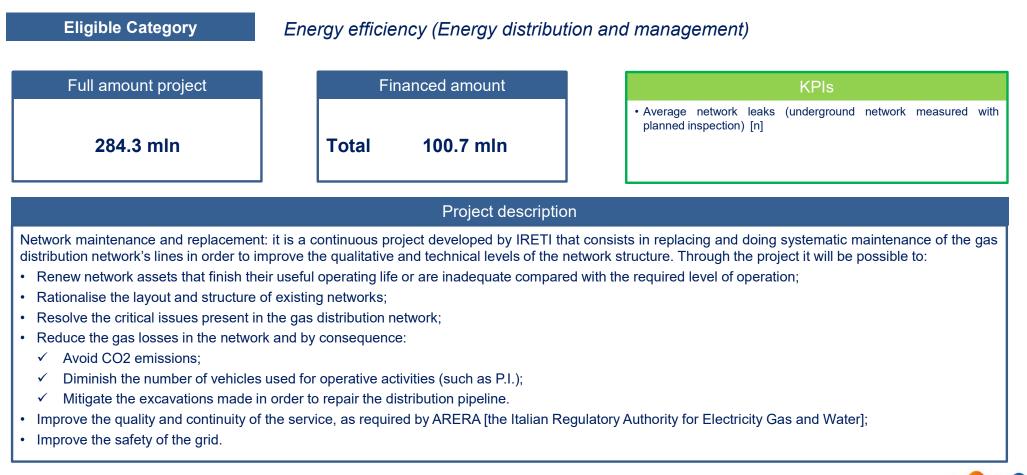


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#### **Replacement of gas distribution networks**

#### 20 NETWORKS BU





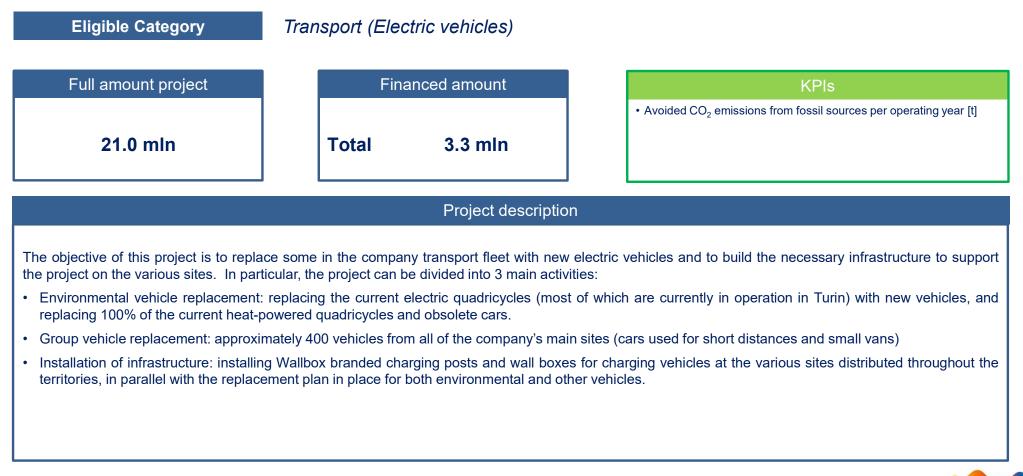


## E-mobility initiatives in the Iren offices

21 MARKET BU

Ref.: project 14-ISIN XS1881533563







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