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

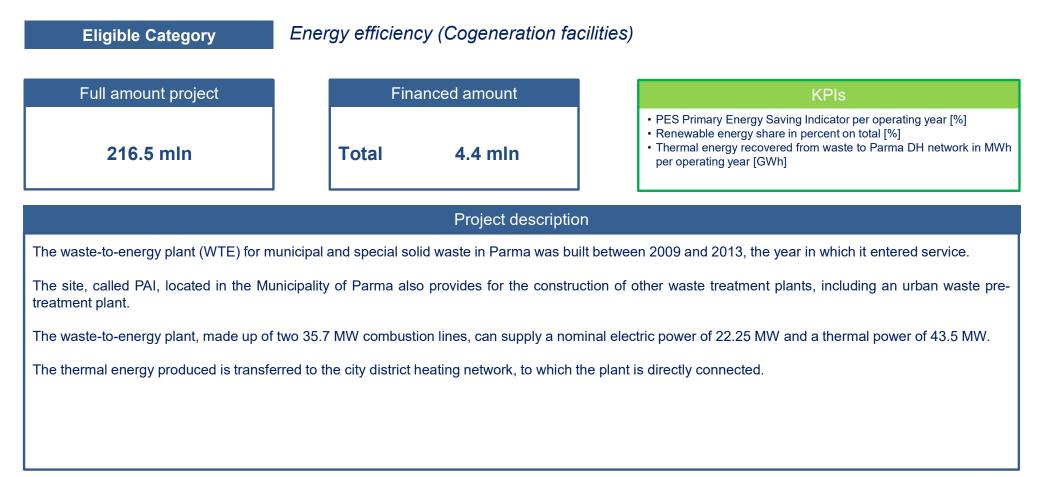
March 2020

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 8.9 mln 8.9 mln Total 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 2019

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 **KPIs** Total sorted waste collection [t] Total of non sorted waste disposed [t] Number of bins for sorted waste [N] · Volumes of bins for sorted waste [mc] 69.1 mln 27.0 mln Total Door to door collection system [N] Sorted waste collection hubs [N] Volumes of waste collected in the collection hubs [t] **Project description** The project concerns the development of separate waste collection through: 1) transformation of the separate collection system in Turin with the extension of home collection to about an additional 150,000 inhabitants compared to the 404,000 inhabitants served in 2012; in the Emilia Area, anticipating the regional planning, 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. 2) collecting centers in Emilia area, a capillary computerized system used to register inputs, through a personal badge, and to check the volumes of waste conferred. This allows to activate competitions with prizes for citizens. ILEI

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

ISIN XS2065601937-FINAL 2019

4 WASTE MANAGEMENT BU



ILEL



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

5 WASTE MANAGEMENT BU



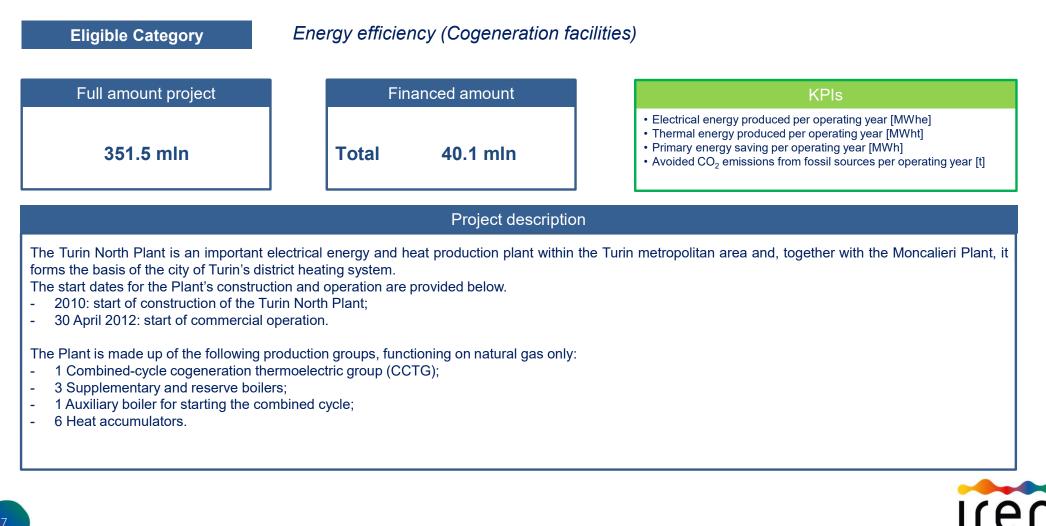




ISIN XS2065601937-FINAL 2019

Cogeneration plant Torino Nord





VDE hydroelectric plant (Chiomonte-Susa) Repowering project

7 ENERGY BU

Ref.: project 9-ISIN XS1881533563





Project description

- The upgrade entails modernising the two plants located in Valle Dora, specifically:
- the upstream plant with intake in the Municipality of Salbertrand and the hydroelectric station in Chiomonte;
- the plant with intake in Chiomonte and the station in Susa.
- The project is divided into three consecutive phases:
- an initial authorisation phase;
- a second executive design phase;
- a third site preparation and construction phase.

During the initial phase, which is already complete, the thirty-year water diversion concession and the single authorisation for construction were obtained in order to be able to prepare the site for the works and operate the two plants in the future. The second executive design phase was completed in the first few months of 2018. The upgrade project consists of replacing the currently existing energy production groups with 4 new groups, providing a total installed power of 15 MW. Two groups will be installed in the Chiomonte plant and two in the lower Susa plant. The upgrade activities will also entail the extraordinary maintenance of the electromechanical works, the adduction and regulation works, with the replacement of the bridge cranes and civil works from the intake in Serre La Voute to the Chiomonte Plant, then restarting with the new intake in Chiomonte, where the new fish ladder will be built, and finally the modernisation of the Susa station. The third and final phase will consist of the actual preparation of the worksite. The works began in December 2017. Meanwhile, the plants are expected to enter into operation by November 2019.

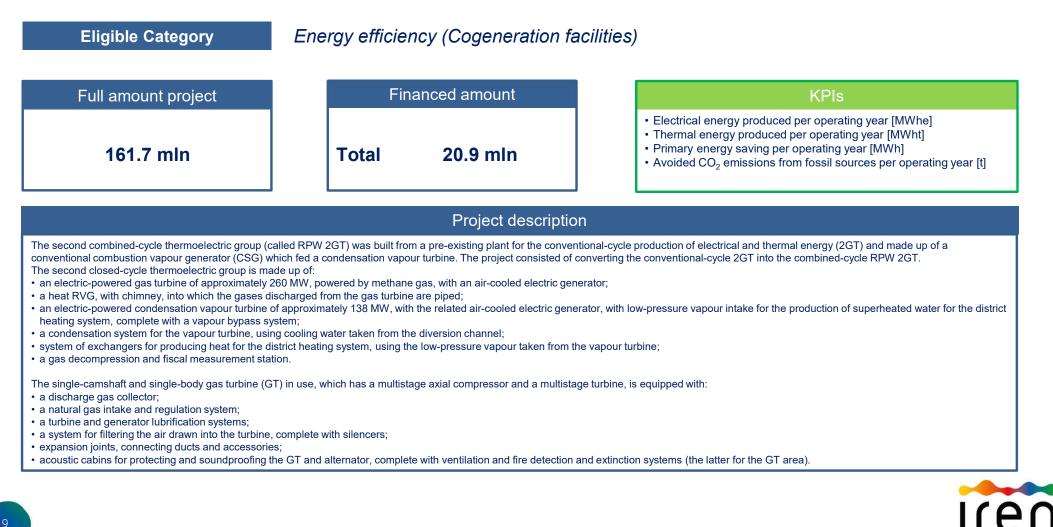


Cogeneration plant Moncalieri–GT2 RPW

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 CO₂ emissions from fossil sources per operating year [t] 13.0 mln 13.0 mln Total **Project description** Since 1986, the public 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 6,000 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, will start in 2019 and will last one year for public and three-year lighting systems for traffic light systems.



ENERGY BU

9

ISIN XS2065601937-FINAL 2019

Torino LED (I and II phases)

Energy efficiency (Energy distribution and management) **Eligible Category** Financed amount Full amount project **KPIs** • Avoided CO₂ emissions from fossil sources per operating year [t] Primary energy saving per operating year [Toe] 19.8 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 in 224 municipal buildings; EPC contracts to guarantee efficiency gains. 3) Interventions to improve the energy efficiency of technological systems Teatro Regio: replacement of 11 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 with the implementation of a new automation system of the BACS type. 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.



ENERGY BU

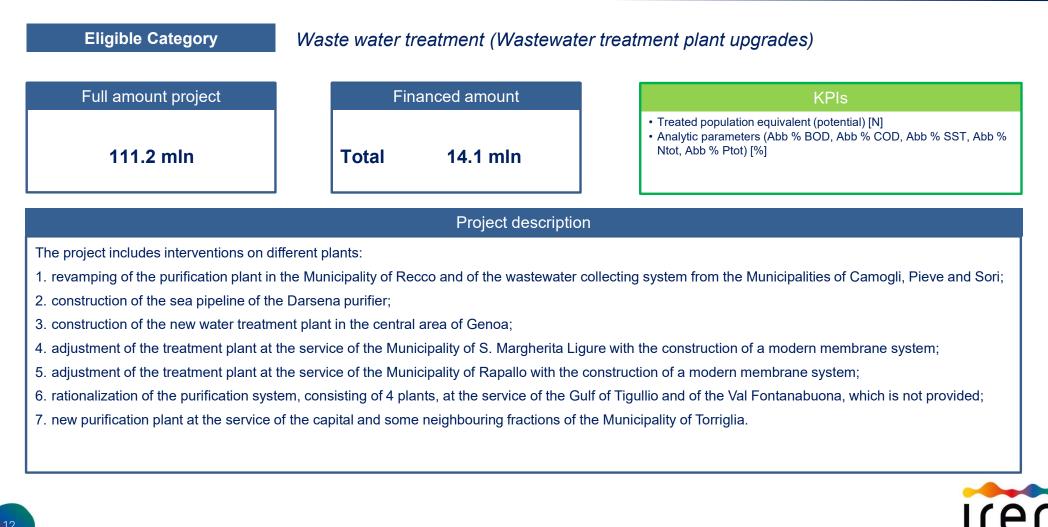
10

ISIN XS2065601937-FINAL 2019

Smart solutions

Improvement of Genova plants





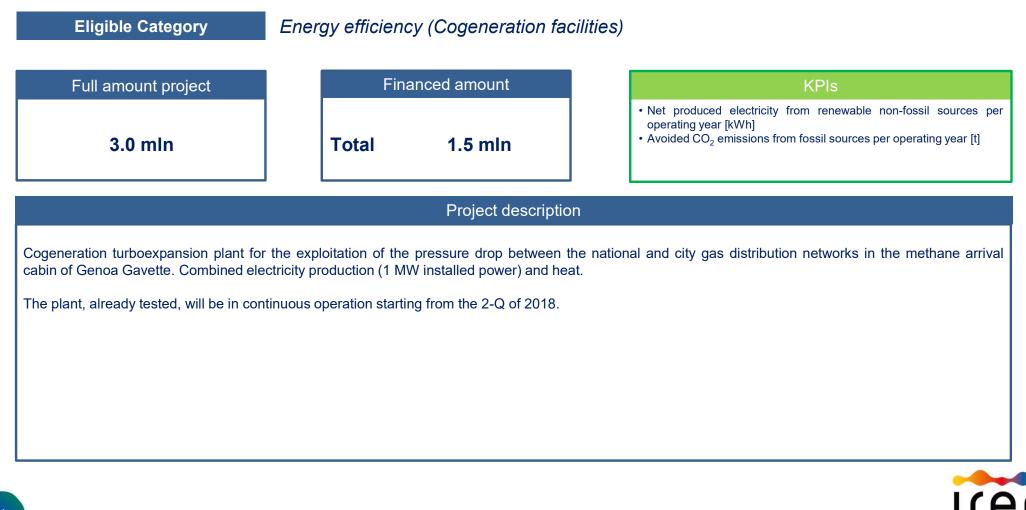
Improvement of Parma plants Ref.: project 20-ISIN XS1704789590 **Eligible Category** Waste water treatment (Wastewater treatment plant upgrades) Full amount project Financed amount **KPIs** • Treated population equivalent (potential) [N] • Analytic parameters (Abb % BOD, Abb % COD, Abb % SST, Abb % Ntot, 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 2019

NETWORKS BU

Cogeneration turboexpansion plant "Celsius"

NETWORKS BU 13

Ref.: project 21-ISIN XS1704789590



iren

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

NETWORKS BU 14 Ref.: project 15-ISIN XS1881533563



Investments in drainage and purification (La Spezia - Liguria)

15 NETWORKS BU

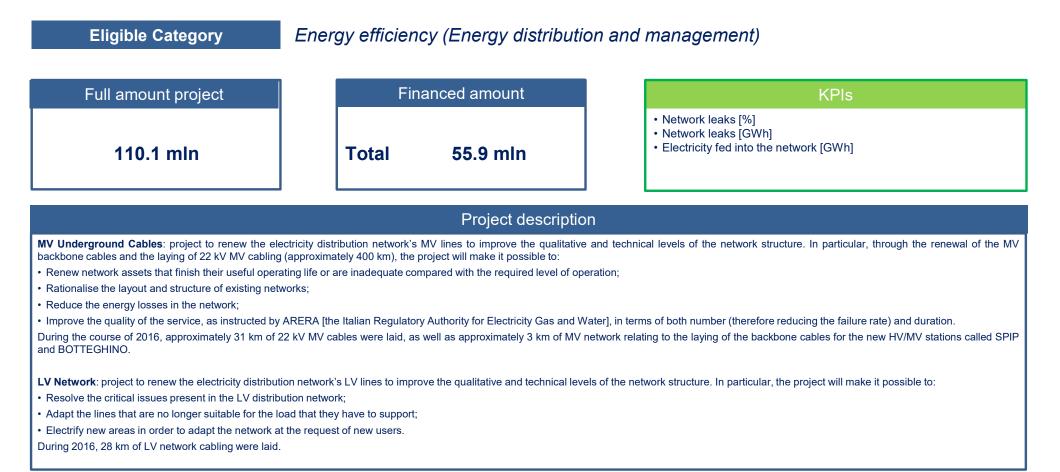




Electricity distribution investments

16 NETWORKS BU Ref.: project 16-ISIN XS1881533563





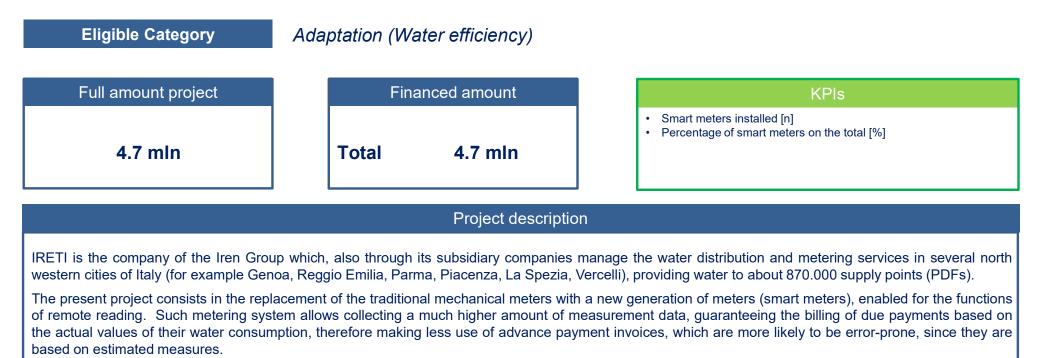


ISIN XS2065601937-FINAL 2019

Water distribution Smart Metering (Emilia, Liguria and Piemonte)

17 NETWORKS BU





A greater availability of real measures provides to the end users a higher awareness of their own water consumptions, supporting virtuous behaviours which lead to a water consumption reduction, with consequent environmental benefits, in terms of efficient utilisation of water resource, and also lower energy consumptions.

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.



Gas distribution Smart Metering (Emilia and Liguria) Energy efficiency (Energy distribution and management) **Eligible Category** Full amount project **Financed** amount **KPIs** Smart meters installed [n] • Percentage of smart meters on the total [%] 96.1 mln 96.1 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. 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



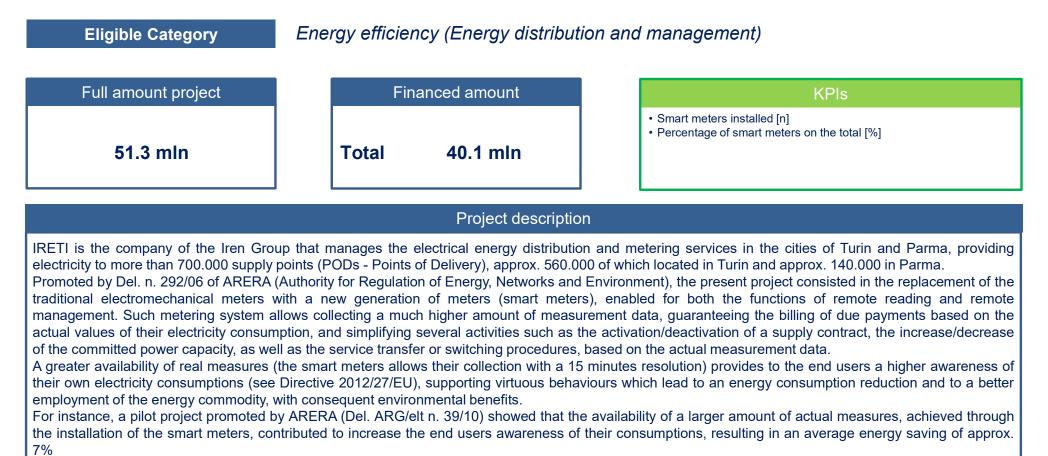
NETWORKS BU

18

Electricity distribution Smart Metering 1G (Torino and Parma)

19 NETWORKS BU





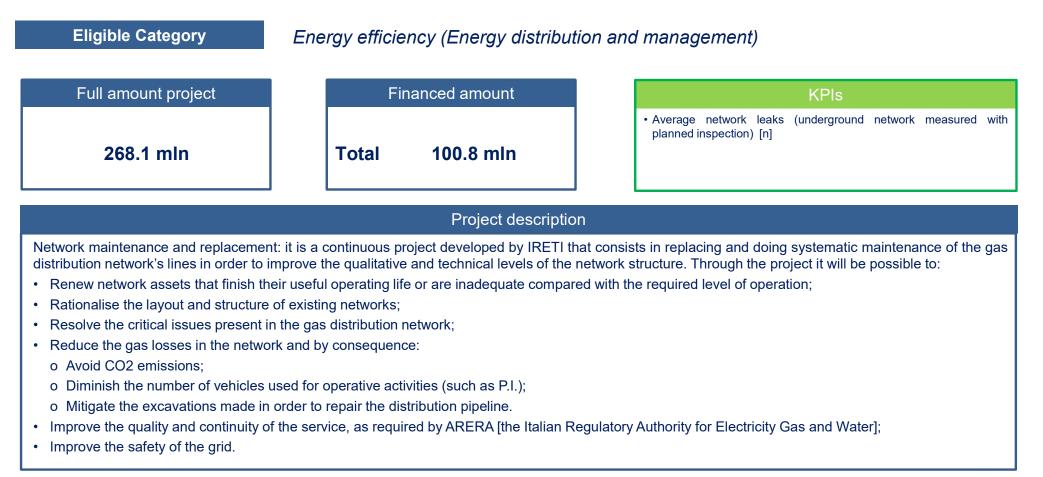


ISIN XS2065601937-FINAL 2019

Replacement of gas distribution networks

20 NETWORKS BU





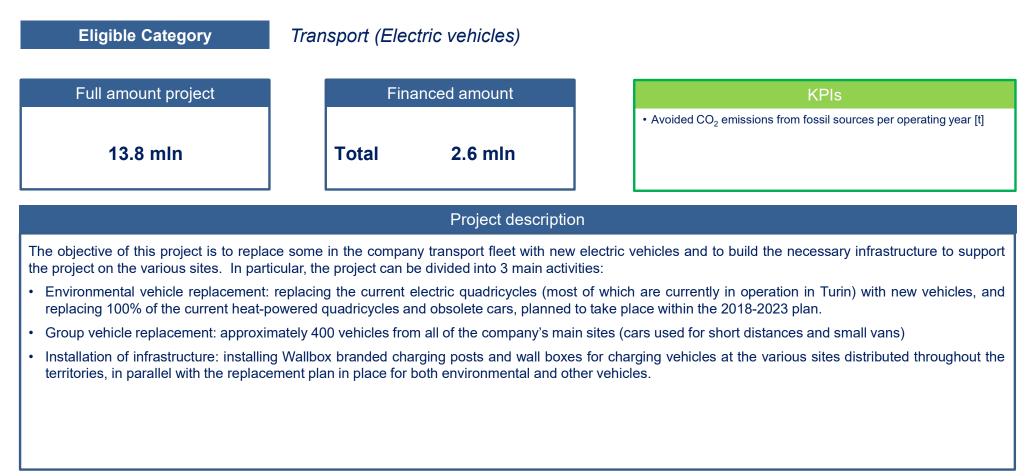


E-mobility initiatives in the Iren offices

21 MARKET BU

Ref.: project 14-ISIN XS1881533563







ISIN XS2065601937-FINAL 2019