



Green Bond Project (post issue)
ISSUED 2020-MATURITY 2031
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March 2022

I.Blu: Selection plant in San Giorgio di Nogaro (UD)

1 WASTE MANAGEMENT BU



Eligible Category

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

Full amount project

7.2 mln

Financed amount

Total 7.0 mln

KPIs

- Plastic sent for material recovery [t]
- Avoided CO₂ emissions [t]

Project description

The plant, owned by Iblu, a company controlled by Iren Ambiente, carries out the treatment and selection of plastic packaging waste mainly on behalf of the COREPLA Consortium on the basis of a multi-year contract.

The process consists of the following steps:

- acceptance, verification and start-up of selection, by loading the bag opener-doser machine;
- highly automated primary selections (dimensional and ballistic separations)
- selection of flexible packaging (mainly polyethylene film), through an aeraulic separation;
- separation of the steel and aluminum through a series of magnets and eddy current devices;
- subdivision of the hollow objects (flacons, bottles, etc) by polymer and color through a series of optical detection devices (infrared) and compressed air nozzles;
- manual quality control for the various fractions (including flexible ones);
- the various products are then sent to temporary storage bunker, pending the subsequent volumetric reduction.

The plant's current production capacity is 120,000 t / y.

Eligible Category

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

Full amount project

8.2 mln

Financed amount

Total 7.7 mln

KPIs

- Plastic sent for material recovery [t]
- Avoided CO₂ emissions [t]

Project description

The plant, owned by Iblu, a company controlled by Iren Ambiente, carries out the treatment and selection of plastic packaging waste mainly on behalf of the COREPLA Consortium on the basis of a multi-year contract.

The process consists of the following steps:

- acceptance, verification and start-up of selection, by loading the bag opener-doser machine;
- highly automated primary selections (dimensional and ballistic separations)
- selection of flexible packaging (mainly polyethylene film), through an aeraulic separation;
- subdivision of the hollow objects (flacons, bottles, etc) by polymer and color through a series of optical detection devices (infrared) and compressed air nozzles;
- manual quality control for the various fractions (including flexible ones);
- the various products are then sent to temporary storage bunker, pending the subsequent volumetric reduction.

The plant's current production capacity is 110,000 t / y.

Eligible Category

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

Full amount project

10.0 mln

Financed amount

Total 9.2 mln

KPIs

- Blupolymer produced [t]
- Bluair produced [t]
- Avoided CO₂ emissions [t]

Project description

The plant, owned by IBLU, operates on behalf of the Corepla Consortium and consists of two distinct production lines.

a) Washing and granulation line (Line 1): this line deals with a previously selected waste consisting of mixed polyolefins.

After a first primary trituration step, the polyolefin component is separated from the other fractions. The polyolefin fraction is then centrifuged and "squeezed" by mechanical presses that reduce its humidity and densified using twin-screw extruders at high temperatures. After the cooling and grinding phases, the densified product is finally sent to single-screw extruders which transform it into granules (Blupolymer) used for:

- create products for the construction of low energy impact buildings and outdoor spaces that respect the environment;
- increase the strength and durability of the asphalt over time, ensuring intact flooring for longer, reduced maintenance and greater safety, less waste of resources and circularity of materials.

b) Production line of Bluair reducing agent (Line 2): the incoming waste, consisting of more heterogeneous and less refined plastic, is subjected to primary shredding, then densified, shredded with a blade mill and separated into different sizes with the aid of a rotating screen. In the process, the heavy fraction of Line 1 processing is also reused, reducing the amount of waste produced by the plant. At the end of the process the product is stored in heaps and shipped mainly in bulk. The output product is Bluair reducing agent (secondary reducing agent, S.R.A.) intended for the steel industry.

The plant's current production capacity is approximately 42,000 t / y.

I.Blu: Recycling plant in San Giorgio di Nogaro (UD)

4 WASTE MANAGEMENT BU



Eligible Category

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

Full amount project

12.9 mln

Financed amount

Total 7.8 mln

KPIs

- Bluair produced [t]
- Avoided CO₂ emissions [t]

Project description

The planned plant, owned by Iblu, is in operation since the second quarter of 2021 and will also operate on behalf of the Corepla Consortium.

The incoming waste, consisting of more heterogeneous and less refined plastic, is subjected to primary shredding, then densified, shredded with a blade mill and separated into different sizes with the aid of a rotating screen. At the end of the process the product is stored in heaps and shipped mainly in bulk. The output product is Bluair reducing agent (secondary reducing agent, S.R.A.) intended for the steel industry.

The authorized production capacity is 90,000 t / y, divided into five distinct lines that can be achieved with partial testing and deferred timing.

Development of separate waste collection services

5 WASTE MANAGEMENT BU

Ref.: Project 3-ISIN XS1704789590

Ref.: Project 3-ISIN XS2065601937



Eligible Category

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

Full amount project

91.5 mln

Financed amount

Total 16.8 mln

KPIs

- Total sorted waste collection [t]
- Total of non sorted waste disposed [t]
- Sorted waste collection [%]

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. The enhancement is realized through traditional internalized door-to-door models, with small-sized containers placed on private property, or through the use of large-sized smart containers placed on the public road, prodromal to the application of the 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 the progressive extension to all collection hubs of a computerized system used for the registration of incoming users and for the control of delivered volumes in order to the application of a discount system. 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)

6 WASTE MANAGEMENT BU
Ref.: Project 4-ISIN XS2065601937



Eligible Category

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

Full amount project

23.4 mln

Financed amount

Total 9.3 mln

KPIs

- Production of compost (% on organic fraction in input) [%]
- Production of biomethane [Msm³]
- Avoided CO₂ emissions from fossil sources per operating year [t]
- Primary energy saving per operating year [Toe]

Project description

The second of July 2019, Iren Ambiente acquired the whole property of FERRANIA ECOLOGIA, owner of an existing plant. The total cost of the acquisition is around 8.8 million Euros.

The plant actually treats 30,000 t/y of bio-waste municipal waste which are turned into compost.

In 2018, the local authority approved to increase the total amount of waste from 30,000 t/y to 60,000 t/y, to which 20,000 t/y of compostable waste are added for a total of 80,000 t/y. In meantime approved the production of Biomethane,

The aim of the project is the construction of a bio-waste treatment plant exploiting the organic and green waste collected in the Liguria region, in particular in the provinces of Savona and Genoa, 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.

Parma district heating network

7 ENERGY BU

Ref.: Project 10-ISIN XS1704789590



Eligible Category

Renewable energy (Energy network development)

Full amount project

28.8 mln

Financed amount

Total 2.5 mln

KPIs

- Primary energy saving per operating year [MWh]
- Avoided CO₂ emissions from fossil sources per operating year [t]
- Distributed thermal energy per operating year [MWh]

Project description

The project consisted of the connection of new users in the city of Parma following the connection of the city network with the waste-to-energy plant (PAI) in operation since December 2013, as envisaged in the authorization documents of the PAI.

The connection with the PAI plant has allowed the increase of production efficiency thanks to the use of cogenerated heat in place of that of the boilers.

The project continues from the year 2017 with the laying of the pipes of the heat distribution network and the construction of heat exchange stations at the utilities to increase the volume connected to the service of district heating.

Over the years, connections have continued, with an increase in heated volume from 5,789,589 m³ to 6,184,103 m³.

District heating networks development in Reggio Emilia

8 ENERGY BU
Ref.: Project 12-ISIN XS1704789590



Eligible Category

Renewable energy (Energy network development)

Full amount project

9.6 mln

Financed amount

Total 2.4 mln

KPIs

- Primary energy saving per operating year [MWh]
- Avoided CO₂ emissions from fossil sources per operating year [t]
- Distributed thermal energy per operating year [MWh]

Project description

The project consists in laying the pipes of the heat distribution network and in the creation of heat exchange stations for the users to increase the volume connected to the service.

The estimated increase in heated volume connected to district heating in the period 2012-2021 for the city of Reggio Emilia was approximately 1 Mm³ between 31/12/2011 (approximately 12,670,000 m³) and 31/12/2021 (13,652,630 m³).

Cogeneration plant Torino Nord

9 ENERGY BU

Ref.: Project 7-ISIN XS1881533563

Ref.: Project 6-ISIN XS2065601937



Eligible Category

Energy efficiency (Cogeneration facilities)

Full amount project

351.8 mln

Financed amount

Total 98.4 mln

KPIs

- Electrical energy produced per operating year [MWh]
- Thermal energy produced per operating year [MWh]
- Primary energy saving per operating year [MWh]
- Avoided CO₂ emissions from fossil sources per operating year [t]

Project description

The Turin North Plant is an important electrical energy and heat production plant within the Turin metropolitan area and, together with the Moncalieri Plant, it forms the basis of the city of Turin's district heating system.

The start dates for the Plant's construction and operation are provided below.

- 2010: start of construction of the Turin North Plant;
- 30 April 2012: start of commercial operation.

The Plant is made up of the following production groups, functioning on natural gas only:

- 1 Combined-cycle cogeneration thermoelectric group (CCTG);
- 3 Supplementary and reserve boilers;
- 1 Auxiliary boiler for starting the combined cycle;
- 6 Heat accumulators.

Eligible Category

Energy efficiency (Energy distribution and management)

Full amount project

20.8 mln

Financed amount

Total 4.6 mln

KPIs

- Primary energy saving per operating year [MWh]
- Avoided CO₂ emissions from fossil sources per operating year [t]

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 **Phase 1**, 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.

Phase 2 of the Torino LED project, called *Light changes the city*, was the natural continuation of the initiative launched in 2015 with the City of Turin, the TO LED 1 project, thanks to which they were replaced, over the of a year and a half, about 53,000 traditional lamps relating to public lighting systems (equal to 55% of the lighting fixtures in the city) with LED luminaires: its main objectives were the achievement of significant energy and economic savings as well as important benefits on the environmental front. In the second phase of the Project, intervention was made on the lighting systems of the main city underpasses and on the high-power lighting devices (former 400 W lamps). devices present in the city underpasses (Bramante, Lingotto, Mortara, Oddone, Repubblica, Rivoli, Spezia). The efficiency and reliability of the new LED lamps have ensured a reduction of well over 60% of the electricity consumption of the public lighting systems affected by the intervention. The new LED lamps installed in public lighting systems emit a pleasant white light and also have greater control in the emission of the luminous flux, directed only in the area to be illuminated, thus offering greater light coverage of the streets and increasing the perception of safety. for the citizens who travel through them.

Phase 3 of the Torino LED Project is currently being drafted, involving the remaining lighting fixtures (historical, street furniture, globes, light towers, street lights for series systems, architectural).

Eligible Category

Energy efficiency (Energy distribution and management)

Full amount project

46.1 mln

Financed amount

Total 26.0 mln

KPIs

- Avoided CO₂ emissions from fossil sources per operating year [t]
- Primary energy saving per operating year [Toe]

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 10 AHU fan motors; centralized cooling and heat recovery with the installation of 4 latest-generation refrigeration units and replacement of the cooling towers. installation of an energy recovery system consisting of a heat pump for heat recovery from tower water; redevelopment of the water plant by installing two new boilers served by two newly installed exchangers; thermal power plant requalification; installation of 6 condensing thermal groups of 840 kW; building management system with the implementation of a new automation system of the BACS type. Thermal power plant requalification of the **Scenography Warehouse Strada Settimo:** installation of 2 condensing thermal groups of 900 kW
 - **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.

Enìa Solaris photovoltaic plants near Brindisi

12 ENERGY BU
Ref.: Project 16-ISIN XS1704789590



Eligible Category

Renewable energy (Solar PV energy generation)

Full amount project

26.7 mln

Financed amount

Total 8.6 mln

KPIs

- Net produced electricity from renewable non-fossil sources per operating year [kWh]
- Avoided CO₂ emissions from fossil sources per operating year [t]

Project description

Enia Solaris includes 5 photovoltaic plants on the ground in Brindisi (BR) with a total installed capacity of 4.3 MW.

Photovoltaic plants owned by “Varsi” company

13 ENERGY BU

Ref.: Project 12-ISIN XS1881533563



Eligible Category

Renewable energy (Solar PV energy generation)

Full amount project

27.5 mln

Financed amount

Total 10.7 mln

KPIs

- Net produced electricity from renewable non-fossil sources per operating year [kWh]
- Avoided CO₂ emissions from fossil sources per operating year [t]

Project description

Varsi Fotovoltaico encompasses 12 photovoltaic plants: 8 on the ground and 4 on roofs, with an overall power of 8.4 MWh.

Plant	Municipality	Province	Power (KWP)	Type
Gonzaga Fiera	Gonzaga	Mantua	741	Roof
Gonzaga Bocciodromo (Bocce hall)	Gonzaga	Mantua	43	Roof
Gonzaga middle school	Gonzaga	Mantua	64	Roof
Rigosa PTV [photovoltaic plant]	Roccabianca	Parma	890	Ground
Canesio PTV	Pellegrino P.se	Parma	551	Ground
Bellario, road to Soragna PTV	San Secondo P.se	Parma	998	Ground
Rimale PTV	Fidenza	Parma	998	Ground
Italian Isolating Plants	Porto Torres	Sassari	972	Roof
Priorato PTV	Fontanellato	Parma	995	Ground
Busseto Fotovoltaico SRL	Busseto	Parma	432	Ground
Medesano Fotovoltaico SRL	Medesano	Parma	832	Ground
Villora PTV (Municipality of Varsi)	Varsi	Parma	851	Ground
Total			8,367	

Photovoltaic plants owned by “GreenSource” company

14 ENERGY BU

Ref.: Project 13-ISIN XS1881533563



Eligible Category

Renewable energy (Solar PV energy generation)

Full amount project

16.8 mln

Financed amount

Total 9.2 mln

KPIs

- Net produced electricity from renewable non-fossil sources per operating year [kWh]
- Avoided CO₂ emissions from fossil sources per operating year [t]

Project description

Green Source PTV encompasses various photovoltaic plants, with an overall power of 3.9 MW.

Plant	Municipality	Province	Power (KWP)	Type
C8	Reggio Emilia	Reggio Emilia	1.212	Roof
Tennis Club	Reggio Emilia	Reggio Emilia	200	Roof
Pluris Energy	Castellarano	Reggio Emilia	710	Ground
ITIS Parma	Parma	Reggio Emilia	170	Ground
Mancasale	Reggio Emilia	Reggio Emilia	993	Roof
Scandiano indoor sports arena	Scandiano	Reggio Emilia	95	Roof
Tressano	Castellarano	Reggio Emilia	122	
School Facilities	Reggio Emilia-Parma-Piacenza	Reggio Emilia-Parma-Piacenza	357	Roof
Total			3.859	

Improvement of Reggio Emilia plants

15 NETWORKS BU

Ref.: Project 18-ISIN XS1704789590



Eligible Category

Waste water treatment (Wastewater treatment plant upgrades)

Full amount project

11.6 mln

Financed amount

Total 1.2 mln

Kéls

- Volumes of water destined to irrigation re-usage / Volumes of total treated water [%]
- Treated population equivalent (potential) [N]

Project description

The project includes interventions on different plants:

1. construction of the advanced tertiary treatment of wastewater leaving the Mancasale treatment plant to obtain an effluent with qualitative requisites to allow its irrigation reuse;
2. upgrading of the Meletole plant;
3. construction of a new purification plant for the municipality of Cadelbosco di Sopra in an area adjacent to the existing plant whose biological sector may in the future be restructured and converted into a rainwater treatment plant;
4. expansion of the Boretto plant;
5. construction of a new water treatment line in addition to the existing line to increase its purification capacity (Canolo plant in Correggio);
6. adjustment of the treatment for the San Bernardino agglomeration through the construction of a purification plant with biological treatment with biodisk.

Eligible Category

Waste water treatment (Wastewater treatment plant upgrades)

Full amount project

6.9 mln

Financed amount

Total 0.8 mln

KPIs

- Treated population equivalent (potential) [N]

Project description

The project includes interventions on different plants:

1. Castel San Giovanni purification plant: upgrading and/or rebuilding all the purification sectors and installation of an MBR compartment for the final filtration of wastewater, the construction of a new transformer substation, the complete reconstruction of the electrical system, the conversion of final separators to tanks for sludge storage;
2. construction of a new waste water treatment plant in the municipality of Calendasco to replace Imhoff pits;
3. reconstruction of the wastewater treatment plant at the service of the Valconasso locality, no longer able to cope with the flow rates arriving at the treatment.

Investments in drainage and purification (La Spezia - Liguria)

17 NETWORKS BU
Ref.: Project 15-ISIN XS2065601937



Eligible Category

Waste water treatment (Wastewater treatment plant upgrades)

Full amount project

33.7 mln

Financed amount

Total 6.3 mln

KPIs

- Treated population equivalent (potential) [N]

Project description

The project aims to extend the drainage networks and build new purification plants aimed at increasing the level of collection service coverage and reducing pollution deriving from untreated discharges in the La Spezia territory.

Electricity distribution Smart Metering 1G+2G (Torino and Parma)

18 NETWORKS BU

Ref.: Project 19-ISIN XS2065601937



Eligible Category

Energy efficiency (Energy distribution and management)

Full amount project

48.7 mln

Financed amount

Total 1.1 mln

KPIs

- 1G Smart meters installed ⁽¹⁾ [n]
- 2G Smart meters installed [n]
- Percentage of 1G+2G smart meters on the total [%]

Project description

IRETI is the company of the Iren Group that manages the electrical energy distribution and metering services in the cities of Turin and Parma, providing electricity to more than 720.000 supply points (PODs - Points of Delivery), approx. 570.000 of which located in Turin and approx. 150.000 in Parma.

Promoted by Del. n. 292/06 of ARERA (Authority for Regulation of Energy, Networks and Environment), the present project consisted in the replacement of the traditional electromechanical 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 electricity consumption, and simplifying several activities such as the activation/deactivation of a supply contract, the increase/decrease of the committed power capacity, as well as the service transfer or switching procedures, based on the actual measurement data.

A greater availability of real measures (the smart meters allows their collection with a 15 minutes resolution) provides to the end users a higher awareness of their own electricity consumptions (see Directive 2012/27/EU), supporting virtuous behaviours which lead to an energy consumption reduction and to a better employment of the energy commodity, with consequent environmental benefits.

For instance, a pilot project promoted by ARERA (Del. ARG/elt n. 39/10) showed that the availability of a larger amount of actual measures, achieved through the installation of the smart meters, contributed to increase the end users awareness of their consumptions, resulting in an average energy saving of approx. 7%

⁽¹⁾The project to install 1G smart meters ended in 2020 and the project to gradually replace 1G smart meters with next-generation 2G smart meters has begun.

Gas distribution Smart Metering (Emilia and Liguria)

19 NETWORKS BU

Ref.: Project 18-ISIN XS2065601937



Eligible Category

Energy efficiency (Energy distribution and management)

Full amount project

107.9 mln

Financed amount

Total 8.0 mln

KPIs

- Smart meters installed [n]
- Percentage of smart meters on the 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 more than 780.000 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.

Replacement of gas distribution networks

20 NETWORKS BU

Ref.: Project 20-ISIN XS2065601937



Eligible Category

Energy efficiency (Energy distribution and management)

Full amount project

295.8 mln

Financed amount

Total 59.3 mln

KPIs

- Average network leaks (underground network measured with planned inspection) [n]

Project description

Network maintenance and replacement in Emilia and Genoa: it is a continuous project developed by IRETI that consists in replacing and doing systematic maintenance of the gas distribution network's lines in order to improve the qualitative and technical levels of the network structure. Through the project it will be possible to:

- Renew network assets that finish their useful operating life or are inadequate compared with the required level of operation;
- Rationalise the layout and structure of existing networks;
- Resolve the critical issues present in the gas distribution network;
- Reduce the gas losses in the network and by consequence:
 - Avoid greenhouse gas emissions, in particular CH₄;
 - Diminish the number of vehicles used for operative activities (such as P.I.);
 - Mitigate the excavations made in order to repair the distribution pipeline.
- Improve the quality and continuity of the service, as required by ARERA [the Italian Regulatory Authority for Electricity Gas and Water];
- Improve the safety of the grid;
- Make the grid hydrogen ready.