Green Bond Framework

February 2019

Sociedade Bioelétrica do Mondego

Sociedade Bioelétrica do Mondego

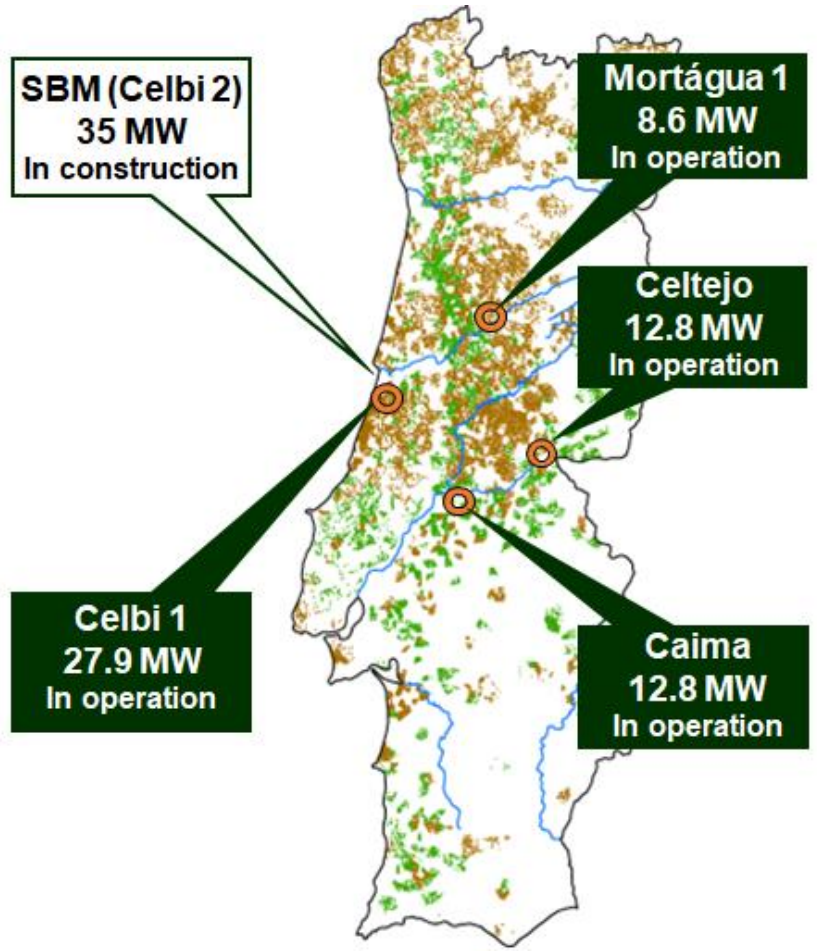
Introduction

- Sociedade Bioelétrica do Mondego, S.A. ("SBM") is a Portuguese company, 100% indirectly owned by Altri, SGPS, S.A. ("Altri"), a Portuguese public company listed on Euronext Lisbon.
- SBM's main activities include the design, construction, operation and maintenance of a 34.5 MW capacity biomass power plant located in Figueira da Foz, Portugal.
- In order to accomplish this objective, SBM intends to issue a Green Bond to finance part of the investment.
- SBM prides itself on its commitment to sustainability through Altri Group and its forest management programmes.

Shareholder structure

Brief description of the project [1]

- A Power Plant for energy production, based on residual forest biomass at Celbi's industrial facility site, where there is already a similar power production unit based on biomass owned by SBM's parent company (Bioelétrica da Foz, S.A.)
- Celbi plant, where the SBM Power Plant is being constructed, is located in Marinha das Ondas, municipality of Figueira da Foz, Portugal.
- Celbi is a pulp production unit producing bleached short-fibre paper grade pulp from eucalyptus wood. Currently, the installed capacity is above 750,000 tonnes/year.



Brief description of the project [2]

- The net proceeds from the Green Bonds issuance will be used in the financing of the existing and on-going investments of Sociedade Bioelétrica do Mondego, S.A. ("SBM"), a Portuguese company, 100% indirectly owned by Altri, SGPS, S.A. ("Altri"), which support the diversify of electricity to include non-conventional sources such as **biomass** and to reduce greenhouse gas emissions, fostering a **renewable and clean energy production** environment.

- Also, it is looking to improve the electricity distribution infrastructure in order to pursue a modernization and extension of its distribution network for the purpose of a more **efficient management.**

- It should be also bared in mind that this biomass based electricity generation project is part of the strategy defined for the **Portuguese National Energy Policy**, through the construction of a power plant from the energy recovery of residual forest biomass with thermal power of 135 MWt, corresponding to net electricity generation of 34.5 MWt, generating around 260 GWh/a to sell in the Public Electricity System ("PES") network. Thus, the biomass plant will contribute to the pursuit of a **energy structural policy**, which will **reduce the external dependence** and **greenhouse effect resulting from the use of fossil fuels**. The use of forest biomass, on the other hand, supports implementation of Portuguese forest legislation, providing an economic output to the removal of harvesting residues from forest areas and **reducing wild fires risk**, while contributing to **job creation** and **economic growth.**

- In addition, some **synergy advantages** can also be accounted for, as Celbi is a pulp mill with an already-existing power plant, with infrastructures that can be used by the project under analysis, namely water supply and effluent treatment.

Biomass power plant

Overview

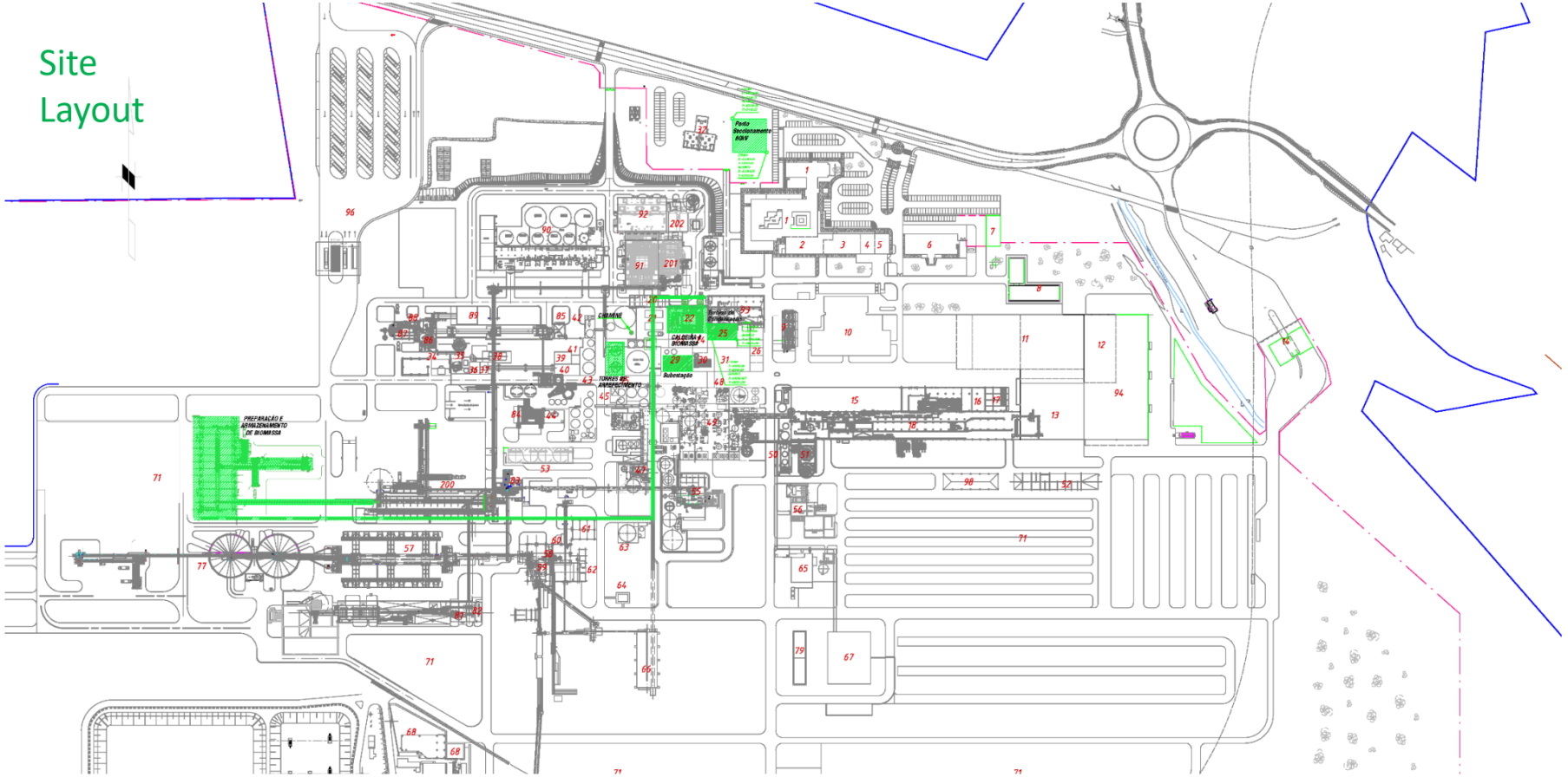
Sociedade Bioelétrica do Mondego

- The biomass plant will operate on a 24-hour-a-day and 350-day-a-year basis, with an average consumption of 55 t/h (460,000 t/year) of residual forest biomass to produce steam of high pressure in a boiler, which will then be fed to a condensing turbine to produce electrical energy in the respective generator.
- In terms of nominal capacity, based on 365 days/year, it will correspond to a biomass consumption of 538,900 t/year. In start-up, shutdown and similar transitional situations, a small amount of natural gas will be used as emergency fuel.
- The biomass plant will be located within the Celbi plant perimeter, adjacent to the current power plant. The total area of the biomass plant will be 9,700 m^2, coinciding with the area covered and will include two existing buildings that will house the boiler and the turbine, with the construction of a new building for the substation with a height of 16.2 m of a biomass storage silo 22.8 m height.
- The biomass plant will be managed by 15 workers, within the operational structure of Celbi.

Biomass power plant

Site layout

Sociedade Bioelétrica do Mondego



Biomass power plant

On site certifications

Sociedade Bioelétrica do Mondego

Availability on site of third parties certification, including:

- **ISO 14001:2015** (through its parent-company Bioelétrica da Foz);
- **OHSAS 18001:2007** (sets out the minimum requirements for occupational health and safety management best practice – through its parent-company Bioelétrica da Foz);
- **EMAS** (through Celbi);
- **ISO 50001:2011** (through Celbi);
- **ISO 9001:2015 | NP EN ISO 9001:2015** (through Celbi).

Biomass power plant

Components [1]

Sociedade Bioelétrica do Mondego

EPC blocks (*):

- Biomass Reception and Storage Plant;
- Biomass Boiler;
- Condensing Turbine;
- MV sub station and network;
- Interconnection to external grid – 60 kV;
- BOP e others (Engineering, Site Preparation, etc.).

(*) Engineering, Procurement and Construction

SBM plant site aerial view:

Biomass power plant

Components [2]

Sociedade Bioelétrica do Mondego

Reception preparation and storage of biomass

Biomass from outside will be received already shredded, transported by trucks that will discharge in a reception pit.

From there, biomass will be conveyed through equipment for removal of stones and other unwanted materials, before being stored in a silo with the capacity of 25,000 m^3.

The silo is fed from the top and extraction is from the bottom using 3 discharge screw conveyors.

From the storage silo, biomass will be carried by belt conveyors to the fuel feeding system of the boiler.

Biomass power plant

Components [3]

Sociedade Bioelétrica do Mondego

Boiler

The boiler (steam generator) will be installed in the building of the former Celbi's recovery boiler. The selected technology is bubbling fluidized bed, suitable for burning of heterogeneous materials and high humidity fuels, while ensuring low emissions of air pollutants, including nitrogen oxides, carbon monoxide and volatile organic compounds.

To minimize emissions of nitrogen oxides (NOx), sulphur dioxide (SO_2) and hydrochloric acid and hydrofluoric acid (HCL and HF), the boiler will be fitted with ammonia and hydrated lime injection systems in flue gas stream.

The boiler will be equipped with start-up and load burners powered by natural gas, which will be used in transitional situations and start-up. The heat resulting from the combustion of biomass is recovered to produce high pressure steam, and the exhaust gases pass through a bag filter system for high-efficiency dust removal from boiler’s flue gas, prior to its discharge into the atmosphere by an 80 m stack.

Biomass power plant

Components [4]

Sociedade Bioelétrica do Mondego

Turbo-generator

The steam generated in the boiler will be expanded in a condensing turbine, which is connected to an electricity generator (alternator) with 50 MVA power.

After expansion in the turbine, the steam is going to the condenser, which is a heat exchanger where steam is condensed indirectly with cooling water.

The condensate, after preheating with steam, is sent to the feedwater/deaerator tank to the boiler.

Biomass power plant

Components [5]

Sociedade Bioelétrica do Mondego

Ancillary services

To connect the biomass power plant to the national power grid a substation will be required.

The transformer will have a power of 50 MVA, and 60/10 kV transformation ratio.

An aerial power line will also be installed.

All auxiliary equipment, namely electric networks, networks of interconnecting piping, pumping systems, cooling systems, natural gas supply system, construction works, etc., as well as the engineering, are included in this category.

Biomass power plant

Supply [1]

Sociedade Bioelétrica do Mondego

Biomass sourcing and supply

Biomass for energy conversion will be supplied through **Altri Florestal / Altri Abastecimento de Madeira**. These companies are, respectively, responsible for forest management and harvesting of own and rented forest estates, and purchase and supply of all biomass for Altri's industrial facilities, both for pulp and for energy. Biomass for energy conversion is the fraction of biomass considered as Residual Forest Biomass ("RFB") from harvest operations, non-commercial materials from thinning or cleaning operations, and shrubs and other non-commercial materials from forest fire prevention operations.

Both companies are **FSC® (Forest Stewardship Council®)** and **PEFC (Programme for the Endorsement of Forest Certification Schemes)** certified (SFM and chain of custody). The certificates are under the process of expanding scope in order to include biomass for energy.

There are explicit forest and conservation policies and commitments to SFM objectives and practices, in line with Portuguese forest legal and institutional frameworks.

Biomass power plant

Supply [2]

Sociedade Bioelétrica do Mondego

Operations and third parties

Forest operations on estates under Altri's management are carried out according to detailed prescriptions, in full compliance with best practices and supported by extensive training and education programmes, in particular involving contractors and other companies.

Forest plans and activities take into account stakeholders views, as appropriate, according to a communication strategy.

Forest management models include regeneration after harvest, through coppice or replanting of growing stock. Third generation genetic improved stock is available from planting, produced in Altri's forest nursery from seed and clones. Company owned genetic improvement program is now running for more than 50 years. New genetic combinations are produced through traditional breeding techniques in dedicated seed orchards. The systems uses production of full-sib families, field testing and selection, grafting and cloning. There is no use of GMO (genetic modified organisms) either in the programme or forest operations, in full compliance with European legislation, and **FSC®** and **PEFC** requirements.

Biomass power plant

Supply [3]

Sociedade Bioelétrica do Mondego

Altri's Forest commitments and practices

In addition to already mentioned policies and strategies Altri's has a long term forest conservation strategy and a large experience in R&D activities carried out in it's own private research centre and through protocols and contracts with Universities and other institutions.

Monitoring of impacts of own forest operations is carried out regularly and reported through quality systems (ISO 9001).

Biomass power plant

Supply [4]

Sociedade Bioelétrica do Mondego

Information systems

Altri Florestal runs a continuous forest inventory for its own managed area.

The company follows closely and also participates in external monitoring systems, such as national forest inventories.

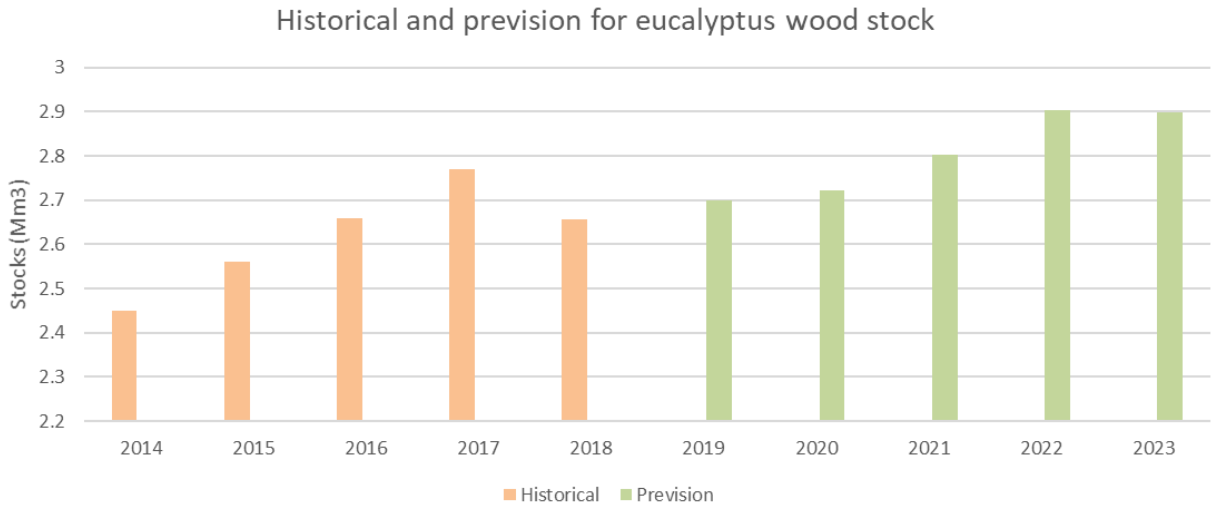
A complete set of performance indicators are computed and analyzed on annual basis.

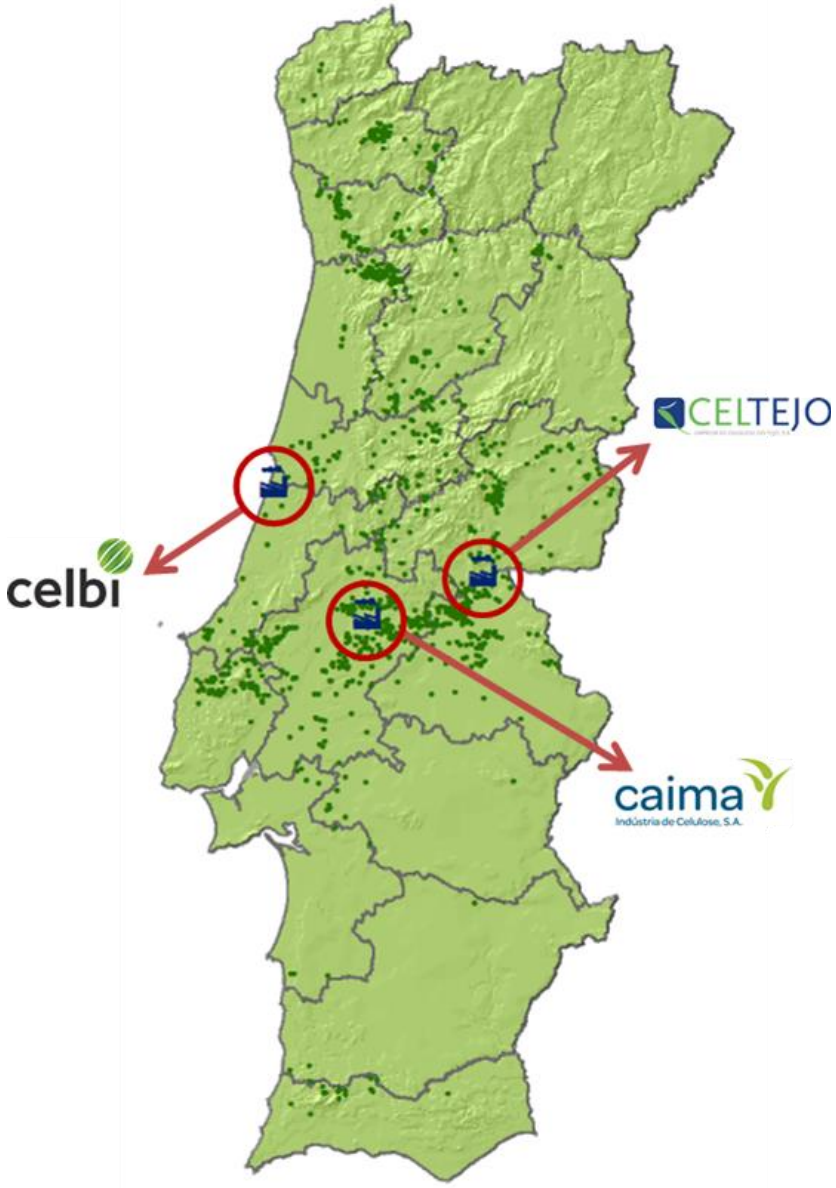
The company's main activities are recorded in auditable information systems (ERP SAP, SGF-INFLOR).

Biomass power plant

Supply [5]

The strategic harvest planning is reviewed periodically, in view of the long-term sustainability of the business.





Biomass power plant

Supply [6]

Sociedade Bioelétrica do Mondego

Wrapping up

Altri Florestal sustainable forest management and conservation practices are in full compliance with European forest policy framework as built around the participatory process 'Forest Europe' and exceeds demands stated in Portuguese forest legislation.

The company's forest management ensures a positive contribution to climate change combat and mitigation policies while responding to LULUCF and RES II directive. Growing stock on owned managed areas are increasing with time, growing rates is also increasing due to genetically improved planting stock being available every year, forest replacement is ensured after harvest and biomass collected is processed into wood products, increasing carbon retention, and burned for energy, enabling substitution of fossil fuels for energy production.

Green Bond Framework

Sociedade
Bioelétrica
do Mondego

Basis of SBM Green Bond Framework

SBM Green Bond Framework is based on and aligned with the latest version of the **Green Bond Principles (GBP)** published by the International Capital Market Association (ICMA).

Accordingly, this Green Bond Framework is based on the following 4 pillars:

- Use of proceeds,
- Project evaluation and selection,
- Management of proceeds,
- Reporting.

To confirm such alignment, SBM has engaged Sustainalytics as an external reviewer to provide a second-party opinion on this framework.

Green Bond Framework

Summary

Use of proceeds

The main goal of this Green Bond is the utilisation of the proceeds for Green Projects, which should provide clear environmental benefits. The eligible Green Projects that SBM is considering the financing are:

- Renewable and clean energy production;
- Integrated pollution prevention and control.

Positive impacts

- Energy efficiency;
- National energy bill decrease;
- Job creation and economic growth;
- Reduction of forest fire risk / Sustainable Forest Management ("SFM") practices;
- Enhance circular economy.

Project evaluation / selection

- SBM's projects are proposed to the Investment Working Group, which is formed by SBM directors. This group manages and reviews all proposed projects.
- Eligible Green projects are selected from the various eligible sectors and result from the application of the eligibility criteria, under the responsibility of the Green Bond Committee.
- Only projects approved by both Investment Working Group and Green Bond Committee will be considered for Green Bond financing.
- Eligible Green Projects are monitored and subjected to reporting in an annual basis.

Management of proceeds

- The net proceeds of green bonds issued will be managed on a single project / single company basis.
- The Finance Department will guarantee the allocation of net proceeds by following an internal management system that aims to define the destination of cash-flows, set reserved accounts for not invested funds and adjust periodically the net proceeds.
- Proceeds not immediately disbursed will be held and not invested in non-green projects, GHG intensive activities, nor controversial activities: proceeds not disbursed shall be invested according to SBM's liquidity and/or liability management activities, following the market best practices.

Reporting

- SBM will provide an annual update on the use of proceeds related to its Green Bonds issuance.
- The report is expected to disclose a breakdown of the Green Bond proceeds outstanding and the amount of allocated and unallocated proceeds.
- Information should include Performance Indicators to allow access the environmental impact of its Eligible Green Projects.

Use of proceeds [1]

Sociedade Bioelétrica do Mondego

Design, construction, operation and maintenance of a 34.5 MW capacity biomass power plant located in Figueira da Foz, Portugal.

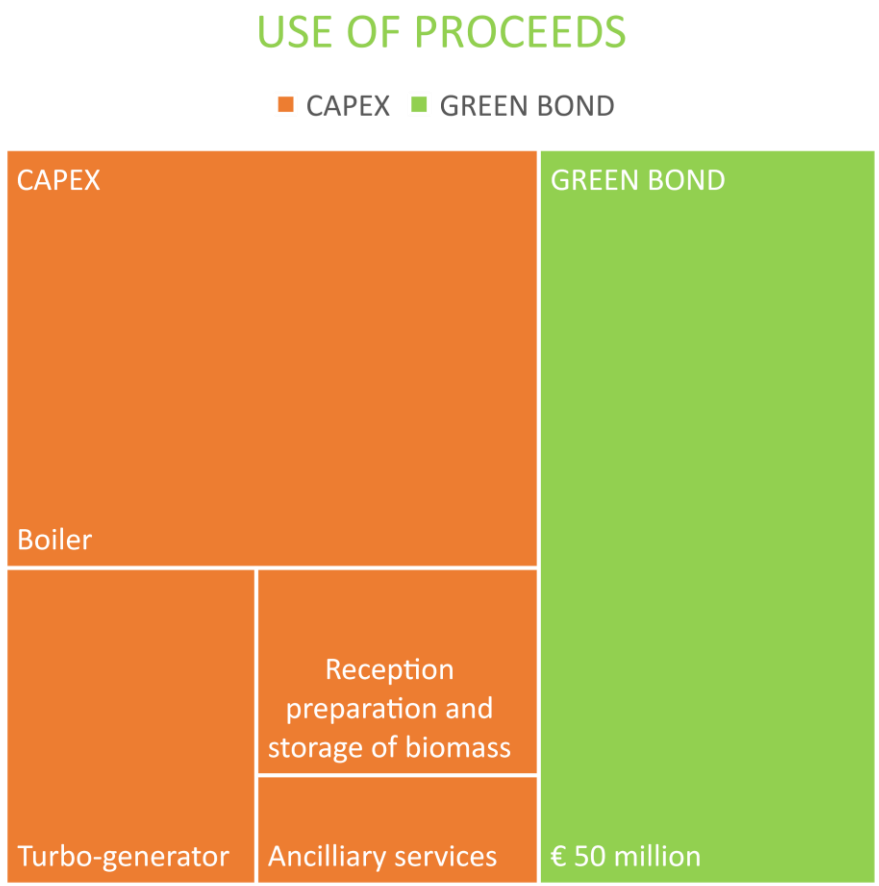
- **Licensing entity:** DGEG
- **Environmental impact assessment entity:** APA

CAPEX:

- Reception preparation and storage of biomass;
- Boiler;
- Turbo-generator;
- Ancillary services.

Detailed description in the "Biomass Power Plant" components section.

- **SBM's operation start (estimate):** Q2 2019



Use of proceeds [2]

Sociedade Bioelétrica do Mondego

SBM biomass power plant figures

Annual working hours	7,500 h/a
Thermal power	135 MWt
Biomass consumption	460,000 t/a (50% wet)
Steam production	150 t/h or 1,140 kt/y
Electricity production	40 MWh/h or 300 GWh/y
Internal consumption	5.5 MWh/h or 40 GWh/y
Electricity sale	34.5 MWh/h or 260 GWh/y
Estimated reduction in CO_2 equivalent emissions (*)	406 $ktCO_2e/y$

(*) SBM identifies a quantified objective of increasing renewables energy generation from biomass sources, thereby reducing greenhouse gas emissions. This objective is precise, measurable and relevant with regards to sustainable development challenges.

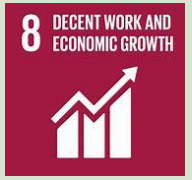
Use of proceeds [3]

Sociedade Bioelétrica do Mondego

Eligible projects	Description	United Nations Sustainable and Development Goals (SDG)
Renewable and Clean Energy	Biomass energy generation: • Endogenous renewable energy source (biomass), thereby avoiding greenhouse gas emissions; • Energy production from biomass from Altri Group's own operation and external sources to supply to the national grid.	 **7. Affordable and Clean Energy** ▪ SDG Target 7.2: By 2030, increase substantially the share of renewable energy in the global energy mix.
Integrated Pollution Prevention and Control	Reduction of air emissions and greenhouse gas reduction. Contribution to Decrease GHG emissions. The biomass power plant was designed and will be operated according to the Best Available Techniques reference document (BREF) published by the European Union for the energy production sector.	 **12. Responsible Consumption and Production** ▪ SDG Target 12.4: By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.  **13. Climate Action** ▪ SDG Target 13.2.1: Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development […]

Positive impacts / externalities [1]

Sociedade Bioelétrica do Mondego

Positive impacts / externalities	Description	United Nations Sustainable and Development Goals (SDG)
Energy Efficiency	Energy efficiency management systems projects: improving the energy efficiency of industrial production process in a factory, operational energy saving projects, solutions for more efficient transmission and distribution of energy. SBM is Altri Group's fifth Biomass Power Plant, whose design and construction has followed the Best Available Techniques, as well as all in-House cumulative know-how from the four existing ones.	 **7. Affordable and Clean Energy** ▪ SDG Target 7.3: By 2030, double the global rate of improvement energy efficiency.
National Energy Bill decrease	National Energy Policy strategy: Pursuant to an energy structural policy, by using an endogenous renewable energy source, reducing the external dependence of imported primary energy fuels for electricity production (normally fossil fuels) and resulting a positive balance concerning greenhouse effect and other environmental impacts.	 **13. Climate Action** ▪ SDG Target 13.2: Integrate climate change measures into national policies, strategies and planning.
Job Creation and Economic Growth	Direct and indirect job creation, including plant operation and maintenance jobs, forestry biomass activities and transportation, having social and economic impact.	 **8. Decent Work and Economic Growth**

Positive impacts / externalities [2]

Positive impacts / externalities	Description	United Nations Sustainable and Development Goals (SDG)
Reduction of Forest Fire Risk / Sustainable Forest Management (“SFM”) Practices	The biomass source is mainly materials resulting from forest cleaning operations, a very important issue concerning forest fires prevention and control.	 **15. Life on Land** ▪ SDG Target 15.1: By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements. ▪ SDG Target 15.2: By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.

Positive impacts / externalities [3]

Positive impacts / externalities	Description	United Nations Sustainable and Development Goals (SDG)
Enhance Circular Economy	Promote non-hazardous by-products from the biomass power plant usage in downstream industries (such as: cement, ceramics, fertilizers, etc.). As a renewable material, is expectable that the biomass valorisation, as primary energy source for electricity production, will be a long-term economic and environmental sustainable process in all direct and related chain-value activities.	 **12. Responsible Consumption and Production** ▪ SDG Target 12.4: By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment. ▪ SDG Target 12.5: By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.

Project evaluation and selection [1]

Sociedade Bioelétrica do Mondego

Environmental Permits

- SBM has received all relevant environmental permits, approvals and authorizations required by both Local and State Agencies for the construction and operation of the Biomass Power Plant.
- Local and State Agencies' goals / agenda: National Energy Bill decrease, sustainable forest management practices & reduction of forest fire risk, job creation and economic growth.

Investment Working Group

- SBM's projects, acquisitions and R&D investments are proposed to the Investment Working Group.
- In this case, the project is clearly identified: SBM's biomass power plant.

Green Bond Committee

- The Green Bond Committee takes decisions to approve or reject projects in accordance with the Green Bond Framework.
- If adequate, the project will be validated and selected for a Eligible Green Loan.

Green Bond Eligible Projects

- Only projects approved by both Investment Working Group and Green Bond Committee will be considered for Green Bond financing.
- SBM will monitor the Eligible Green Loan and prepare the Green Bond reporting.

Project evaluation and selection [2]

Sociedade Bioelétrica do Mondego

Investment Working Group:

This group manages and reviews all proposed projects. The **IWG** is also responsible for defining strategies, governance, risk management and monitoring the process, following the mandate from the Board of Directors of Altri. This group is formed by SBM directors.

Green Bond Committee:

The Green Bond Committee members come from several departments of Altri Group (namely, Engineering, Environmental & Sustainability, Forestry and Finance), who guarantee that the project has the features and follows the steps to be defined as an Eligible Activity, thus being able to apply for Green Bond Financing. Subsequently, the **GBC** works close together with SBM Treasury department in order to ensure the accurate and well-defined use of the proceeds.

Management of proceeds

Sociedade Bioelétrica do Mondego

The net proceeds of the Green Bond will be managed by the Finance Department and allocated to promote the Eligible Green Project: SBM will use the total amount of the issuance (€ 50 million) to finance the construction of the Biomass Power Plant.
The Finance Department will guarantee the allocation of net proceeds by following an internal management system that aims to define the destination of cash-flows, set reserved accounts for not invested funds and adjust periodically the net proceeds.
The balance of the tracked net proceeds shall be periodically adjusted to match allocations to the Eligible Green Project.
The Finance Department assures that the Eligible Green Project will not be externally refinanced.
Proceeds not immediately disbursed will be held and not invested in non-green projects, GHG intensive activities nor controversial activities: proceeds not disbursed shall be invested according to SBM's liquidity and/or liability management activities, following the market best practices.
SBM has total intention to make known to investors the intended type of temporary placement for the balance of unallocated net proceeds, which will be publicly reported on an annual basis.

Reporting and impact [1]

Sociedade Bioelétrica do Mondego

Prior to the beginning of its construction, the SBM biomass power plant was subjected to a thorough **Environmental Impact Assessment** from the Portuguese Government

All **Environmental permits, approvals and authorisations** to operate already issued

SBM biomass power plant was designed and it will be operated in accordance with the **Best Available Techniques (BAT)**, following European Union's **BREF** for energy production

Allocation reporting

SBM aims to provide an annual report of the activities related to its Green Bonds issuance, that will be available for investors in Altri's website

The report is expected to include a description of its Eligible Green Project and to disclose a breakdown of the Green Bond proceeds outstanding, the total amount of the proceeds allocated to Eligible Categories and the unallocated amount

Impact reporting

Moreover, SBM will also annually report on the Green Project proceeds according to the sustainability criteria and environmental indicators defined

Reporting and impact [2]

Sociedade Bioelétrica do Mondego

Eligible categories	Examples of outputs and impact indicators
Renewable and Clean Energy	▪ Installed renewable energy capacity (MW) ▪ Expected annual renewable energy generation (MWh) ▪ Estimated annual GHG emission avoided or reduced (tCO_2e)
Integrated Pollution Prevention and Control	▪ Reduction of biomass waste in the forest ▪ Estimated annual GHG emission avoided or reduced (tCO_2e) ▪ Emissions of dust, nitrogen oxides (NOx), sulphur dioxide (SO_2) and hydrochloric acid and hydrofluoric acid (HCL and HF)

External review

Second Party Opinion:

SBM has appointed Sustainalytics to provide a Second Part Opinion (“SPO”) on its Green Bond Framework (“GBF”). The Second Party Opinion and the Green Bond Framework will be available to the green bond investors on Altri’s website at **www.altri.pt > investors > green funding**

Verification:

An independent external party will verify the internal tracking method and allocation of the funds until the full allocation of the outstanding green bonds.

Sociedade
Bioelétrica
do Mondego