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EMPOWERING THE ENERGY TRANSITION: GREENVOLT'S IPO

FINANCIAL PERFORMANCE AND STRATEGIC POTENTIAL

Maria Madalena Pedro Gomes da Fonseca Montez

Work project carried out under the supervision of:

Rui Silva

Margarida Soares

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Abstract

In mid-2021, Altri announced its intention to list its renewable energy subsidiary, Greenvolt, on Euronext Lisbon. The company aimed to diversify its portfolio, increase brand recognition, and become a major European player, but faced a capital shortage to support the strategy. The following case study delves into the CEO's journey towards deciding whether to proceed with the IPO or keep Greenvolt a private entity and pursue alternative capital raising options. Given this, an analysis was performed to assess Greenvolt's valuation, financial health, and the potential implications of market conditions on the success of the listing.

Acknowledgments

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Keywords

Initial Public Offering; Corporate Finance; Capital Raising Methods; Advantages *versus* Disadvantages; Financial Analysis; Share Price; Market Timing; Sustainability; Energy Transition; Renewables; Business Model; Valuation; Fair Value; Underpricing

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Abbreviations

CAGR Compounded Annual Growth Rate

CEER Council of European Energy Regulators

CEO Chief Executive Officer

DCF Discounted Cash Flow

ESG Environmental Sustainability Governance

EU European Union

EUR Euro

EV Enterprise Value

GDP Gross Domestic Product

GHG Greenhouse Gas

GW Gigawatt

IPO Initial Public Offering

LCOE Levelized Cost of Energy

MoU Memorandum of Understanding

MW Megawatt

PSI-20 Portuguese Stock Index comprising the 18 largest public listed companies

PV Photovoltaic

RE Renewable Energy

RTB Ready-to-Build

S&P 500 Standard & Poor's 500

SBM Sociedade Bioelétrica do Mondego

SWOT Strength Weaknesses Opportunities Threats

TGPH Tilbury Green Power Holdings

TW Terawatt

UK United Kingdom

U.S. United States

USD United States Dollar

YoY Year-on-Year

CASE STUDY – GREENVOLT'S IPO

Introduction

In early 2021, João Manuel Manso Neto was pacing back and forth across his office, questioning whether the timing was right for his company to pursue a public listing. This decision could transform the future of renewable energy in Portugal, since Greenvolt, a rising star in the biomass energy sector was considering an Initial Public Offering (IPO). The company's future, the shareholder's faith and the transition to a greener economy hung in the CEO's hands.

Due to the current volatility of the economic markets, the stakes were high as well as the risks. For Manso Neto, this IPO represented not only a way of raising the necessary capital to fund expansion and increase brand recognition, but also a strong assertion for the future of renewable energy. However, not everyone was convinced, as some board members raised alarms about the growing competition in the biomass sector and the unpredictability of public markets, as investor sentiment was fragile at the time. Thus, the pressure was building, both internally and externally.

The Company

Altri is a leading Portuguese producer of bleached eucalyptus pulp, generating forestry waste as a byproduct of its forest management and pulp production processes. Greenvolt's history began in 2006 with Altri SGPS's idea of generating electricity from the biomass waste produced by its forestry operations. To implement this vision, Altri indirectly acquired a 50.0% stake in *EDP Produção – Bioelétrica*, a company established in 2002 and headquartered in

Porto. This partnership with EDP marked the beginning of a strategic effort to integrate biomass into energy generation while enhancing the value of Portugal's forest resources.

Over the years, the company expanded its operations by developing several biomass power plants and securing a significant share of licenses for biomass energy generation, establishing itself as a leader in the Portuguese forest biomass energy sector. Furthermore, the company's operations support sustainable forestry management as they recycle residual biomass, contributing to environmental preservation and mitigate forest fire risks.

In 2018, Altri solidified the commitment to this vision by acquiring the remaining 50.0% of *EDP Produção – Bioelétrica* for EUR 55.6m, gaining full ownership of the company. At the time, the company operated four biomass power plants and was constructing a fifth, allowing Altri to further integrate forestry waste from its business activity into renewable energy production. Following this acquisition, the company was rebranded as *Bioeléctrica da Foz* and consolidated under the Altri Group.

In 2019, the fifth biomass power plant became operational, financed through Portugal's first green bond issuance. This milestone underscored Greenvolt's commitment to sustainable energy production and innovative financing mechanisms. By 2020, Greenvolt expressed its intention to expand into the solar photovoltaic (Solar PV) sector, aiming to diversify its energy portfolio and enhance its position in the market.

In March 2021, the company rebranded as Greenvolt - *Energias Renováveis*, suggesting an ambition for international recognition and plans for expansion abroad. By June this year, the company completed the first step in its internationalization plan by acquiring a majority stake on a British power plant.

Building on its biomass expertise and a growing portfolio, Greenvolt currently develops, operates, and manages power stations and energy facilities across Portugal, and soon in the UK.

Additionally, the company actively contributes to research and projects in the green energy field and has established itself as key player in sustainable energy development.

The Business

Greenvolt's revenue capacity relies primarily on the energy generated through biomass, with five power plants operating across Portugal, which represent a total injection capacity of 98 MW, and a recently acquired one in the UK, with 42MW of injection capacity (**Exhibit 1**). In May 2021, Altri and Greenvolt signed a Memorandum of Understanding (MoU) with V-Ridium Europe, for an in-kind capital increase in the amount of EUR 56.0m at the time of Greenvolt's IPO, by delivering 100% of its shares in V-Ridium Power to Greenvolt. Following this, at the end of June 2021, Greenvolt concluded the acquisition of a 51.0% stake in Tilbury Green Power Holdings Limited (TGPH) alongside Equitix (an investor, manager and developer of renewable energy assets in the UK and Europe). This acquisition granted the company control of the Tilbury power plant, a 42 MW biomass facility located near London.

Through these strategic steps, Greenvolt has demonstrated a clear interest in diversifying its generating assets and expand its international presence. Moreover, the company outlined the expected pipeline for the years 2021-2025e (**Exhibit 2**) in its most recent report, evidencing a strong focus on the Solar PV and Wind sectors. In this scenario, Greenvolt will expand its operations in Portugal, Poland, Greece, and Romania, targeting a new construction volume of c. 3.6 GW by 2025 and an operating portfolio of c. 1.1 GW.

Biomass

Biomass refers to renewable organic material from plants and animals, such as wood processing waste, agricultural crops and residues, biogenic materials in municipal waste, or even animal manure and human sewage (Greenvolt 2021). Biomass energy is an innovative way of converting natural waste materials into renewable power (**Exhibit 3**). The process of generating electricity from biomass begins with preparing the biomass to meet specific combustion requirements. Once treated, it is burned at high temperatures (700°C–900°C), producing combustion gases. These gases are used to heat water, converting it into steam, which in turn powers turbines to generate electricity. The electricity produced is then exported to the network through substations and interconnection lines. The complexity of this system lies in its sustainable "closed water cycle", meaning no water is wasted, as it is continuously recycled.

Each biomass power plant has a specific availability and load factor which assess their efficiency and reliability. The availability of a power plant refers to the amount of time that the plant is operational and capable of producing electricity, excluding periods of maintenance, unplanned shutdowns or other unpredictable situations. The load factor measures the ratio between the actual power generated by the plant and the maximum possible power generation if it operated at full capacity for a specific period.

Greenvolt is the largest biomass power producer in Portugal, contributing to the production of around 730 GWh of renewable energy annually. As shown in **Exhibit 1**, the company operates six biomass power plants with a total capacity of 140 MW, including five in Portugal and one in the UK - which Greenvolt will start to consolidate from the 2H21.

The Portuguese plants thrive due to the forestry waste supplied by Altri, as they were strategically built near the parent's company pulp mills, also benefiting from human and technical resources for their operation and maintenance, creating synergies. If the nameplate

capacity was to be stable from 2020 onwards (**Exhibit 4**), these power plants could generate between 728 GWh and 733 GWh annually. Plus, residual biomass creates incentives for cleaning up the forests by developing local biomass markets and by contributing towards more appropriate forestry practices, being considered a powerful mitigating agent against seasonal forest fires that ravage Portugal every summer (Neto 2021).

Across the seas, the UK biomass plant operates using mostly urban waste. Since landfills will be banned in the country by 2025, the use of biomass for electricity production allows the capitalization of a useless by-product. The Tilbury power plant is located 40 km from central London and has an installed capacity of 43.6 MW with an average availability of 91%, according to 2020 values. Thus, the plant is capable of producing 330 GWh to 335 GWh annually. These values are to be included in Greenvolt's financial statements from 2H21 onward, adding to the company's total capacity.

Other Projects - Solar PV and Wind

Although Greenvolt's roots are deeply entrenched in biomass, the company also develops ***Utility-scale*** and ***Distributed energy generation*** projects, operating with onshore Wind, Solar PV and Storage installation plants. Greenvolt's Solar PV and Wind projects expected to develop until 2025, can be classified as "Under Construction", "Ready-to-Build" (RTB), "Advanced stage", and "Early stage", as indicated in **Exhibit 5**. Although most projects are likely to be sold at RTB, Greenvolt aims to retain about 25.0% of the total pipeline for self-use.

Utility-Scale

This branch covers all activities, from the design of the project to its permitting and construction, which implies long timelines and high team-expertise, but less capital throughout the development stages. The Wind and Solar energy production projects are meant to generate

energy on a large scale, with significant infrastructure, contributing to national grids. Large and medium scale projects are defined as those above 10 MW, while small-scale projects are those of 10 MW or less. To complement this, the storage solutions ensure energy can be saved for later use, adding flexibility and reliability to these RE projects.

Distributed energy generation

This business unit focuses on developing and implementing photovoltaic energy projects to be used for self-consumption for both residential and commercial users, mainly through photovoltaic solar panels installed on rooftops. This business area has a high growth potential, particularly in Portugal, as the country has one of the highest solar irradiation levels in Europe (**Exhibit 6**) and one of the lowest penetration rates of distributed energy generation. Plus, these projects aid the transition to carbon-free energy sources, attracting "sustainability-driven" consumers, while also reducing the reliance on traditional energy and lowering electricity costs for businesses and families.

Expansion Strategy

Greenvolt has positioned itself as a leader in the Portuguese renewable energy sector by making strategic acquisitions of smaller players, which allowed the company to effectively scale its operations. **Exhibit 7** illustrates the structural evolution of the Greenvolt Group and the respective ownership percentages.

The company has just begun its internationalization strategy, with the investment of EUR 220m for the acquisition of 51.0% of Tilbury Green Power Holdings, entering the UK biomass market. This move leveraged the company's experience in managing biomass plants, and as João Manso Neto stated, "*Greenvolt's operational excellence and experience in*

managing biomass power plants led us to believe that internationalization would create value. The knowledge from Portugal allowed to improve each project and Tilbury Power Station fits our efficiency, investment and profitability criteria perfectly" (Neto 2021).

Greenvolt's ambition is to further expand its portfolio and continuously increase the pipeline of projects under development. The company strategically choses to focus on the upstream segment of the renewable energy value chain – development and promotion of wind and solar PV energy projects up to RTB – as this phase offers high profitability, with lower capital requirements compared to the construction of power plants (lower level of profitability and high investment needs).

In line with this strategy, Greenvolt recently disclosed plans to enhance its portfolio by acquiring V-Ridium, a company recognized for its expertise and success in renewable energy project development. With more than 200 years of accumulated management experience in the field, V-Ridium developed more than 17 GW and closed transactions in c. EUR 2.5b. Manso Neto believes this acquisition might position Greenvolt as a major player in the European Wind and Solar PV energy market, adding new projects in Poland, Greece, and Italy to the company's growing portfolio.

Additionally, Greenvolt aspires to negotiate and perhaps acquire a percentage of companies that operate in decentralized energy generation, such as Profit Energy and *Perfecta Energia*, to further diversify its energy sources.

The Management Team

Greenvolt's management team stands out for its depth of expertise and proven success, positioning the company as a reliable and credible player (**Exhibit 8**). The CEO, João Manso Neto, brings over 35 years of experience, with 18 years dedicated to the renewable energy industry, including 9 years as the CEO of *EDP Renováveis* (EDPR). His strategic vision and commitment have been key in guiding EDPR through industry challenges and growth.

Alongside him, Greenvolt will benefit from the leadership of Radek Nowak, CEO of V-Ridium Power, who has over 25 years of experience, including 17 years in renewables. Radek's expertise in developing and executing renewable energy projects strengthens Greenvolt's ability to meet its development goals and expand globally. Together, Manso Neto and Nowak ensure the company is well-positioned to become a leader in renewable energy in Europe.

Greenvolt is further reinforced by a diverse board of directors, composed of eleven members who bring a wide range of expertise in business, finance, energy regulation, management, economics and sustainability. The board's long-standing relationship with Greenvolt's parent company, Altri, also enhances its financial stewardship and strategic guidance.

Shareholders Structure

Altri holds, directly or indirectly, the entire share capital of Greenvolt (**Exhibit 9**), and therefore, holds 100% of the voting rights of the company. At this time, Altri's main shareholders are *Promendo Investimentos, S.A.* (18.7% of Altri's voting rights), *Caderno Azul, S.A.* (15.1% of Altri's voting rights), *Actium Capital, S.A.* and *Livrefluxo, S.A.* (each holding 13.0% of Altri's voting rights) and *1 Thing, Investments, S.A.* (10.0% of Altri's voting rights).

After the projected IPO, Altri plans to continue to hold the majority of shares (**Exhibit 10)** and therefore hold sufficient voting rights to approve or block resolutions such as the distribution of dividends and the appointment of the majority of the members of the Board of Directors. Although Greenvolt does not foresee any conflict between Altri's interests and its own, Altri has the power to influence over the business's strategy and financial condition.

Greenvolt's dividend policy aligns with its focus on accelerated growth, as the company does not expect to distribute dividends at least until 2025. Nevertheless, this situation will be assessed annually by the board based on the company's available reserves (Greenvolt 2021).

SWOT Analysis

Greenvolt is well-positioned in the renewable energy industry, benefiting from a strong backing from Altri Group (**Exhibit 11**). The company intends to operate in multiple energy sectors (biomass, wind, and solar) among several regions, namely in Portugal and in the United Kingdom, which provides a strategic advantage by diversifying risk and protecting the company against localized economic downturns. However, this means that Greenvolt is also exposed to exchange rate volatility, as part of its revenues will be coming from countries that do not operate under the euro currency. For instance, any depreciation of the British Pound against the Euro could negatively affect the company's profit.

Greenvolt main business area involves the construction and operation of power plants, as well as consultancy and project management services related to energy efficiency. These operations, namely the construction of power plants, require a high investment in CAPEX and high levels of debt. This poses as a risk due to the volatility of the cashflows the company obtains from its revenue streams, as the sale of projects is periodical, which could lead to liquidity challenges. Moreover, although every biomass power plant has assured its own supply

of biomass through long-term agreements with Altri, the company might still be affected by supply shortages and biomass price variations, since this material was responsible for 41.5% of the energy production revenues in 2020 (Greenvolt 2021), and therefore essential for the course of business.

On the other hand, Greenvolt can capitalize on expansions into different markets where there is a gap in renewable energy fonts, also diversifying revenue streams and reducing dependence on current platforms.

Industry Analysis

After the industrial revolution, the planet began to show signs of environmental distress, and as climate changes became more severe, there was a need for global measures to combat rising temperatures and reduce greenhouse gas (GHG) emissions. These needs led to the signing of the Paris Agreement (2016), the first universal and legally binding climate agreement, aimed at limiting global warming to below 2ºC above pre-industrial levels, and to pursue efforts to limit the increase to 1.5ºC, by reducing GHG emissions and promoting climate health. The agreement started an international movement, boosting demand for clean energy sources, as countries race to meet global climate goals. Thus, in 2020, the European Green Deal became the European Union's (EU) blueprint, laying out a plan to make the continent climate-neutral by 2050. To achieve this, the EU raised the 2030 GHG emissions reduction target, setting proposals to make the climate, energy, transport and taxation policies fit for reducing emissions to at least 55.0% below 1990 values.

With this, many European countries were pushed to set ambitious climate targets for carbon neutrality, which have translated into a rapid growth of the renewable energy sector. This industry focuses on the production of energy from sustainable sources that have low to

zero GHG emissions, such as solar, wind, hydropower, biomass, and other forms of renewable energy. Thus, it has become the centre of the transition to less carbon-intensive and more sustainable energy systems, weakening the demand for traditional energy sources such as coal and natural gas. In the European Net Zero Emissions by 2050 scenario, renewables allow electricity generation to be almost completely decarbonised, and renewable transport fuels and renewable heat contribute to significant emission reductions in other polluting roots such as transports, buildings and industries (IEA 2021).

According to IRENA (2021), currently, only about 50.0% of the generation power installed in Europe comes from renewable sources, but market trends in the sector point in the direction of progressive growth. In this regard, biomass has had a Cumulative Annual Growth Rate (CAGR) of new annual power instalments of renewable technology of 6.6% in the period 2010-2020, though its share in the renewables accumulated power matrix is still residual (3.7% in 2020). Hydro-energy is the most common form of renewable energy, with a c. 44.0% share of the total renewable electric power, although this represents a 32.0% market share decrease since 2010. Solar PV technology has led the growth, with a CAGR of 33.2%, and its installed capacity (708 GW) has nearly reached the one of wind energy (733 GW). Its rapid rise in popularity is owed to its simplicity in construction, the abundance of solar resources, and the decline of the global weighted average Levelized Cost of Energy (LCOE) for PVs (Greenvolt 2021).

Correspondingly, in Europe, the CAGR of new annual power instalments of renewable technology reached 7.2% in the period 2010-2020, which contrasts with the around 37.0% reached globally. Particularly, PV energy showed a CAGR of 17.5%, wind energy had a CAGR of 9.1%, and bioenergy and biomass have shown a CAGR of 4.7%, although its share in the energy matrix remains residual (4.9%) (Greenvolt 2021). Nonetheless, statistics show that wind and solar power-generation growth must nearly triple to reach Europe's 2030 green deal targets,

which implies adding well over 100 TWh annually until 2030 (Jones 2021), and thus, demanding a heavy investment in renewables.

The first semester of 2020 was marked by supply chain disruptions and construction delays which slowed the progress of renewable energy projects (IEA 2020). Still, the demand for RE continued to be strong despite the unfavourable economic conditions, with annual renewable capacity additions increasing 45.0% to almost 280 GW – the highest increase year-on-year (YoY) since 1999. The exceptional level of new capacity additions is expected to be maintained, with an estimated 270 GW becoming operational globally in 2021 and 280 GW in 2022. This expansion plan exceeds the record-level of annual capacity additions achieved between 2017-2019 by over 50.0%, such that renewables are expected to start accounting for 90.0% of total global power capacity increases in both 2021 and 2022 (IEA 2021).

Costs, Remuneration Schemes and Technological Advancements

The global need to fight climate changes has led governments to support investments in renewable energy generation through fiscal incentives and public financing, as these are integral to the achievement of national climate strategies that aim to cut GHG emissions (Finkelstein, Frankel e Jesse 2020).

In the European Union, the deployment of renewable energy has been predominantly driven by government support schemes. This reflects the fact that, until recent years, renewable technologies were not financially competitive with other energy sources without subsidies. According to the Council of European Energy Regulators (CEER), the volume of publicly supported renewable electricity increased from 297 TWh in 2014 to 422 TWh in 2019, with wind energy constituting most of this increment. In terms of financial support, renewable

electricity producers in the EU received EUR 35.0b in 2018, which increased to EUR 43.0b in 2019, with EUR 19.0b being allocated to Germany alone (Busch, et al. 2023).

In Portugal, the prevalent remuneration schemes are the feed-in tariffs and auctions. The first one corresponds to a remuneration mechanism designed to support and accelerate the installation of renewable energy facilities by providing producers with a fixed remuneration, above market prices, and ensuring stable long-term cash inflows. Likewise, auctions introduced a competitive bidding process for developers to secure contracts at the lowest possible price, particularly for solar PV energy (Greenvolt 2021).

Although investments in renewable energy are still largely dependent on financial support schemes, the need for such assistance is gradually diminishing due to the substantial improvements in supply chains and technology advancements. Thus, renewables are now becoming a viable alternative to fossil fuels like coal and natural gas (Jesus 2021). During the past decade, the most significant decline in LCOE (**Exhibit 12**) came from solar PV (-85.0% from 2010 to 2020), from a value of 381 USD/MWh to 57 USD/MWh, with concentrated solar power (-68.0%), onshore wind (-56.0%), and offshore wind (-48.0%) following the same trend (IRENA 2021).

Macroeconomic Context

With COVID-19 cases continuing to surge across the U.S. and Europe, a return to the pre-pandemic life remains unlikely, with many countries reintroducing restrictions as infection rates surge. Yet, the global economy has shown a surprising level of resilience in adapting to the prolonged crisis. According to the European Commission (2021), the European Union GDP in 2020 contracted by -6.1%, and is expected to growth at around 4.2% in 2021 - the fastest rate recorded in the 21st century – and 4.4% in 2022. Similarly, the inflation rate in the European

Union in 2020 had a value of 0.7% and is expected to be around 1.9% in 2021 (European Commission 2021), reflecting a gradual recovery in economic activity.

Stock markets have experienced a strong recovery since the pandemic downturn in 2020. Global stock indexes are hitting record highs as the economy shows signs of recovery, boosting investor confidence. In the first half of 2021, the S&P 500 rose 15.9% and the STOXX Europe 600 rose 11.1%, while the PSI-20 had a grow of 5.1% (as of July 1st, 2021). The S&P 500 is frequently used as a proxy for the value of the entire U.S. stock market, since the stocks it contains account for roughly 80.0% of the total value of stocks that are publicly available for trading, and so, it is frequently used as a measure of the health of the economy and can serve as an indicator of investor sentiment (Daks e Silbert 2024). Similarly, the PSI-20 is a benchmark stock market index that tracks the performance of the 18 main companies (as of June 2021) within the Euronext Lisbon Stock Exchange.

Due to the indexes' susceptibility to market risk, their performance is largely influenced by major global events, such as the 2008 financial crisis and the COVID-19 pandemic. Despite this, the S&P 500 index has historically returned around 10.0% per year since being created in the '50s (Daks e Silbert 2024), reflecting the structural strength of the U.S. economy. On the other hand, the PSI-20 suffered a sharp decline in 2007 due to the Portuguese crisis, and, ever since, has failed to return to pre-crisis levels, showcasing the ongoing challenges faced by Portugal's economy. **Exhibit 13** illustrates the S&P 500 and PSI-20 performances from 2006 to 2021 adjusted to relative values due to structural differences between the two indexes. By setting both indexes to 100 in June 2006, it becomes clear how each index evolved relative to its starting value.

The PSI-20 underperformance compared to the S&P 500 indicates that Portugal is a less dynamic market for equity investments and poses challenges in attracting capital. So, even

though the company operates in a growing sector, the decision to list its shares on the Euronext Lisbon Stock Exchange market concerns shareholders, as it might become difficult to appeal to investors.

Greenvolt's Comparables

As the sector expands, maintaining a healthy financial performance is critical for renewable energy manufacturers and project developers, as it directly influences their ability to secure low cost of capital to fund capital-intensive expansions. This is because a key measure of financial health for the industry is the stock market, which provides a transparent method of assessing financial performance (IEA 2020). **Exhibit 14** and **Exhibit 15**, provide a visual representation of the comparables' stock market price from 2006 to 2021.

Greenvolt operates in very distinctive projects and most of its pipeline is still in early stages, thus making it hard to find listed peers with similar characteristics. Still, when analysing competitors at an European level (**Exhibit 16**), such as *EDP Renováveis S.A.*, *Iberdrola S.A.*, *Solaria Energía y Medio Ambiente*, *ERG SPA*, *Drax Group*, *Alerion Cleanpower*, among others, discrepancies in multiples can be attributed to Greenvolt's low maturity, as the company has recently started expanding its operations.

Sustainability: ESG

Greenvolt's commitment to sustainability is guided by four pillars that reflect its approach to balancing company progress and planet preservation, these are: Planet, People, Responsibility and Ethics, and Financial Sustainability. The company's intention is to enhance global renewable energy production and contribute to carbon neutrality by providing accessible renewable energy solutions. Nonetheless, the company's mission extends beyond clean energy

as Greenvolt places a strong emphasis on fostering an inclusive and supportive work environment, ensuring the well-being and work-life balance of its employees. The governance model is grounded in ethical conduct, transparency, and responsible practices, in alignment with its commitment to the United Nations Global Compact and the Sustainable Development Goals.

For its commitment, Sustainalytics assigned an ESG Risk Rating of 29.3 (medium risk) and an ESG management score of 50.8/100 (considered strong), indicating solid ESG disclosure and accountability to investors and the public.

The SBM 2019-2029 Green Bond

In 2019, *Sociedade Bioelétrica do Mondego* (SBM), Greenvolt's subsidiary, issued its first green bond to exclusively finance the Figueira da Foz II biomass power plant. The 10-year maturity bond amounted to EUR 50.0m with a 1.9% coupon rate and was the first green bond to be traded in Portugal on Euronext Access Lisbon. The issuance followed the Green Bond Principles published by the International Capital Market Association and obtained a positive Second-Party Opinion from Sustainalytics (an ESG ratings and specialised independent research company). For Greenvolt, this bond was a step towards credibility in sustainable energy aligning with its commitment to sustainable finance.

The IPO

Listing a company means offering its shares to a regulated market, making them available for trading by investors. The listing process provides opportunities for growth by providing access to capital and enhancing the visibility of the company, while supporting its

long-term development and strategic goals. However, listing also comes with challenges, as the market is driven by factors beyond the company's control.

To fund the existing investment plan (**Exhibit 2**), Greenvolt needs between EUR 1.5b to EUR 1.8b that are planned to be financed by a combination of cash flow from operations, sale of minority stakes in certain projects, the IPO proceeds and new debt. In 2021, Greenvolt expects to make investments amounting EUR 300.0m: EUR 220.0m corresponding to the acquisition of Tilbury Holdings, EUR 30.0m in V-Ridium's capital needs for investments, and EUR 50.0m in other endeavours in Portugal (i.e. updates in biomass power plants, solar photovoltaic, decentralised generation).

Greenvolt intends to use the proceeds of the IPO to support growth and expansion (**Exhibit 17**), focusing on biomass development in Portugal and Europe, including the acquisition of under-performing biomass companies. Additionally, the company plans to develop solar PV and onshore wind projects and invest in decentralized power generation projects.

Currently, Greenvolt has a share capital of EUR 70.0m and, by proceeding with an IPO, the company plans to raise a maximum of EUR 205.5m. This share capital increase would comprise EUR 149.5m in cash contributions – net proceeds of approximately EUR 142.0m after deducting all expenses in the amount of EUR 7.3m – and EUR 56.0m in contributions in kind.

At this time, Greenvolt has 75,000,000 shares held by Altri and Calma Energia and, upon the completion of the IPO, Greenvolt intends to have 121,376,470 total shares - V-Ridium should hold 11,200,000 shares and other shareholders should represent the remaining float. All Greenvolt's share capital is ought to be admitted to trading on Euronext Lisbon, and if moving forward with the IPO, the board is planning to set the offering price range at EUR 4.25 to EUR 5.00.

The Decision

João Manso Neto, along with the rest of the board, is now facing a crucial decision. When the CEO accepted the challenge to join the company, Manso Neto was entrusted with the mission of transforming Greenvolt into one of the most significant RE companies in Europe. The IPO represents an opportunity for Greenvolt to secure the capital it needs to accomplish its expansion plans and for the company to become internationally recognized, possibly securing additional projects in the future. Yet, Manso Neto recognizes the inherent risks of going public, as the small size of the company might pose difficulties to investor demand. Plus, going public requires a need to sustain growth every quarter, which could shift the company's focus away from innovation, and towards more stable sources of revenue. Considering all the benefits and risks associated, the board must decide the future of the company.

EXHIBTS LIST

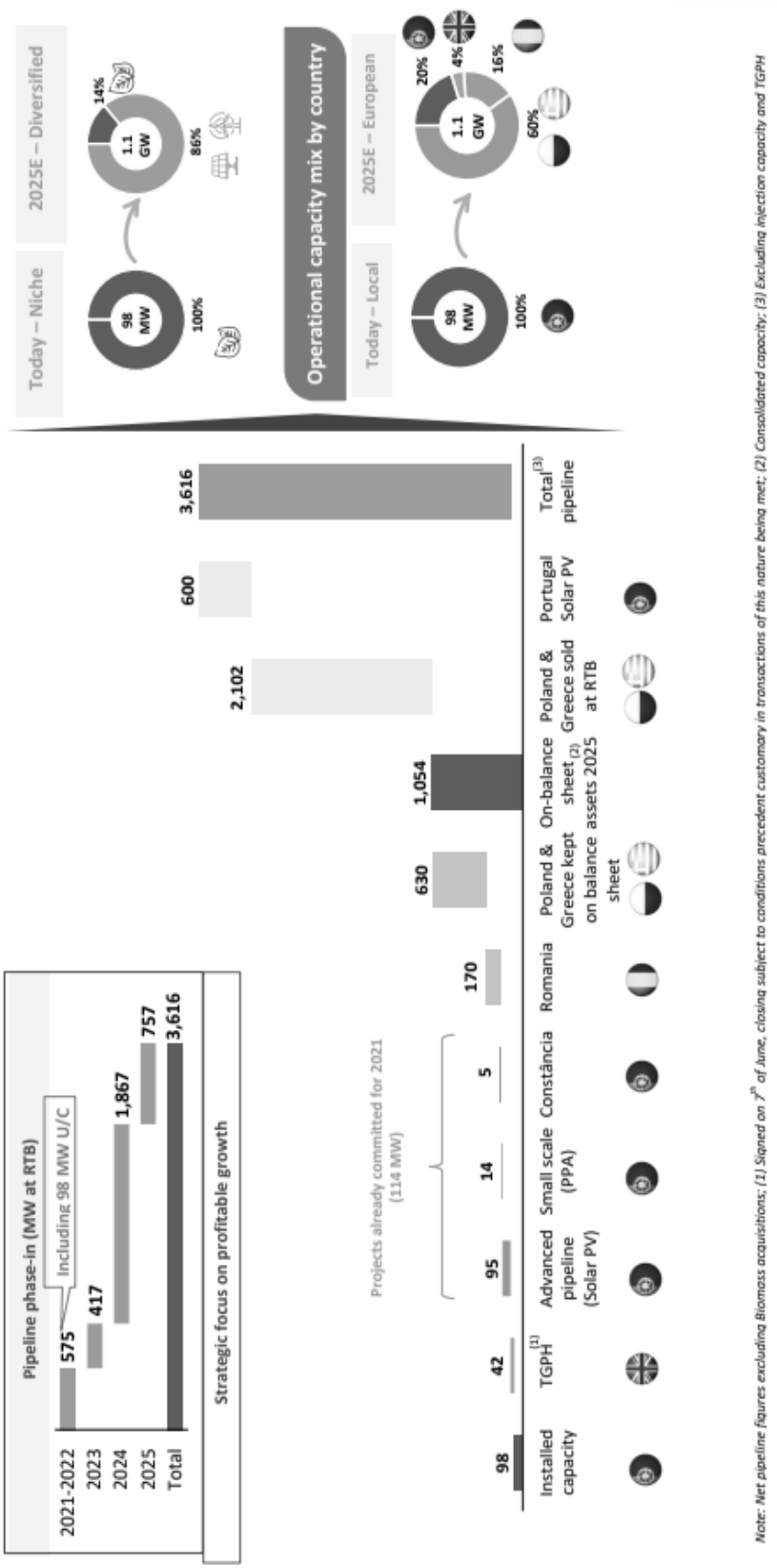
EXHIBITS

Exhibit 1 – Greenvolt's biomass plants information as of July 1st 2021

Power Plant	Country	Beginning of electricity supply to the grid	Installed capacity	Injection capacity (limited)	End of tariff period
Mortágua	Portugal	August 1999	10 MW	10 MW	August 2024
Constância	Portugal	July 2009	13.7 MW	11.8 MW	July 2034
Figueira da Foz I	Portugal	April 2009	34.3 MW	30 MW	April 2034
Ródão Power	Portugal	December 2006	13.2 MW	11.8 MW	November 2031
Figueira da Foz II	Portugal	July 2019	40.9 MW	34.5 MW	July 2044
Tilbury	United Kingdom	January 2019	43.6 MW	41.6 MW	March 2037
Total			156 MW	140 MW (98MW + 42 MW)	

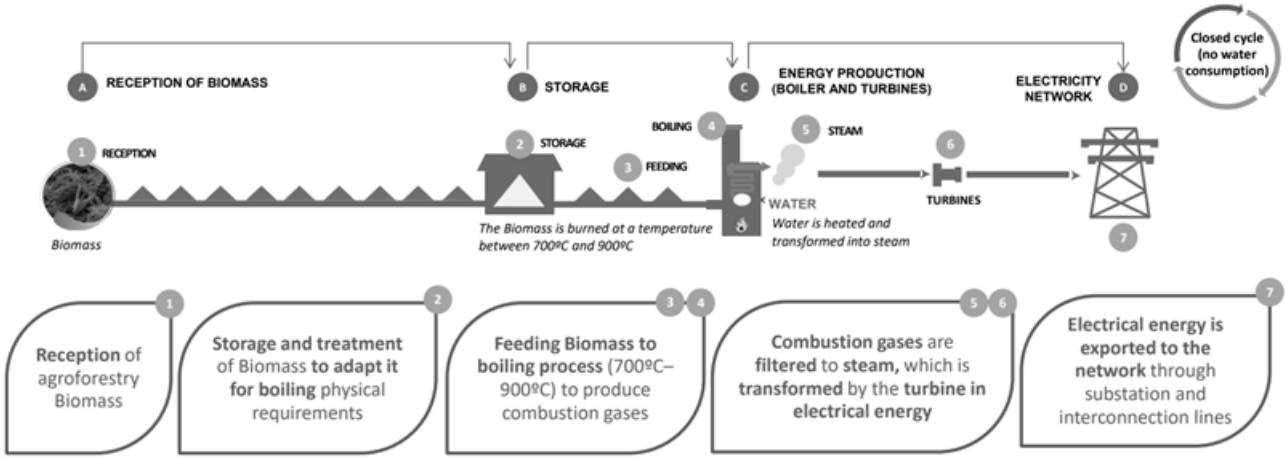
Source: Greenvolt *(2021)*

Exhibit 2 – Greenvolt's pipeline for the period 2H21 – 2025



Source: Greenvolt *(2021)*

Exhibit 3 – The Biomass Production Process



Source: Greenvolt (2021)

Exhibit 4 – Portuguese biomass plants' availability in FY20

Plants	Capacity (MW)	Availability
Mortágua	10	91.6%
Ródão	12	89.2%
Constância	12	91.8%
Fig. Foz I	30	94.5%
Fig. Foz II	35	95.4%

Source: Greenvolt *(2021)*

Exhibit 5 – Greenvolt's pipeline by net installed capacity expected to develop until 2025

Type of power plant	Pipeline per project status				Total (MW)	Mix (%)	
	Under construction	RTB	Advanced phase	Early stage		within country	per country / type of plant
	(MW)	(MW)	(MW)	(MW)			
Portugal	**-**	**62**	**52**	**600**	**714**	**100%**	**20%**
Solar PV power plants	-	62	47	600	709	99%	28%
Biomass power plants	-	-	5	-	5	1%	100%
% Total	0%	9%	7%	84%	100%		
Poland	**98**	**30**	**939**	**1,057**	**2,124**	**100%**	**59%**
Wind power plants	50	0	267	420	737	35%	68%
Solar PV power plants	48	30	672	637	1387	65%	55%
% Total	5%	1%	44%	50%	100%		
Greece	**-**	**-**	**190**	**418**	**608**	**100%**	**17%**
Wind power plants	-	-	74	165	239	39%	22%
Solar PV power plants	-	-	116	253	369	61%	15%
% Total	0%	0%	31%	69%	100%		
Romania	**-**	**-**	**170**	**-**	**170**	**100%**	**5%**
Wind power plants	-	-	100	-	100	59%	9%
Solar PV power plants	-	-	70	-	70	41%	3%
% Total	0%	0%	100%	0%	100%		
Total	**98**	**92**	**1,346**	**2,075**	**3,611**	**100%**	
Wind power plants	50	0	441	585	1076	30%	100%
Solar PV power plants	48	92	905	1490	2535	70%	100%
Biomass power plants	-	-	5	-	5	0%	100%
% Total	3%	3%	37%	57%	100%		

Source: Greenvolt *(2021)*

Exhibit 6 – Solar radiation in Europe

Source: Solargis (2021)

Exhibit 7 – Subsidiaries included in Greenvolt Group's

Company	Registered office	Effective held percentage June 2021	Effective held percentage December 2020	Main activity
Parent company:				
Greenvolt – Energias Renováveis, S.A. (a)	Porto, Portugal			Electricity generation using waste and biomass sources. Power plants: Figueira da Foz; Constância and Mortágua.
Subsidiaries:				
Ródão Power - Energia e Biomassa do Ródão, S.A.	Vila Velha de Ródão, Portugal	100%	100%	Electricity generation using waste and biomass sources. Power plants: Vila Velha de Rodão.
Sociedade Bioelétrica do Mondego, S.A.	Figueira da Foz, Portugal	100%	100%	Electricity generation using waste and biomass sources. Power plants: Mondego (Figueira da Foz).
Bioródão, S.A.	Figueira da Foz, Portugal	100%	100%	Electricity generation using waste and biomass sources
Golditábua, S.A. (b)	Figueira da Foz, Portugal	100%	-	Electricity generation using solar energy
Sociedade de Energia Solar do Alto Tejo (SESAT), Lda.	Nisa, Portugal	80%	80%	Renewable energy sources
Ribatejo Green, Lda (c)	Algés, Portugal	70%	70%	Electricity generation
Amieira Green, Lda (c)	Algés, Portugal	70%	70%	Electricity generation
Paraimo Green, Lda	Algés, Portugal	70%	70%	Electricity generation
Piara Solar, Lda (c)	Algés, Portugal	70%	70%	Electricity generation
Maior Green, Lda (c)	Algés, Portugal	70%	70%	Electricity generation
Greenvolt Energias Renovaveis Holdco Limited (d)	Manchester, United Kingdom	100%	-	Holding
Lakeside Topco Limited (d)	Manchester, United Kingdom	51%	-	Holding
Lakeside Bidco Limited (d)	Manchester, United Kingdom	51%	-	Holding
Tilbury Green Power Holdings Limited (e)	Tilbury, United Kingdom	51%	-	Holding
Tilbury Green Power Limited (e)	Tilbury, United Kingdom	51%	-	Electricity generation using biomass from urban waste wood. Power plants: Tilbury.

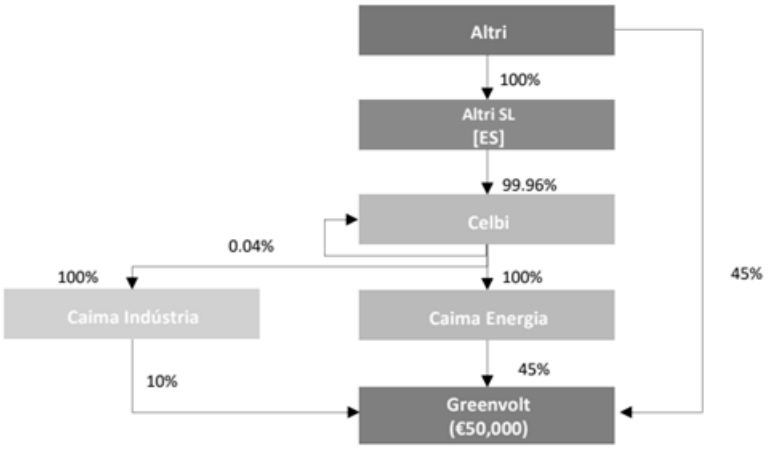
(a) Formerly known as Bioelétrica da Foz, S.A.
(b) Company acquired in December 2020
(c) Company extinguished with effect on 31 March 2021
(d) Company incorporated in the current period
(e) Company acquired with effect on 30 June 2021

Source: Greenvolt (2021)

Exhibit 8 – Executive Profiles: João Manso Neto and Radek Nowak

Source: Greenvolt (2021)

Exhibit 9 – Altri Group's shareholding structure as of 2020



Source: Greenvolt (2021)

Exhibit 10 – Expected ownership breakdown after the IPO

Total Shares	121 376 470	100,0%
The Offering New Shares	30 588 235	25,2%
Contribution in kind New Shares	11 200 000	9,2%
Option Shares	4 588 235	3,8%
Ordinary Shares	75 000 000	61,8%

Shareholders	121 376 470	100,0%
Altri	56 250 000	46,3%
Caima Energia	18 750 000	15,4%
	75 000 000	
V-Ridium	11 200 000	9,2%
Free float	35 176 470	29,0%

*As of July 1st, shares amounted to 75 million

Source: Greenvolt (2021)

Exhibit 11 – Greenvolt's SWOT analysis

Strenghts

- Established expertise of the management team (backing from Altri Group)
- Targeting a diverse portfolio with multiple revenue generation sources (Biomass, Wind, Solar PV) in multiple locations
- R&D Investments

Opportunities

- Growth of renewable energy demand
- Regulatory framework
- Expansion into European markets

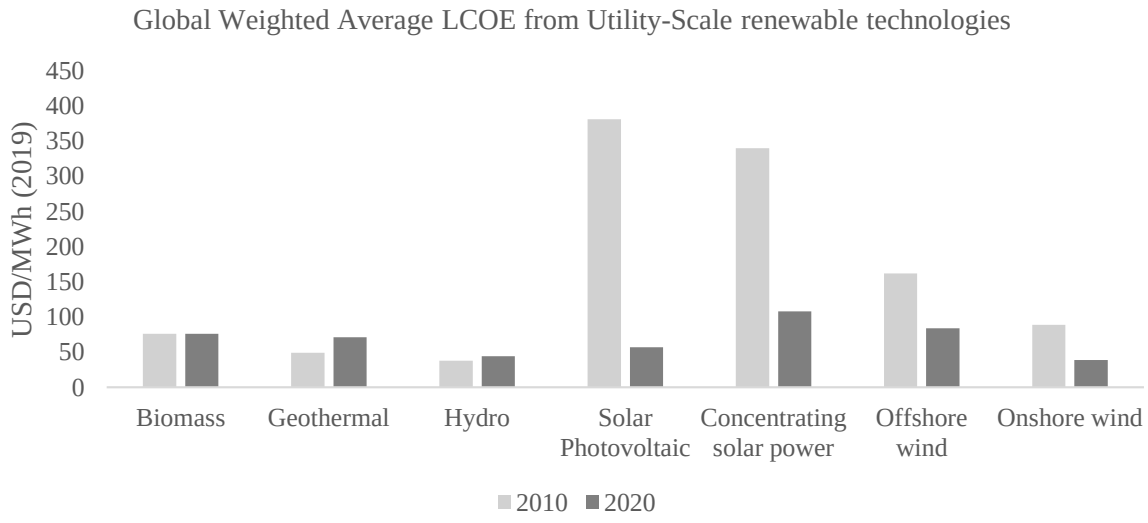
Weaknesses

- Relatively new and small company
- Dependence on Biomass supply
- Price volatility of raw materials
- High CAPEX requirements
- High Debt to Value ratio

Threats

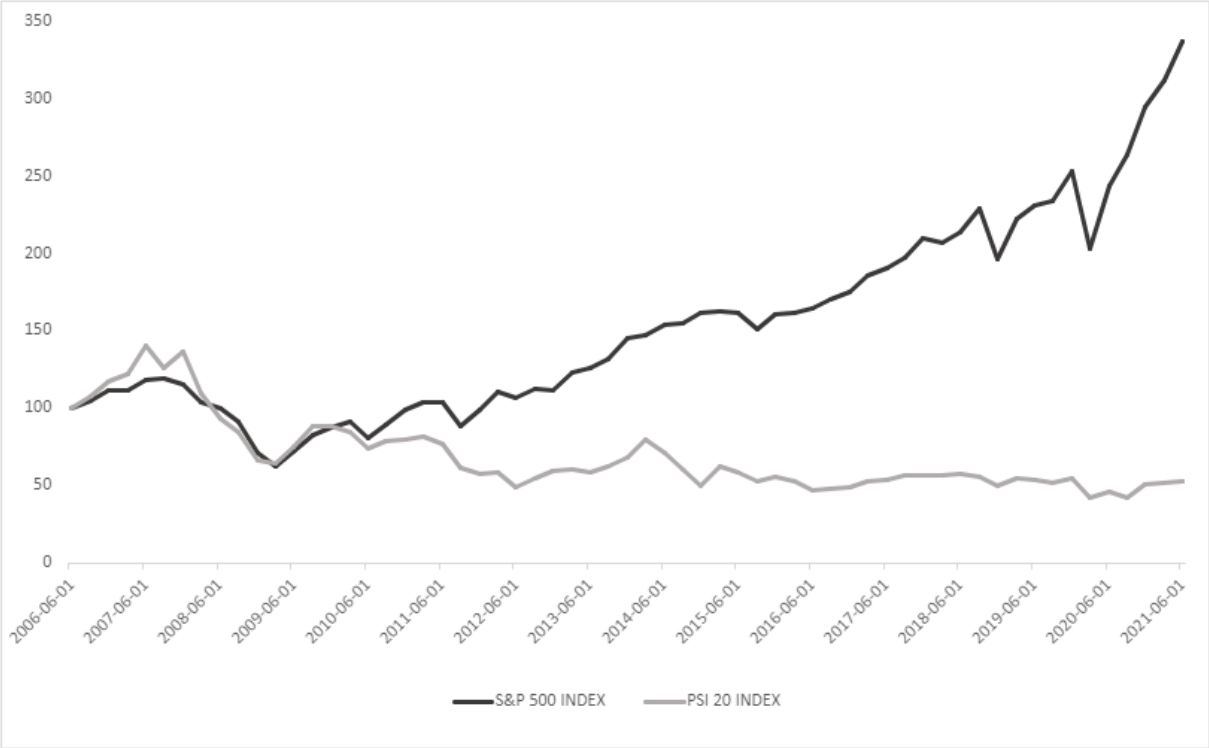
- Regulatory framework
- Intensifying competition from other renewable energy companies
- Substitute technologies might reduce demand for Greenvolt projects
- Market saturation

Exhibit 12 – LCOE from Utility-Scale renewable technologies (2010 *versus* 2020)



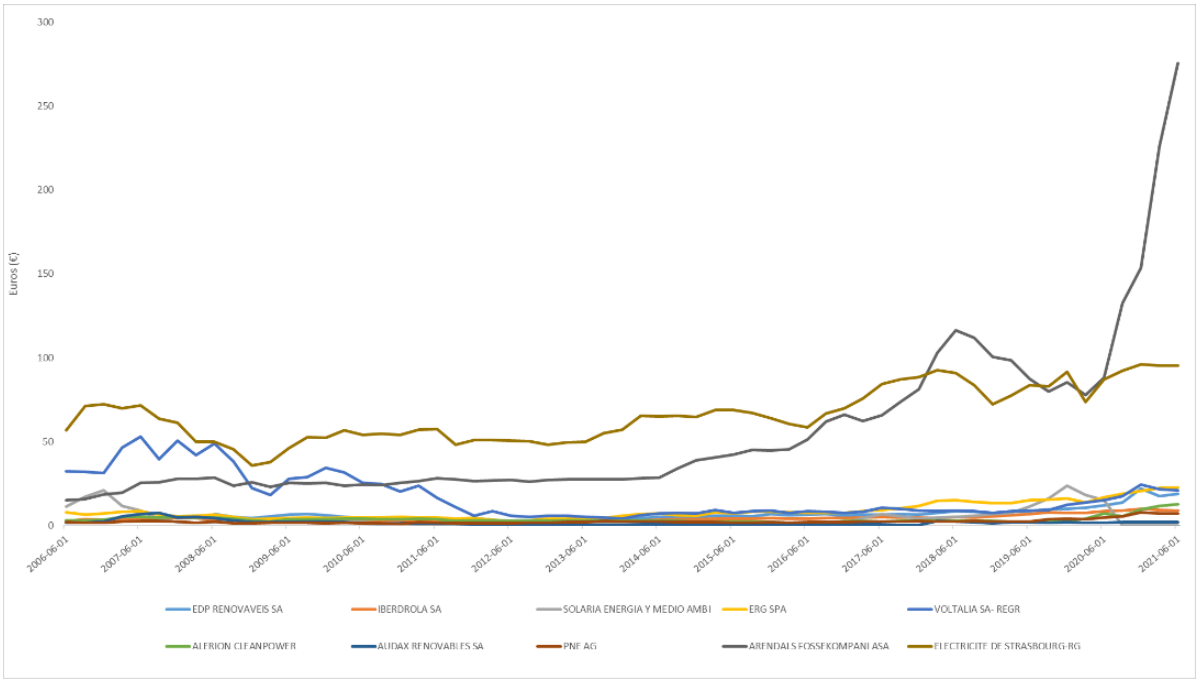
Source: IRENA (2021)

Exhibit 13 – Normalized Performance of S&P 500 and PSI-20 Indexes (2006-2021)



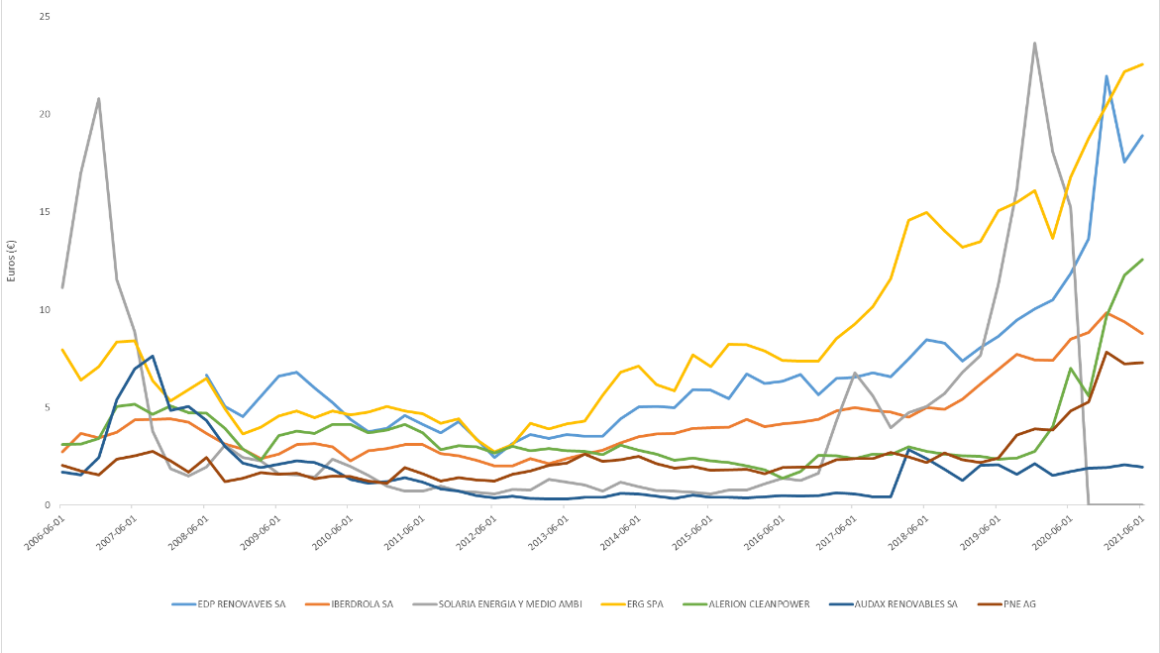
Source: Bloomberg

Exhibit 14 – Stock price of 10 Greenvolt's comparables (2006-2021)



Source: Bloomberg

Exhibit 15 – Stock price (< EUR 25.00) of Greenvolt's main comparables (2006-2021)



Source: Bloomberg

Exhibit 16 – Peer Group Analysis

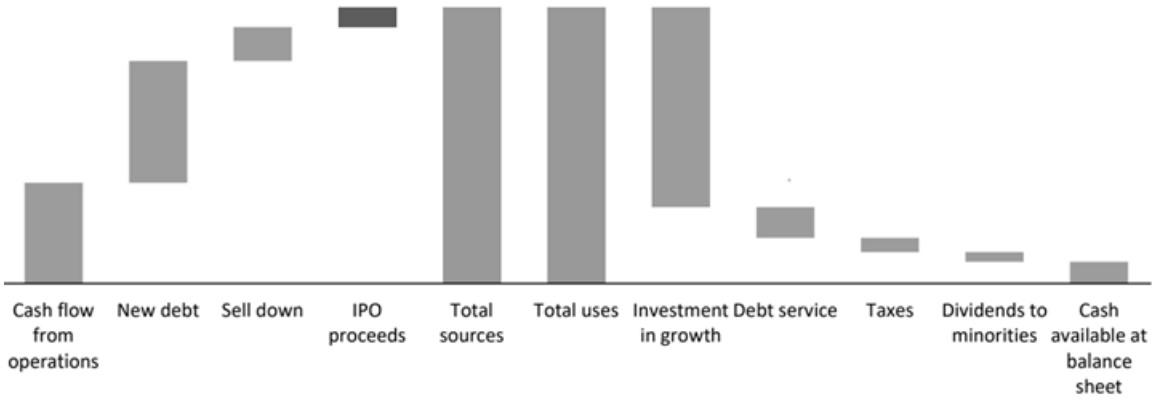
Peer Group Analysis

* values as of 2021/30/06, in local currency

Company / Index	Country	Price 2021 - 30 -06	Current Market Cap 2021 - 30 -06	P/E (Adjusted)	EV / EBITDA	Adjusted EBITDA mg. (%)	Net Debt / EBITDA	Price to Book	Current EV/ 12M trailing Sales	Debt to Equity (%)
S&P 500 INDEX	n/a	4297.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
PSI-20	n/a	5035.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
EDP Renovaveis SA	SPAIN	18.9	18769	37.4	22.0	71.9	2.8	2.1	14.6	50.8
Iberdrola SA	SPAIN	8.8	65979	16.8	12.3	30.4	4.4	1.5	3.5	97.0
Solaria Energia y Medio Ambiente SA	SPAIN	15.2	1904	48.5	n/a	94.8	n/a	7.7	32.4	241.6
ERG SpA	ITALY	22.6	3738	41.6	13.7	67.3	4.3	2.0	7.5	144.3
Drax Group PLC	BRITAIN	374.4	1690	n/a	12.3	7.6	8.0	1.1	0.7	113.4
Voltalia SA	FRANCE	21.1	2146	940.9	27.2	22.8	7.3	3.2	10.1	151.5
Alerion Cleanpower SpA	ITALY	12.6	731	14.7	13.9	80.6	5.2	3.4	10.7	281.7
Audax Renovables SA	SPAIN	1.9	862	44.7	15.9	1.6	1.8	6.3	0.8	425.2
PNE AG	GERMANY	7.3	565	70.2	23.0	12.2	10.9	2.7	10.2	227.8
Arendals Fossekompani ASA	NORWAY	273.9	16411	127.6	26.4	24.6	-1.9	4.4	4.6	43.1
Electricite de Strasbourg SA	FRANCE	95.5	807	15.8	3.8	20.2	-1.2	1.9	0.8	5.3
Average				**135.8**	**17.1**	**39.5**	**4.2**	**3.3**	**8.7**	**162.0**
Average (EDPR + Iberdrola)				**27.1**	**17.2**	**51.1**	**3.6**	**1.8**	**9.0**	**73.9**

Source: Bloomberg

Exhibit 17 – Greenvolt's sources and uses of funds



Source: Greenvolt *(2021)*

Exhibit 18 – Consolidated Balance Sheet

End in Euros (€)	2018	2019	2020	1H21
ASSETS				
Property, plant and equipment	144 915 916 €	166 809 912 €	160 466 245 €	293 184 060 €
Right-of-use assets		5 737 867 €	5 433 575 €	63 008 777 €
Goodwill				150 868 770 €
Intangible assets	1 537 395 €	1 418 432 €	6 795 875 €	26 619 874 €
Other investments				488 €
Deferred tax assets	2 336 918 €	2 503 285 €	1 493 924 €	1 576 909 €
Total non-current assets	148 790 229 €	176 469 496 €	174 189 619 €	535 258 878 €
Inventories	1500765	3041661	1108	424
Trade receivables			19580	11357240
Assets associated with contracts with customers	8 018 339 €	7 365 847 €	7 476 825 €	17 730 599 €
Other receivables	2 478 325 €	988 262 €	11 578 €	434 582 €
Income tax receivable			387 €	28 152 €
Other tax assets	2 174 477 €	7 271 €	115 287 €	1 379 532 €
Other current assets	140 294 €	203 819 €	506 427 €	4 372 150 €
Derivative financial instruments				8 840 €
Cash and cash equivalents	6 707 457 €	16 107 267 €	14 100 666 €	46 005 679 €
Total current assets	21 019 657 €	27 714 127 €	22 231 858 €	81 317 198 €
Total assets	169 809 886 €	204 183 623 €	196 421 477 €	616 576 076 €
EQUITY AND LIABILITIES				
EQUITY				
Share capital	50 000 €	50 000 €	50 000 €	70 000 000 €
Legal reserve	10 000 €	10 000 €	10 000 €	10 000 €
Supplementary capital	13 150 000 €	13 150 000 €	9 583 819 €	
Other reserves and retained earnings	15 014 208 €	19 772 948 €	39 718 335 €	38 918 387 €
Consolidated net profit for the year attributable to Equity holders of the parent	5 202 616 €	6 795 387 €	17 934 337 €	1 051 699 €
Total equity attributable to Equity holders of the parent	33 426 824 €	39 778 335 €	67 296 491 €	109 980 086 €
Non-controlling interests		13 453 €	14 584 €	40 805 773 €
Total equity	33 426 824 €	39 791 788 €	67 311 075 €	150 785 859 €
LIABILITIES				
Bank loans		49 673 801 €		132 170 709 €
Other loans (such as bond loans)			48 463 769 €	47 227 238 €
Shareholder loans				39 974 360 €
Lease liabilities		6 088 752 €	5 836 636 €	63 320 076 €
Other payables			820 348 €	820 348 €
Other non-current liabilities	1 106 111 €	834 043 €	611 632 €	1 957 217 €
Deferred tax liabilities	3 048 177 €	2 844 621 €	3 258 306 €	3 126 890 €
Provisions	9 238 147 €	11 388 007 €	11 538 164 €	15 679 003 €
Derivative financial instruments				7 295 903 €
Total non-current liabilities	13 392 435 €	70 829 224 €	70 528 855 €	311 571 744 €
Bank loans		294 954 €		3 835 351 €
Other loans (such as bond loans)		50 000 000 €	41 552 483 €	117 791 416 €
Shareholder loans	111 313 870 €	24 596 424 €		
Lease liabilities		273 537 €	284 370 €	364 899 €
Trade payables	6 914 258 €	11 931 566 €	8 537 852 €	20 149 908 €
Other payables	3 462 979 €	1 954 692 €	3 939 205 €	4 266 980 €
Income tax payables	944 931 €	150 718 €	3 411 514 €	1 380 272 €
Other tax liabilities		4 012 039 €	565 732 €	3 476 886 €
Other current liabilities	354 589 €	348 681 €	290 391 €	1 866 120 €
Derivative financial instruments				1 086 641 €
Total current liabilities	122 990 627 €	93 562 611 €	58 581 547 €	154 218 473 €
Total liabilities	136 383 062 €	164 391 835 €	129 110 402 €	465 790 217 €
Total equity and liabilities	169 809 886 €	204 183 623 €	196 421 477 €	616 576 076 €

Source: Greenvolt *(2021)*

Exhibit 19 – Consolidated Income Statement

End in Euros (€)	2018	2019	1H20	2020	1H21
Revenue	50 537 103 €	64 283 355 €	46 398 944 €	89 877 619 €	41 852 888 €
Other income	3 313 368 €	851 448 €	111 206 €	222 437 €	111 465 €
Costs of sales	-19 870 281 €	-24 880 975 €	-21 490 355 €	-39 028 957 €	-18 229 810 €
External supplies and services	-13 517 660 €	-17 470 548 €	-9 230 151 €	-17 920 494 €	-12 239 167 €
Payroll expenses					-894 039 €
Provisions and impairment reversals /(losses) in current assets				41 €	
Other expenses	-364 828 €	-82 425 €	-98 945 €	-129 539 €	-23 082 €
EBITDA	20 097 702 €	22 700 855 €	15 690 699 €	33 021 107 €	10 578 255 €
Amortization and depreciation	-7 764 671 €	-10 623 246 €	-6 069 379 €	-12 148 457 €	-6 612 956 €
Impairment reversals /(losses) in non-current assets	-5 500 000 €			6 335 742 €	
EBIT	6 833 031 €	12 077 609 €	9 621 320 €	27 208 392 €	3 965 299 €
Financial expenses	-620 739 €	-1 872 466 €	-872 985 €	-1 791 223 €	-779 617 €
Financial income	443 €	480 €	4 €	67 €	17 €
Profit before income tax and CESE (EBT)	6 212 735 €	10 205 623 €	8 748 339 €	25 417 236 €	3 185 699 €
Income tax	-1 010 119 €	-2 616 493 €	-1 855 271 €	-6 412 734 €	-1 138 113 €
Energy sector extraordinary contribution (CESE)		-797 390 €	-1 078 934 €	-1 078 934 €	-1 016 000 €
Consolidated net profit for the year	5 202 616 €	6 791 740 €	5 814 134 €	17 925 568 €	1 031 586 €
Attributable to:					
Equity holders of the parent	5 202 616 €	6 795 387 €	5 814 372 €	17 934 337 €	1 051 699 €
Non-controlling interests		-3 647 €	-238 €	-8 769 €	-20 113 €
	5 202 616 €	6 791 740 €	5 814 134 €	17 925 568 €	1 031 586 €
Earnings per share					
Basic	520,00	680,00	581,44	1793,00	11,00
Diluted	520,00	680,00	581,44	1793,00	11,00

Source: Greenvolt *(2021)*

Exhibit 20 – Consolidated Cash Flow Statement

End in Euros (€)	2018	2019	1H20	2020	1H21
Receipts from customers	55 173 791 €	80 445 458 €	56 452 832 €	110 433 281 €	43 796 050 €
Payments to suppliers	-41 184 453 €	-47 361 213 €	-36 572 910 €	-67 434 325 €	-33 696 130 €
Payments to personnel					-757 379 €
Other receipts/(payments) relating to operating activities	-2 838 857 €	889 978 €	-6 497 305 €	-12 626 081 €	-3 807 574 €
Income tax (paid)/received	-1 970 454 €	-3 636 676 €		-1 729 279 €	-3 411 513 €
Cash flows generated by operating activities (1)	9 180 027 €	30 337 547 €	13 382 617 €	28 643 596 €	2 123 454 €
Receipts arising from:					
Interest and similar income	482 €	479 €	4 €	55 €	18 €
Payments relating to:					
Investments		-18 000 €		-821 779 €	-169 289 564 €
Property, plant and equipment	-43 395 327 €	-31 829 710 €	-768 422 €	-2 955 492 €	-2 146 969 €
Intangible assets					-20 001 370 €
Cash flows generated by investing activities (2)	-43 394 845 €	-31 847 231 €	-768 418 €	-3 777 216 €	-191 437 885 €
Receipts arising from:					
Loans obtained		180 000 000 €	135 000 000 €	400 000 000 €	291 006 060 €
Shareholders loans	81 500 000 €	5 000 000 €			39 974 360 €
Capital contributions				9 900 €	50 000 000 €
Capital contributions by non-controlling interests					40 817 606 €
Payments relating to:					
Interest and similar expenses	-778 769 €	-1 438 513 €	-907 473 €	-1 441 761 €	-2 542 740 €
Loans obtained	-52 944 375 €	-80 000 000 €	-140 000 000 €	-410 000 000 €	-189 605 501 €
Shareholders loans		-92 230 135 €		-14 913 000 €	
Lease liabilities		-421 858 €	-264 060 €	-528 120 €	-285 180 €
Other financing transactions					-8 145 161 €
Cash flows generated by financing activities (3)	27 776 856 €	10 909 494 €	-6 171 533 €	-26 872 981 €	221 219 444 €
Cash and cash equivalents at the beginning of the year	13 145 419 €	6 707 457 €	16 107 267 €	16 107 267 €	14 100 666 €
Net increase/(decrease) in cash and cash equivalents: (1)+(2)+(3)	**-6 437 962 €**	**9 399 810 €**	**6 442 666 €**	**-2 006 601 €**	**31 905 013 €**
Cash and cash equivalents at the end of the year	6 707 457 €	16 107 267 €	22 549 933 €	14 100 666 €	46 005 679 €

Source: Greenvolt *(2021)*

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TEACHING NOTE – Maria Madalena Montez

Case Synopsis

In early 2021, Altri, a Portuguese pulp and paper company, was planning to list Greenvolt, its renewable energy subsidiary, on Euronext Lisbon.

Greenvolt, a prominent player in Portugal's biomass energy sector, has recently expanded internationally by acquiring a biomass plant in the UK. This acquisition marked the company's first step towards becoming a diversified renewable energy leader.

To sustain Greenvolt's ambitious growth strategy, the CEO João Manso Neto believes that a public listing could provide the necessary funding. The proceeds from the IPO would be directed towards diversifying the company's revenue streams by expanding into the solar photovoltaic and wind energy sectors, positioning Greenvolt as a key player in the European renewable energy market.

Despite the optimism surrounding renewable energy, the potential listing raised concerns among shareholders. As an emerging company, Greenvolt's future hinges on its ability to execute its pipeline amidst a highly competitive and capital-intensive industry. The pressure was building… would the IPO be a big step taken too soon, or was Greenvolt prepared to take on the challenges and opportunities of going public?

Learning Objectives

This case delves into the complexities of a company's journey towards being publicly listed. The class can evaluate the company's financial performance to determine whether it is in a favourable financial position, while also performing comparisons with industry peers. Additionally, students can explore the motivations and benefits for a company to go public, as well as the several risks and challenges involved in the process. Finally, the class can interpret

and assess the announced project pipeline to estimate the company's future revenues, making reasonable assumptions where information is limited, as is often necessary in real-world scenarios.

Target Audience

This case is meant for courses at the BSc, MSc or MBA levels related to subjects such as Corporate Finance, Applied Corporate Finance, Entrepreneurial Finance and Venture Capital, Financial Statement Analysis, Corporate Valuation, Corporate Governance, Investments, or their similar topics.

Teaching Plan

This case study is designed for a one-day session in courses related to Corporate Finance. To ensure productive and insightful discussions, students should read and reflect on the entire case before class to prepare answers for the proposed assignment questions. Additionally, students are encouraged to conduct independent research on the topic. In class, the professor is advised to begin with a brief overview of Greenvolt's journey and the significance of its IPO decision, followed by discussions to deepen understanding of the case.

Assignment Questions

Question 1. Analyse Greenvolt's historical financial performance. Was the company in a favourable financial situation? Compare to the industry peers.

Question 2. What are the key benefits and motivations behind the IPO? What risks and challenges does the company face by going public?

Question 3. How will Greenvolt's project pipeline impact the company's future revenues? Consider potential challenges and provide revenue estimations.

Question 1.

The historical financial performance of a company is crucial in assessing the success of an IPO (Tamen 2022). Greenvolt's financial performance was evaluated, based on data from 2018 to 2020, through several analysis including a profitability, cash flow, liquidity and capital structure analysis. Although information is available for the first half of 2021, it is important to note that comparable data for the first half of 2020 was not disclosed, limiting year-over-year analysis. For peer comparison purposes, the analysis focuses on the year 2020 and includes ten prominent companies in the renewable energy sector*: EDP Renováveis SA, Iberdrola SA, Solaria Energía y Medio Ambiente, ERG SpA, Drax Group PLC, Voltalia SA, Alerion Clean Power SpA, Audax Renovables SA, PNE AG, Arendals Fossekompani ASA, Electricité de Strasbourg SA*. These peers provide relevant benchmarks for assessing Greenvolt's positioning and performance.

Profitability Analysis

Greenvolt's revenue demonstrated a remarkable upward trajectory, growing from EUR 50.5m in 2018 to EUR 89.9m in 2020 representing an extremely positive historical CAGR of 33%. This growth, entirely driven by the Biomass unit, was more accentuated from 2019 to 2020, with close to 40% increase (**Graph 1**).

The profitability ratios from operations evaluate the company's ability to generate profit from each sale it makes. The higher the profit for each sale, the healthier its operations will be and, eventually, the more will be available to secure its long-term obligations and the higher the return generated by the company (Tamen 2022). Despite the strong revenue growth, Greenvolt's costs of goods sold escalated making the Gross Margin decline from 61% to 57% and the EBITDA Margin decrease from 40% to 37%, between 2018 and 2020 (**Graph 2**). On the other hand, through these years, Greenvolt revealed significant increases in EBIT Margin

(from 13.5% to 30.3%, improved by 17%), EBT Margin (from 12.3% to 28.3%, improved by 16%) and Net Margin (from 10.3% to 19.9%, improved by 10%) – **Graph 3.** These improvements were driven by the company's ability to grow revenues at a faster rate than overall costs, signalling improved efficiency and better cost management. EBIT and EBT figures are so close to each other, suggesting that interest gains or losses had minimal impact on Greenvolt's operations, possibly due to the past low reliance on debt financing alongside modest levels of debt issued in subsequent years.

Regarding investment efficiency, Greenvolt reported a growing Return on Assets (ROA), from 4% in 2018 to 14% in 2020, and an increasing Assets Turnover, from 30% up to 46%, demonstrating an improved efficiency in managing its resources and assets (**Graph 4**).

Moreover, with an outstanding performance, Greenvolt increased its Return on Equity (ROE) by 11%, going from 15.6% in 2018 to 26.6% in 2020, showing a higher return for investors, which in turn will facilitate the firm chances to raise capital when needed (**Graph 5**). ROE is particularly attractive to potential equity investors, as it enables a quick comparison of the returns generated by the company relative to other investment opportunities.

Cash Flow Management Analysis

The Cash Conversion Cycle (CCC) measures the number of days that a company takes on average, to perform its regular trade cycle. It is calculated by summing the Average Holding Period (AHP) with the Average Collection Period (ACP) and subtracting the Average Payable Period (APP). From 2018 to 2020, Greenvolt reported a negative CCC, at -145 days, -153 days, and -117 days, respectively, suggesting that suppliers are essentially financing the operational activity of the company (**Graph 6**). The AHP has abruptly decreased to zero days in 2020 (28 days in 2018 and 45 days in 2019) as Greenvolt sold nearly all its inventory and decided to be fully supplied by Altri's biomass waste. Similarly, the ACP reached zero days in 2020 due to a

progressively reduction in receivables alongside an increase in revenues. The APP increased from 191 days in 2018 to 204 days in 2019 meaning the payables outgrew the COGS, yet the opposite happened in 2020, leading to an APP of 117 days. Briefly, on average, in 2020, inventories remained less days in the company, clients paid Greenvolt sooner, and Greenvolt settled with its suppliers sooner (**Table 1**).

Greenvolt's Net Working Capital (NWC), computed as [(Current Assets – Cash) – (Current Liabilities – Current Debt)], was EUR 2.6m in 2018, EUR -6.8m in 2019 and EUR -8.6m in 2020 as illustrated in **Graph 7**. This transitioning from a positive value to a negative one was due to not only decrease in non-cash current assets but also increasing cash and cash equivalents. However, the NWC's above formula will not be used for peer comparison, as each company might include different cash and debt items within its captions. Instead, the analysis focuses on a simplified Operating Net Working Capital (ONWC: Receivables + Inventory – Payables), providing a comparable measure of operational liquidity. Greenvolt reported a negative ONWC, going from EUR -6m in 2018 to EUR -12m in 2020 (**Graph 8**), and reflecting the previously mentioned reduction in inventory and receivables. Among its peers, companies are evenly divided between those with positive and negative ONWC (**Graph 9**), revealing once again the varying liquidity management strategies across the industry.

Liquidity Analysis

Greenvolt was able to more than double its Current and Quick ratios from 2018 to 2020 (**Graph 10**). As inventory shrank through the years, these ratios grew together, from 0.16 in 2018 to 0.38 in 2020, revealing an average increase of 22 percentage points. However, despite these improvements, both ratios remain critically below one, failing to meet the rule of minimum short-term financial equilibrium (Current Ratio > 1) (Tamen 2022). This may indicate cash flow issues arising soon and the need to either reduce the short-term obligations or increase

the current assets. Similarly, the Cash Ratio also showed a significant increase, from 0.05 in 2018 to 0.24 in 2020, yet standing in a relatively low value (**Graph 10**). With plenty of room to improve, Greenvolt could possibly have more cash available in the balance sheet. When compared to industry peers, Greenvolt's three liquidity ratios set among the lowest values (*Bloomberg*), demonstrating once again a weak liquidity position (**Graph 11, Graph 12 and Graph 13**).

Capital Structure Analysis

By including a short-term ratio analysis, it is possible to inquire whether the firm is able to meet its current obligations and have a sustainable amount of leverage to finance its activity (Tamen 2022). In 2018, Greenvolt reported a negative net debt, as the company had neither current or non-current loans nor lease liabilities, implying both a negative Net Debt-to-EBITDA (-0.33) and Net Debt-to-Equity (-0.20) ratios. However, this situation reversed in the following years as Greenvolt issued new loans, with Net Debt-to-EBITDA ratio going from 2.27 in 2019 to 1.22 in 2020 and Net Debt-to-Equity (D/E) ratio from 3.97 in 2019 to 2.48 in 2020 (**Graph 14**). These decrease in both ratios, due to a smaller amount of debt and an increase in Equity and EBITDA, suggest a positive trajectory towards covering all incurred debt in the event of a business downturn, yet the values remain too high indicating significant reliance on debt financing reflecting, the capital-intensive nature of the green sector. When comparing among peers (**Graph 15**), Greenvolt has a relatively high D/E ratio possibility due to being a "newborn" company where substantial upfront investments are required for infrastructures and projects, which may yet be mature and returned its potential.

On the other hand, trying to assess a long-term analysis, the Solvency and Financial Autonomy ratios are often important for banks and creditors to evaluate the company's ability to pay back, as well as the level of independence from creditors (Tamen 2022). Greenvolt was

able to more than double its Solvency Ratio, from 0.25 in 2018 and 2019 to 0.52 in 2020 (**Graph 16**), resulting from an increase in equity (+69%) and decrease in liabilities (-21%). The company was also able to improve its Financial Autonomy Ratio, from 0.20 in 2018 to 0.34 in 2020 (**Graph 17**), although the assets have increased 16% in this period. When comparing the company, Greenvolt is standing approximately at the peers' ratios average, indicating a balanced financial position without raising significant concerns (**Graph 18 and 19**).

Moreover, Greenvolt's D/(D+E) ratio – where debt means net debt – went from -25% in 2018, due to negative net debt, to 69% in 2019, as a result of new debt issued. From 2019 to 2020, the company was able to decrease the D/V ratio by 14.5 percentage points, from 69.4% in 2019 to 54.9% in 2020, due to a debt decrease and equity increase (Graph 19). When compared to its industry peers (**Graph 20**), Greenvolt's D/(D+E) ratio reflects a moderate level of leverage yet still a high reliance on debt, suggesting the company adopts a balanced capital structure, leveraging debt for growth.

Greenvolt's Credit Rating

The Interest Coverage Ratio (ICR) is an important metric usually used to assess the company's ability to meet its interest obligations (Dothan 2006) and has direct impact on the company's credit rating. Despite the gradually increasing EBIT, Greenvolt observed some fluctuation in the ICR due to an upward followed by a downward path of interest expenses. From 2018 to 2020, the ICR declined from 11 to 6.5 before rising sharply to 31.2, reflecting Greenvolt's strong ability to meet the relatively small interest payments with the EBIT. For non-financial service firms with a market capitalization under $5 billion, an ICR of this level is typically associated with an credit rating of Aaa/AAA (Damodaran 2024). To better estimate Greenvolt's credit rating, alternative methodologies were considered. A comparison with industry peers' credit rating was not successful as only two out of the ten peers were rated by

Moody's, *EDP Renovaveis SA* and *Iberdrola SA*, with Baa2 and Baa1, respectively. Afterward, a Z''-score model estimation, including non-manufacturing and private firms (Demirci 2024), assigned to Greenvolt a credit rating of D (**Figure 1**). At last, a European credit rating agency, assigned to Greenvolt a long-term credit rating of BBB- and a Stable outlook (EthiFinance 2023). After considering the different strategies and given *EthiFinance*'s credibility, the BBB- credit rating will be assumed and assigned to Greenvolt for further analysis.

Discussion

In conclusion, Greenvolt demonstrates a generally favourable financial position, with improvements across multiple key metrics, The company's ability to manage resources control costs and maintain a balanced capital structure, suggests a strong foundation to meet long-term obligations and pursue future growth opportunities. Despite being a young player in the renewable energy sector, Greenvolt's financial health and strategic performance, enhance Greenvolt's attractiveness and readiness for pursuing a successful IPO.

Question 2.

Greenvolt's IPO faces several risks and challenges, particularly due to the uncertainty of whether an active and sustained trading market for its shares will develop and be maintained (Greenvolt 2021). As the company has no prior public listing history, the initial share price may not reflect the true market value, and factors beyond Greenvolt's control – such as market conditions, political developments, economic shifts, public debt concerns and investor sentiment – could negatively affect the share price, regardless of the company's performance. Additionally, significant announcements, mergers, new products or financial performance updates from Greenvolt or its competitors may contribute to share price volatility (EY 2009).

The costs of going public vary widely, influenced by factors such as IPO complexity, company size and readiness to operate publicly. Therefore, all IPOs demand significant time

and resources, with underwriting fees typically representing the largest direct cost, ranging from 4.1% to 7.0% of the gross IPO proceeds (PwC 2020).

Furthermore, since current shareholders waived their pre-emption rights for the initial shares, failing to subscribe as qualified investors could lead to immediate dilution of their holdings (Greenvolt 2021).

Once public, Greenvolt will face increased scrutiny and accountability, including strict regulatory compliance, financial reporting and corporate governance standards (EY 2009). The expiration of the lock-up period could lead to volatility and a downward pressure on share price as previously restricted shares enter the market (Keasler 2001). Additionally, Greenvolt's market price of shares being in Euros (EUR) may expose investors dealing in other currencies to exchange rate risks (Greenvolt 2021).

In the worst-case scenario, unfavourable market conditions, poor corporate governance and lack of preparation could lead to IPO withdrawal – with rates of 12% in Europe and 30% in the U.S. between 2001 and 2015 (Helbing, Lucey, and Vigne 2018) – forcing the company to remain private and consider alternative financing options, such as, debt instruments, private equity or strategic alliances (EY 2009). Post-IPO failure risk is also significant, influenced by financial leverage, pre-IPO performance, underwriter prestige, audit quality, market conditions, firm age and IPO offer price (Demers e Joos 2007).

On the other hand, an IPO offers strategic benefits, including access to capital from a large pool of external investors to repay debt and/or support growth (Nelson 2003). CFOs identify increased visibility, prestige, growth funding and financial flexibility as the main benefits of going public (Brau and Fawcett 2006). This move aligns with Altri Group's strategy to consolidate its leadership in Portugal and expand internationally in the renewable energy market (Greenvolt 2021). By going public, Greenvolt would achieve greater autonomy from

Altri, establishing an independent capital structure and unlocking shareholder value through increased visibility and credibility (EY 2009). By turn, the attracted analysts' attention motivates smaller and younger firms more than their counterparts (Brau e Fawcett 2006), and, in line with this, public shares can also be used for employee compensation plans, helping to attract and retain talent (EY 2009).

Despite IPO costs and fees, a survey showed that CFOs generally do not view them as an obstacle to going public (Brau e Fawcett 2006). Proceeds from the IPO could give managers the flexibility to shift focus from debt repayment to long-term value creation, such as expansion, innovation and new product development (Latham e Braun 2010). This supports Greenvolt's ambition to operate 3.6 GW of renewable energy capacity across six primary markets – Portugal, Poland, Greece, Italy, France and Romania – by 2025.

Lastly, the IPO could also position Greenvolt for future mergers and acquisitions, enhancing its competitiveness in the European market. This aligns with IPO theories that identity mergers and acquisitions as key benefits (Bancel e Mittoo 2009) and supports Greenvolt's strategy to pursue multiple acquisition opportunities.

Discussion

An IPO could provide Greenvolt with the necessary capital to fuel its growth strategy and strengthen its position in the renewable energy market. The potential benefits, such as increased autonomy, market visibility and access to a diverse investor base may outweigh the associated risks. Therefore, it is justifiable to advocate for the firm's decision to go public. However, this is a complex decision and should carefully consider factors like market timing, investor sentiment and alternative financing methods to ensure alignment with Greenvolt's long-term strategy.

Question 3.

Greenvolt's future revenue was projected into two distinct segments – Biomass (covering Portugal and UK plants) and Other Projects (covering Solar PV and Wind projects). As most of Greenvolt's contract lengths are between 10 and 20 years (Greenvolt 2021), revenues were forecasted semi-annually until 2040. Additionally, the extensive experience and proven track record of Greenvolt's management team, led by the CEO João Manso Neto, reinforce confidence in the feasibility of the announced pipeline, for 2H21 to 2025, establishing a solid foundation for the forecasts.

Biomass

Portugal (PT): Until the first semester of 2021 (1H21), the biomass segment consisted solely of Greenvolt's Portuguese unit, which comprises five biomass power plants with a total installed capacity of 98 MW. These facilities generated revenues of EUR 50.5m in 2018, EUR 64.3m in 2019, EUR 86.9m in 2020 and EUR 41.9m in 1H21. For each period, was derived an average price per MWh, given actual generation levels of 419 GWh in 2018, 540 GWh in 2019, 733 GWh in 2020 and 352 GWh in 1H21.

To forecast the revenues, a two-part methodology was applied: up to 2025, projections were based on Greenvolt's pipeline, afterward, a separate approach was used from 2026 to 2040.

By analysing the 2H21-2025 pipeline, a 5MW increase in the Portuguese Constância power plant is planned, assumed to be concluded by the end of 2021 and effective at the beginning of 2022. From 2H21 to 2H25, the expected actual generation of the five plants was calculated using a weighted average availability of 94% (from Exhibit 5) and an annual load factor of 86% (based on 730 GWh of net production over 24 hours for 360 days). To obtain an average price (EUR/MWh), it was assumed an annual inflation rate of 2% on which the

historical calculated average price will grow (Greenvolt 2021), and consecutively, the revenues for this period were calculated. In the light of these projections, from 2H21 to 2H25 the average annual revenue growth was approximately 2.0%.

From 2026 to 2030, due to Greenvolt's mature experience in this segment, revenues were assumed to grow at the industry CAGR (2020-2030) of 2% in Portugal (Greenvolt 2021) (European Commission 2019). This assumption reflects the company's intention to retain these assets on the balance sheet rather than sell them, with a continued focus on expanding operations in line with industry trends (Greenvolt 2021). In the following period, until 2040, a conservative 2% growth rate was similarly assumed, aligning with the expected inflation to avoid overestimating projections.

United Kingdom (UK): The Tilbury unit, a 42 MW capacity plant, will have the respective revenues included in the financial statements from the second semester of 2021 onward. With no historical data available from Greenvolt to inform forecasts, a similar approach as the Portuguese unit was followed.

The expected actual generation was determined for each semester, assuming a 91% availability (according to Greenvolt's FY20 data) and an annual load factor of 92% (based on 330 GWh of net production over 24 hours for 360 days). However, the UK revenues estimation will differ as this market describes two main income sources: baseload wholesale revenue – generated by selling electricity at wholesale market prices, which are subject to market fluctuations – and Renewables Obligation Certificates (ROCs) – a scheme to incentivize biomass energy generation by awarding certificates to producers for each megawatt-hour (MWh) of renewable electricity generated. These certificates are indexed to inflation via the Retail Prices Index (RPI) and can be sold to fossil fuel electricity generators, creating an additional revenue stream and encouraging these producers to meet renewable sourcing

requirements. Considering this, the UK power plant was linked to a 1.4 ROCs (Greenvolt 2021) for every MWh of electricity produced (average of 330 GWh annually) and was further used the buy-out price per ROC published by the United Kingdom's Office of Gas and Electricity Markets (OFGEM 2021), which grows at the annual inflation rate of 2%. Regarding the wholesale market prices, the futures price for renewables in the UK (Bloomberg) were considered, assuming it to be a flat price, meaning no variation. Consequently, from 2H21 to 2H25, the UK revenues were calculated as the sum of the baseload wholesale revenues and the ROCs sales, applying a EUR/GBP conversion rate of 0.85 (European Central Bank 2024). On this basis, the revenues from the Biomass UK unit faced an average annual growth of 1.5%.

From 2026 onwards, similarly to the Portuguese receipts, The UK revenues were assumed to grow at the industry CAGR (2020-2050) of 1.4% in Europe, until 2040 (Greenvolt 2021) (IRENA – International Renewable Energy Agency 2019). Since this percentage represents one of the more conservative growth projections, it was chosen over the inflation rate to avoid overestimating future revenues.

The total segment revenue combines the two different units reflecting an average annual growth of 12.7% from 2021 to 2025 and around 1.8% from 2026 until 2040 (**Table 2 and 3**).

Other projects

For this segment, comprising Solar PV and Wind, similarly to the Biomass UK unit, there are no historical revenues from Greenvolt to serve as a baseline. Thus, estimates are entirely pipeline-driven, based on Greenvolt's 2H21-2025 pipeline and projections for Solar PV and Wind units (**Table 4**).

By analysing the pipelines, it becomes clear the total addition of 3,611 MWs are allocated as 909 MWs retained on Greenvolt's balance sheet for current use, 2,102 MWs in Ready-to-Build (RTB) projects, and 600 MWs in "Portugal PV" assumed to be Solar PV

projects in Portugal. By turn, this 3.6 GW expansion is distributed as 2,535 MWs in Solar PV and 1,076 MWs in Wind. Additionally, the company is expecting to sell 75% of the projects at RTB phase, while keeping 25% of the total assets on its balance sheet (Greenvolt 2021).

Solar Photovoltaic (Solar PV): As Greenvolt's stated strategy is to sell the majority of the projects at RTB phase and retain only around 25% on the balance sheet, the Portugal PV (600 MWs in Solar PV projects in Portugal) were assumed to be sold simultaneously with the RTB projects (2,102 MWs).

Accordingly, the unit revenues will be divided into two batches: one to keep (25%) and one to sell (75%). The MWs capacity additions were evenly distributed across semesters and according to the subdivided annual MWs in **Table 4**.

Regarding the presumed MWs to sell (RTB + Portugal PV), it was calculated an average selling price – from an average project exit value per MW – of EUR 97,500 per MW, and consecutively, the respective receipts.

With respect to the 25% retained projects, which is cumulative as the MWs are carried over from one semester to another, an annual load factor of 25% was derived, reflecting the system's effective operation during approximately 6 Peak Sun Hours (PSH) per day (from 9 a.m. to 15 p.m.) out of a total of 24 hours (Javidnia 2024). Moreover, by assuming a 94% availability and a flat futures price for renewables in Germany (Bloomberg), the remaining part of the revenues were estimated.

For each semester, the total revenue of the Solar PV unit is the sum of both batches: the one to keep (25%) and the one to sell (75%).

From 2026 onward, proceeds from RTB and Portugal PV were assumed to cease, as these assets will have been fully sold, leaving only the projects retained on the Balance Sheet.

During this period, due to Greenvolt' lack of prior experience in this segment, no new projects or the industry growth were assumed, leading to stable and constant forecasted revenues.

Wind: Likewise the Solar PV projects, the Wind unit revenues will be divided into two components: one to keep (25%) and one to sell (75%), and the MWs capacity additions to this unit were evenly distributed across semesters and according to the subdivided annual MWs in **Table 4**.

Regarding the presumed MWs from RTB projects to sell, it was calculated an average selling price – from an average project exit value per MW (Greenvolt 2021) – of EUR 252,500 per MW, and consecutively, the respective receipts.

With respect to the keeping stream (25%), which is cumulative as the MWs are carried over from one semester to another, an annual load factor of 30% was assumed, reflecting the system's effective operation during approximately 2,600 full load hours per year out of a total of 8,760 hours. Moreover, by assuming a 94% availability and a flat futures price for renewables in Germany (Bloomberg), the remaining part of the revenues were estimated.

For each semester, the total revenue of the Wind unit is the sum of the respective components.

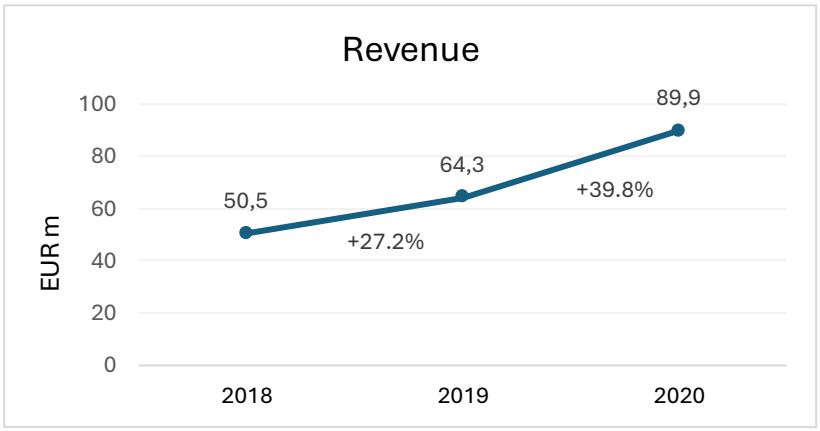
From 2026 onward, proceeds from RTB were assumed to cease, as these assets will have been fully sold, leaving only the projects retained on the Balance Sheet. During this period, due to Greenvolt' lack of prior experience in this segment, no new projects or the industry growth were assumed, leading to stable and constant forecasted revenues.

The total segment revenue combines the two different units reflecting an average annual growth of 115% from 2021 to 2025 (**Table 5 and Table 6**).

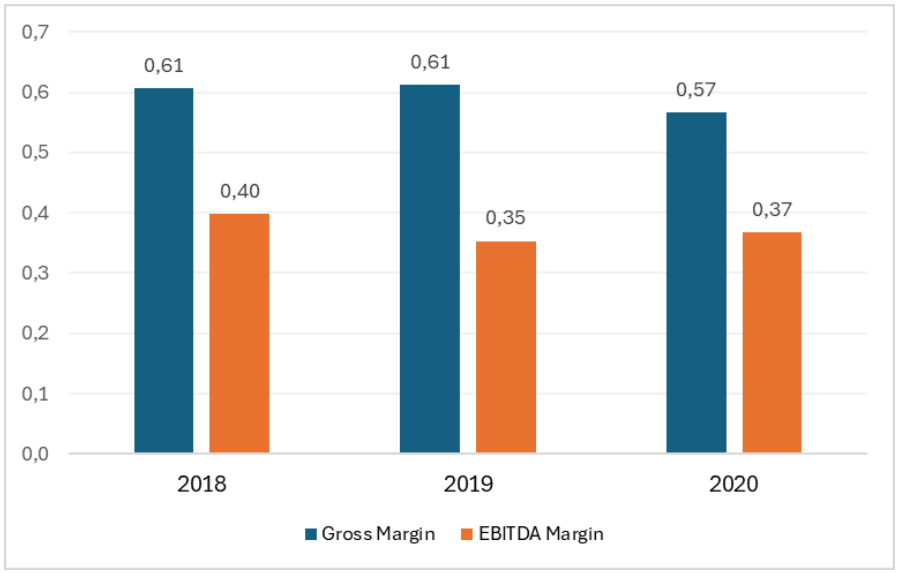
EXHIBITS LIST

EXHIBITS

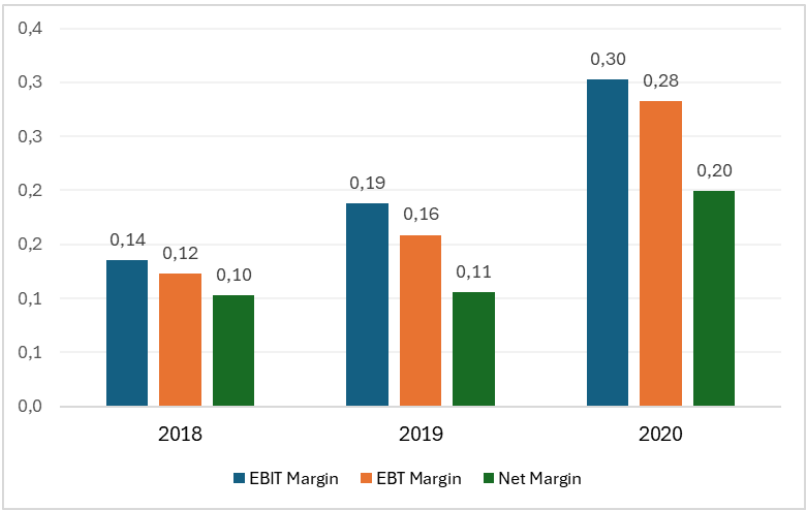
Graph 1 – Greenvolt's Revenue Growth



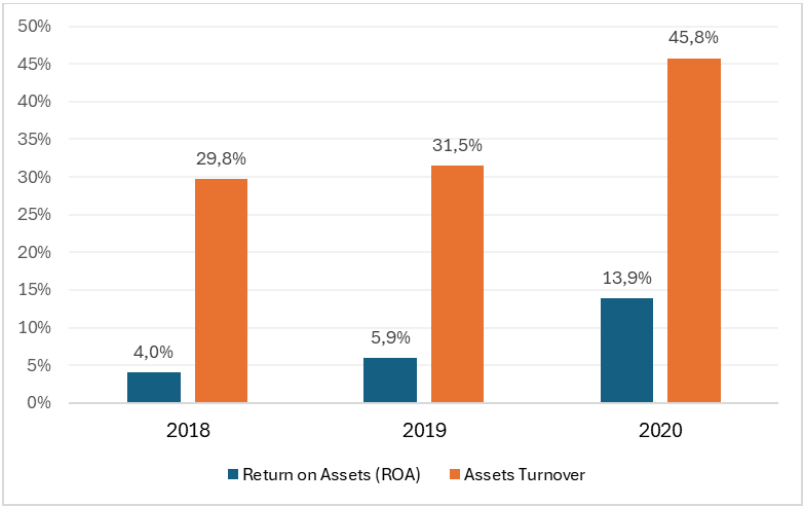
Graph 2 – Greenvolt's Gross and EBITDA margins



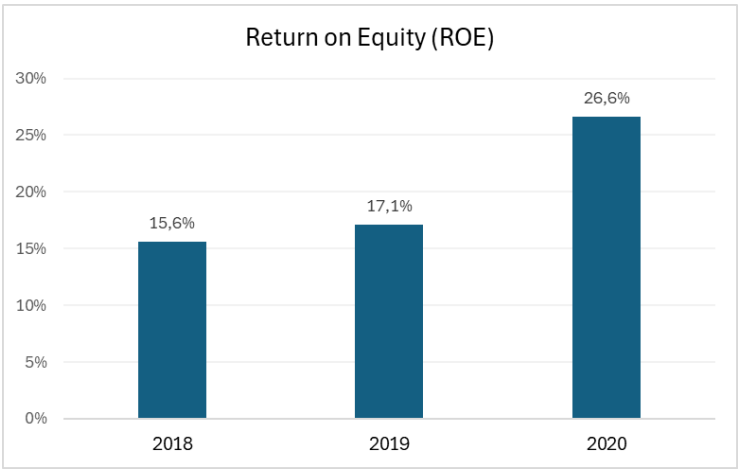
Graph 3 – Greenvolt's EBIT, EBT and Net margins



Graph 4 – Greenvolt's Return on Assets and Assets Turnover



Graph 5 – Greenvolt's Return on Equity



Graph 6 – Greenvolt's Cash Conversion Cycle

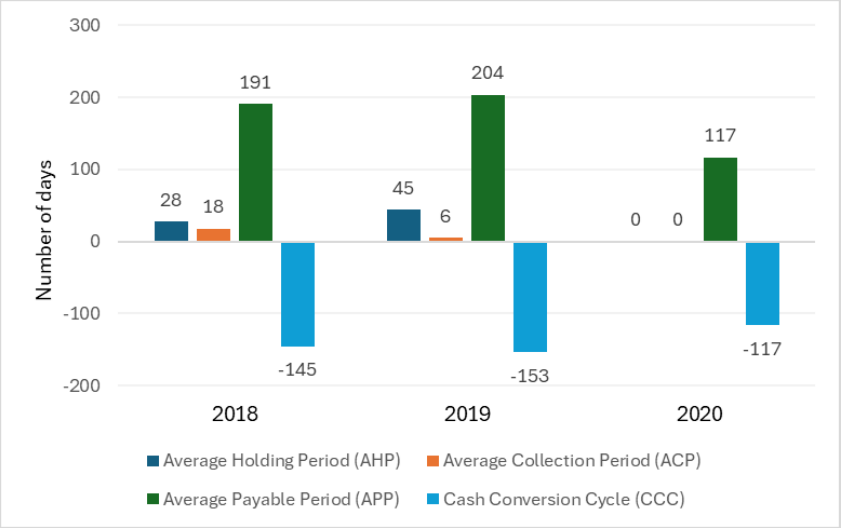
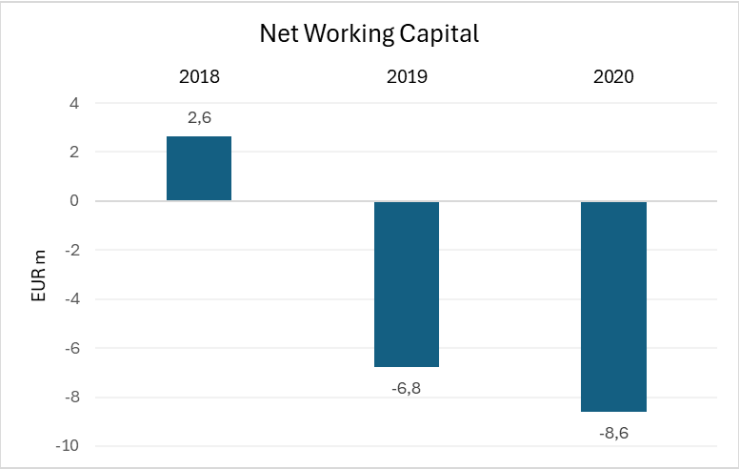


Table 1 – Greenvolt's Cash Flow Management Ratios

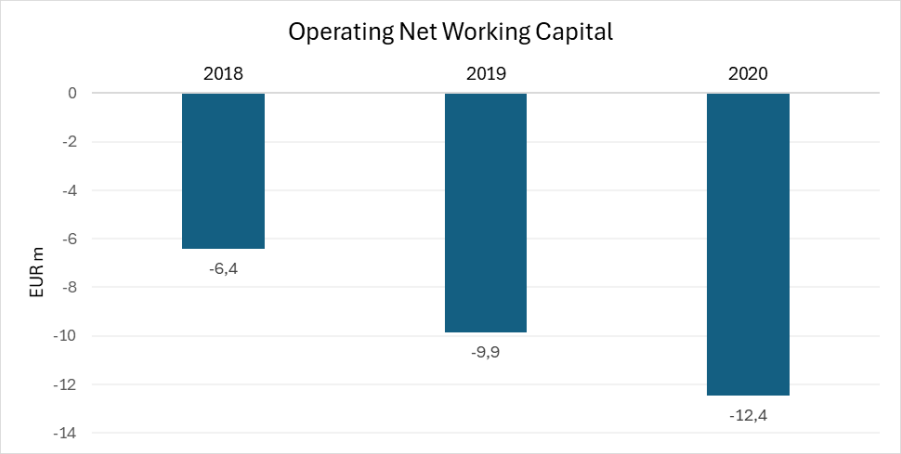
Cash Flow Management Ratios			
Inventory	1 500 765 €	3 041 661 €	1 108 €
COGS	19 870 281 €	24 880 975 €	39 028 957 €
Average Holding Period (AHP)	**28**	**45**	**0**
Accounts Receivable	2 478 325 €	988 262 €	31 158 €
Revenue	50 537 103 €	64 283 355 €	89 877 619 €
Average Collection Period (ACP)	**18**	**6**	**0**
Accounts Payable	10 377 237 €	13 886 258 €	12 477 057 €
COGS	19 870 281 €	24 880 975 €	39 028 957 €
Average Payable Period (APP)	**191**	**204**	**117**
Cash Conversion Cycle (CCC)	**-145**	**-153**	**-117**

Inventories remain in the company	Longer	Less
Clients are paying Greenvolt	Sooner	Sooner
Greenvolt is settling with its suppliers	Later	Sooner

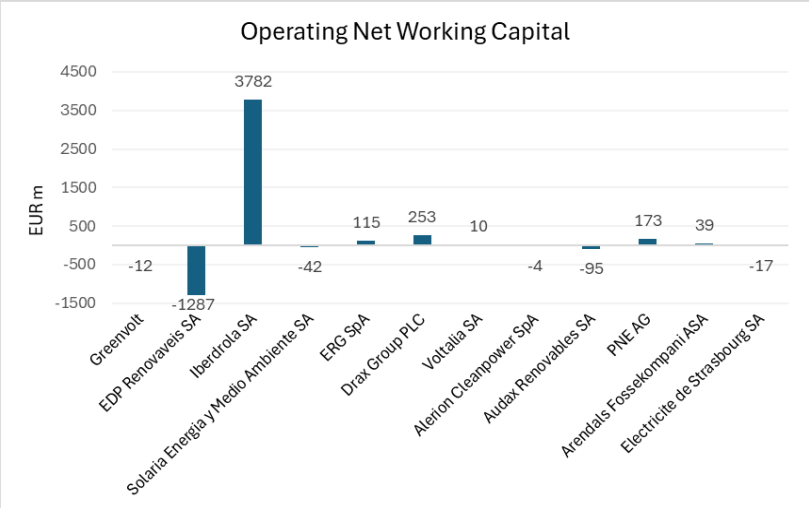
Graph 7 – Greenvolt's Net Working Capital (NWC)



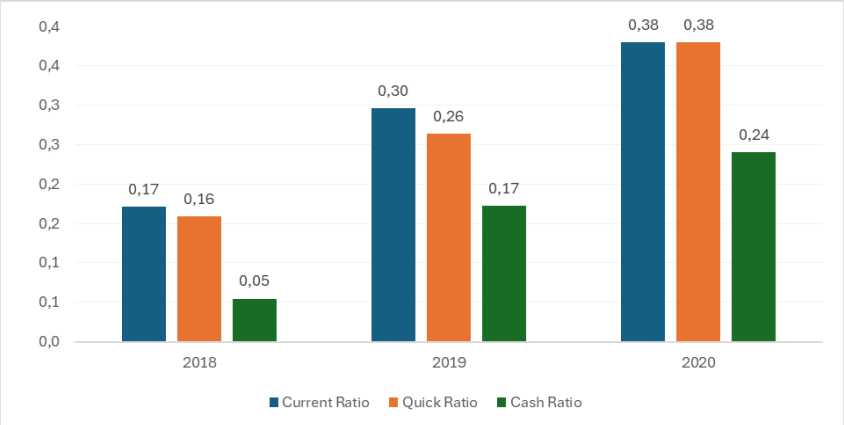
Graph 8 – Greenvolt's Operating Net Working Capital (ONWC)



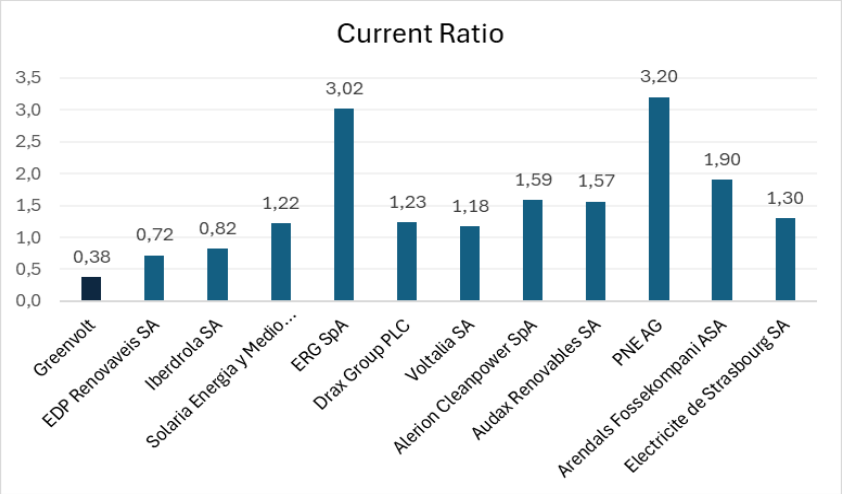
Graph 9 – Greenvolt and peers' Operating Net Working Capital in 2020



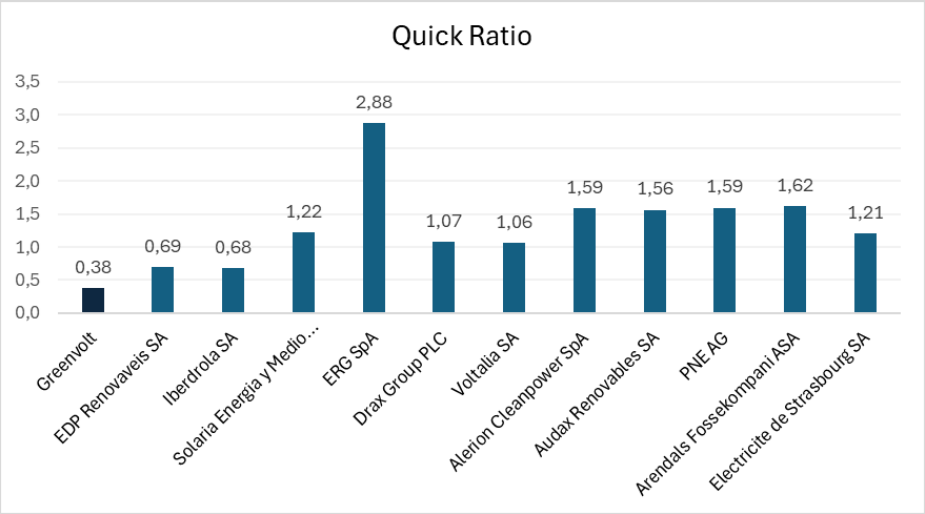
Graph 10 – Greenvolt's Current, Quick and Cash ratios



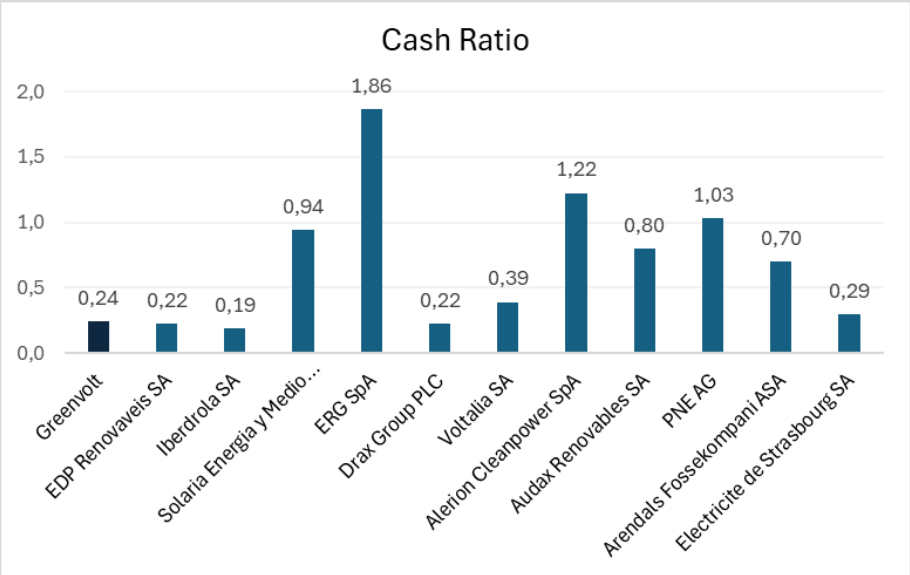
Graph 11– Greenvolt and peers' Current Ratio in 2020



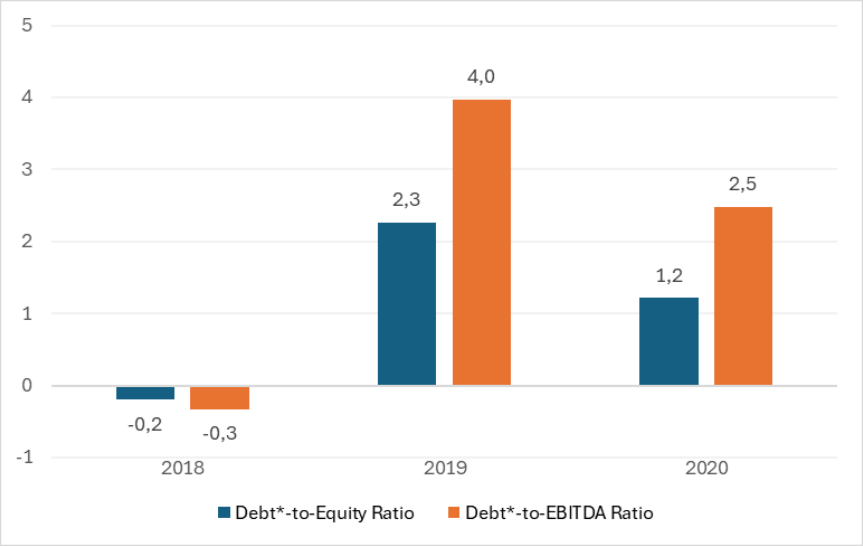
Graph 12 – Greenvolt and peers' Quick Ratio in 2020



Graph 13 – Greenvolt and peers' Cash Ratio in 2020

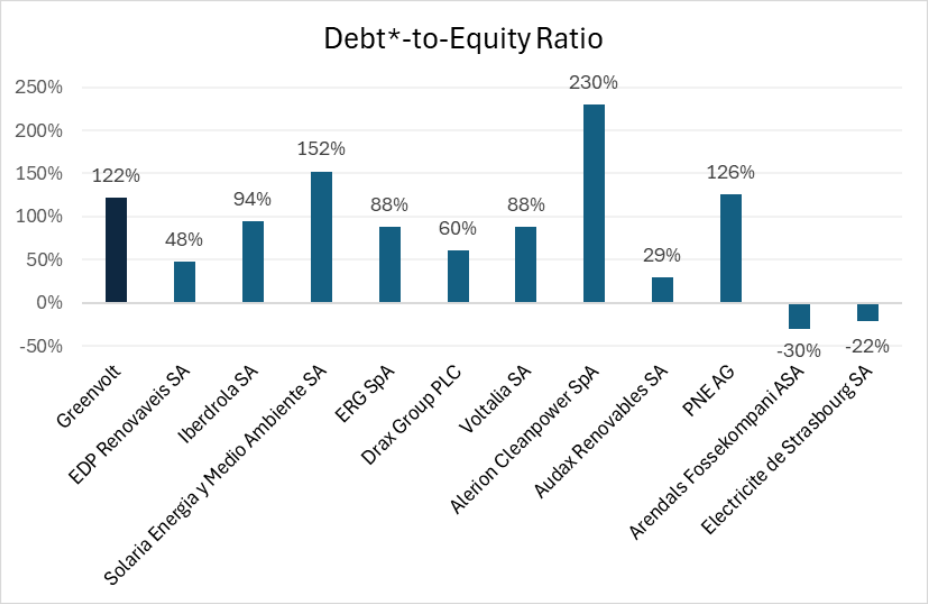


Graph 14 – Greenvolt's Debt*-to-Equity and Debt*-to-EBITDA ratios



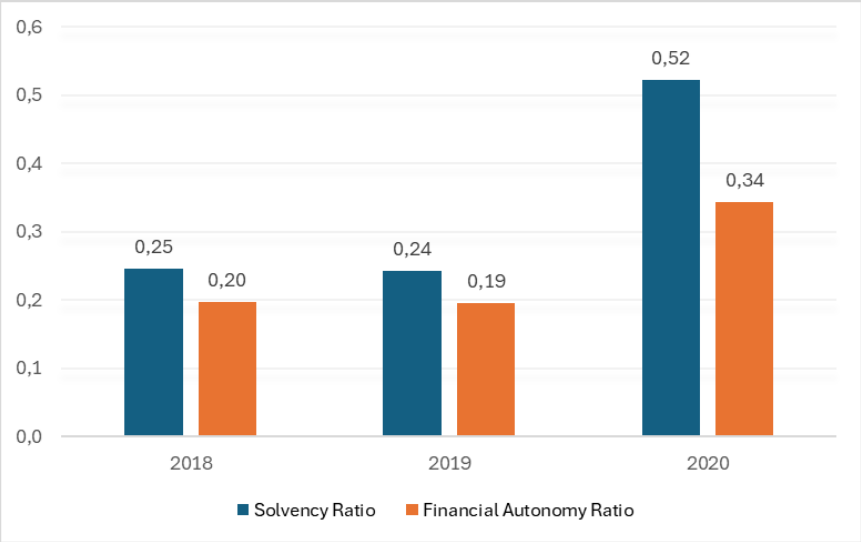
*Net Debt

Graph 15 – Greenvolt and peers' Debt*-to-Equity Ratio in 2020

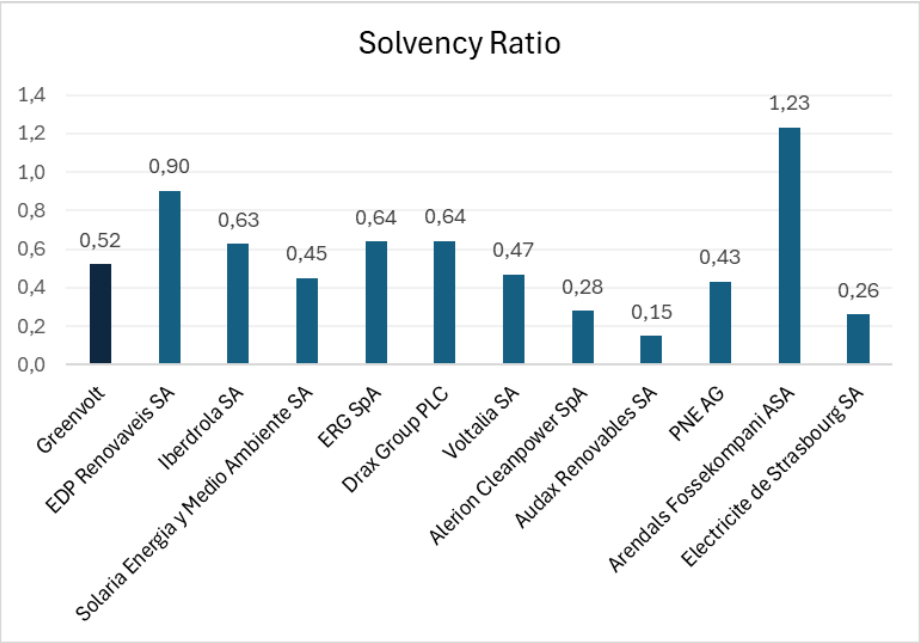


*Net Debt

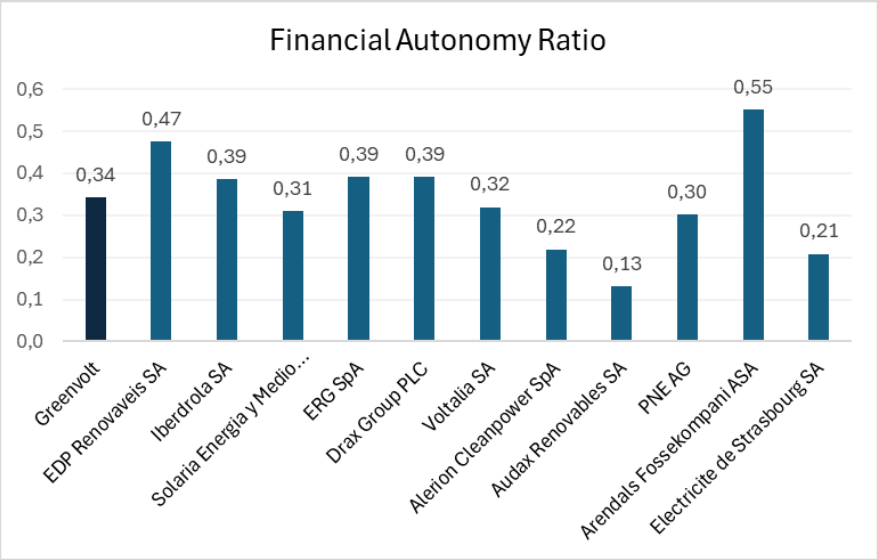
Graph 16 – Greenvolt's Solvency and Financial Autonomy ratios



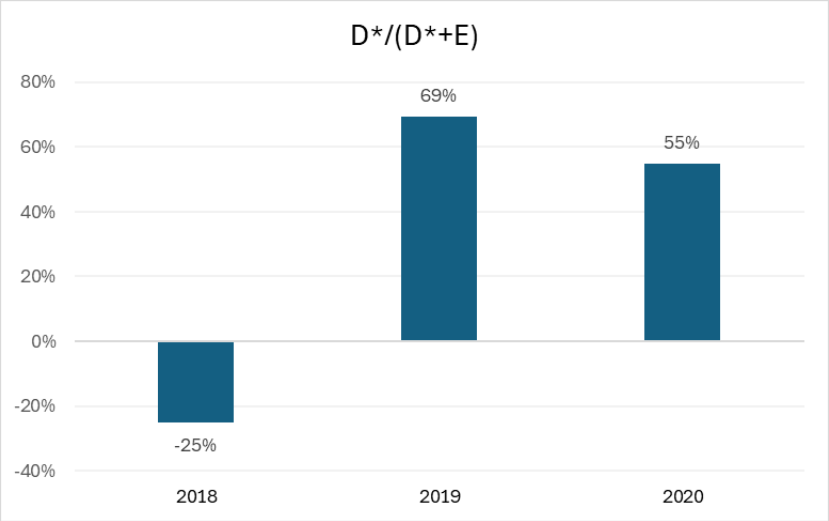
Graph 17 – Greenvolt and peers' Solvency Ratio in 2020



Graph 18 – Greenvolt and peers' Financial Autonomy Ratio in 2020



Graph 19 – Greenvolt's Debt*-to-Value Ratio



Graph 20 – Greenvolt and peers' Debt*-to-Value Ratio in 2020

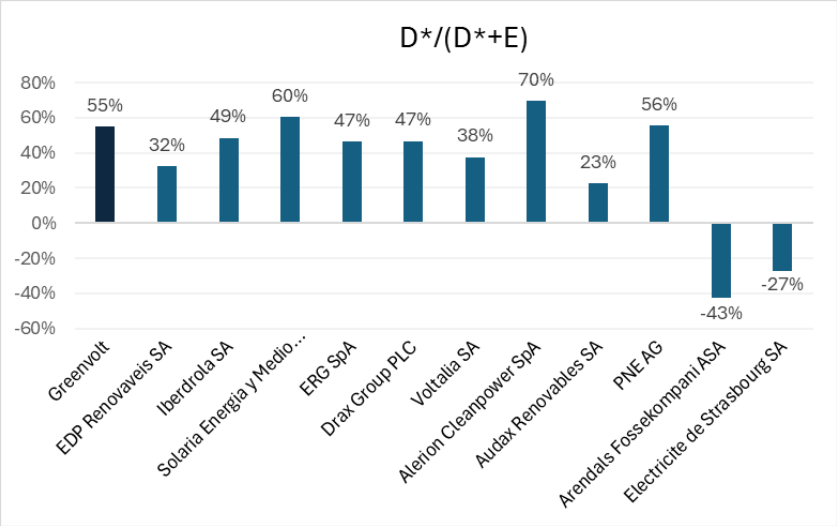


Figure 1 – Z''-score model

A more universal model including non-manufacturing and private firms

Z" = 6.56X1 + 3.26X2 + 6.72X3 + 1.05X4

Z" > 2.60
1.1 < Z" < 2.60
Z" < 1.1

	2020
Current Assets	22 231 858
Current Liabilities	58 581 547
Total Assets	196 421 477
X1	**-0,185**
Retained Earnings	39 718 335
Total Assets	196 421 477
X2	**0,202**
EBIT	27 208 392
Total Assets	196 421 477
X3	**0,139**
Book Value of Equity	67 311 075
Total Liabilities	129 110 402
X4	**0,521**

Z"	0,92
Credit Rating	D

	Rating	*Z" - Score Threshold*	*Rating*	*Z" - Score Threshold*	
Safe Area	AAA	>8.15	BB+	5.65	Grey area
	AA+	8.15	BB	5.25	
	AA	7.60	BB-	4.95	
	AA-	7.30	B+	4.75	
	A+	7.00	B	4.40	Distress Area
	A	6.85	B-	4.15	
	A-	6.65	CCC+	3.75	
	BBB+	6.40	CCC+	3.20	
	BBB+	6.25	CCC-	2.50	
	BBB-	5.85	D	<1.75	

Source: Altman and Hotchkiss (2006, page, 314)

Table 2 – Biomass Forecasted Revenue (until 2025)

Biomass		1H18a	2H18a	1H19a	2H19a	1H20a	2H20a	1H21a	2H21	1H22	2H22	1H23	2H23	1H24	2H24	1H25	2H25
PORTUGAL																	
MW	Power Generation Capacity	98	98	98	98	98	98	98	98	103	103	103	103	103	103	103	103
	Availability	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%
MW	Available Power Generation	92	92	92	92	92	92	92	92	97	97	97	97	97	97	97	97
h	Hours of work per semester	4 320	4 320	4 320	4 320	4 320	4 320	4 320	4 320	4 320	4 320	4 320	4 320	4 320	4 320	4 320	4 320
73000/(24*360*98)	Annual Load Factor	86,22%	86,22%	86,22%	86,22%	86,22%	86,22%	86,22%	86,22%	86,22%	86,22%	86,22%	86,22%	86,22%	86,22%	86,22%	86,22%
MWh	Actual Generation	209 500	209 500	270 100	270 100	366 400	366 580	352 000	343 100	360 605	360 605	360 605	360 605	360 605	360 605	360 605	360 605
	Annual Growth %				*28,9%*		*35,7%*										
EUR/MWh	Price	120,61 €	120,61 €	119,00 €	119,00 €	118,52 €	118,47 €	118,90 €	120,84 €	121,28 €	123,25 €	123,70 €	125,72 €	126,18 €	128,23 €	128,70 €	130,80 €
	Consumer Price Index (inflation)								2%	2%	2%	2%	2%	2%	2%	2%	2%
EUR (€)	Revenues	25 267 871 €	25 267 871 €	32 141 678 €	32 141 678 €	43 427 215 €	43 427 215 €	41 852 535 €	41 458 549 €	43 733 189 €	44 445 257 €	44 607 852 €	45 334 162 €	45 500 009 €	46 240 845 €	46 410 010 €	47 165 662 €
	Annual Growth %			*27,2%*	*27,2%*	*35,1%*	*35,1%*	*-3,6%*	*-4,5%*	*4,5%*	*7,2%*	*2,0%*	*2,0%*	*2,0%*	*2,0%*	*2,0%*	*2,0%*
UK																	
MW	Power Generation Capacity								42	42	42	42	42	42	42	42	42
	Availability								*91,00%*	*91,00%*	*91,00%*	*91,00%*	*91,00%*	*91,00%*	*91,00%*	*91,00%*	*91,00%*
MW	Available Power Generation								38	38	38	38	38	38	38	38	38
h	Hours of work per semester								4 320	4 320	4 320	4 320	4 320	4 320	4 320	4 320	4 320
330000/(24*360*42)	Annual Load Factor							90,94%	*90,94%*	*90,94%*	*90,94%*	*90,94%*	*90,94%*	*90,94%*	*90,94%*	*90,94%*	*90,94%*
MWh	Actual Generation (330-335 GWh yearly)								150 150	150 150	150 150	150 150	150 150	165 000	150 150	150 150	150 150
GBP/MWh	Futures Price for Renewables (UK) - Baseload Wholesale							46,37	46,37	46,37	46,37	46,37	46,37	46,37	46,37	46,37	46,37
	ROCs per MWh								1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4
	ROCs								210210	210210	210210	210210	210210	210210	210210	210210	210210
GBP (£)	Buy-out price from *ofgem*								50,80	51,84	52,88	53,41	53,94	54,48	55,02	55,57	56,12
	Consumer Price Index								2%	2%	2%	2%	2%	2%	2%	2%	2%
EUR/GBP	EUR/GBP								0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85
EUR (€)	Revenues								20 715 756 €	20 972 477 €	21 229 198 €	21 359 731 €	21 490 263 €	21 623 407 €	21 756 550 €	21 892 356 €	22 028 162 €
	Annual Growth %									*1,2%*	*1,2%*	*0,6%*	*0,6%*	*0,6%*	*0,6%*	*0,6%*	*0,6%*
	Average Price								137,97 €	139,68 €	141,39 €	142,26 €	143,13 €	144,01 €	144,90 €	145,80 €	146,71 €
TOTAL																	
MW	Available Power Generation	92	92	92	92	92	92	92	130	135	135	135	135	135	135	135	135
MWh	Actual Generation	209 500	209 500	270 100	270 100	366 400	366 580	352 000	493 250	510 755	510 755	510 755	510 755	510 755	510 755	510 755	510 755
EUR (€)	Revenues	25 267 871 €	25 267 871 €	32 141 678 €	32 141 678 €	43 427 215 €	43 427 215 €	41 852 535 €	62 174 305 €	64 706 666 €	65 674 454 €	65 967 583 €	66 824 425 €	67 123 416 €	67 997 395 €	68 302 366 €	69 193 824 €
	Annual Growth %			*27,2%*	*27,2%*	*35,1%*	*35,1%*	*-3,6%*	*43,2%*	*54,6%*	*5,6%*	*2,0%*	*1,8%*	*1,8%*	*1,8%*	*1,8%*	*1,8%*

Table 3 – Biomass Forecasted Revenue (2026-2040)

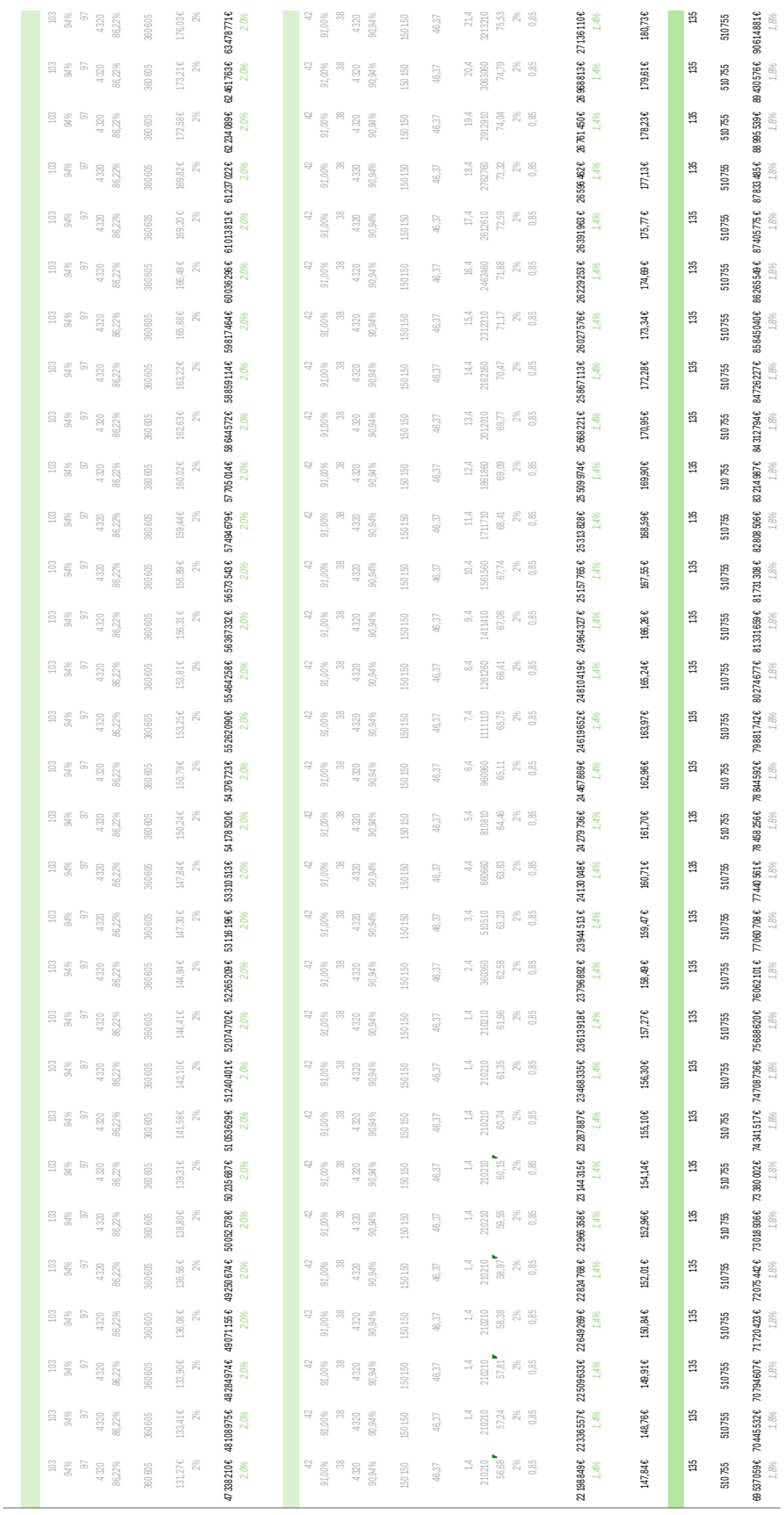


Table 4 – Solar PV and Wind pipeline breakdown

What will happen to the project?	MW	%	
On-Balance Sheet for current use	909	25,17%	<< excluding installed capacity (98MW); TGPH (42MW) and Contância's pipeline (5MW)
RTB	2102	58,21%	
Portugal PV	600	16,62%	
Total	3611	100,00%	

Pipeline Phase-in	MW	%	
2021-2022	570	15,79%	<< excluding the 5MW from Constancia plant
2023	417	11,55%	
2024	1867	51,70%	
2025	757	20,96%	
Total	3611	100,00%	

Pipeline by net installed capacity expected to develop until 2025 (+3.6GW)

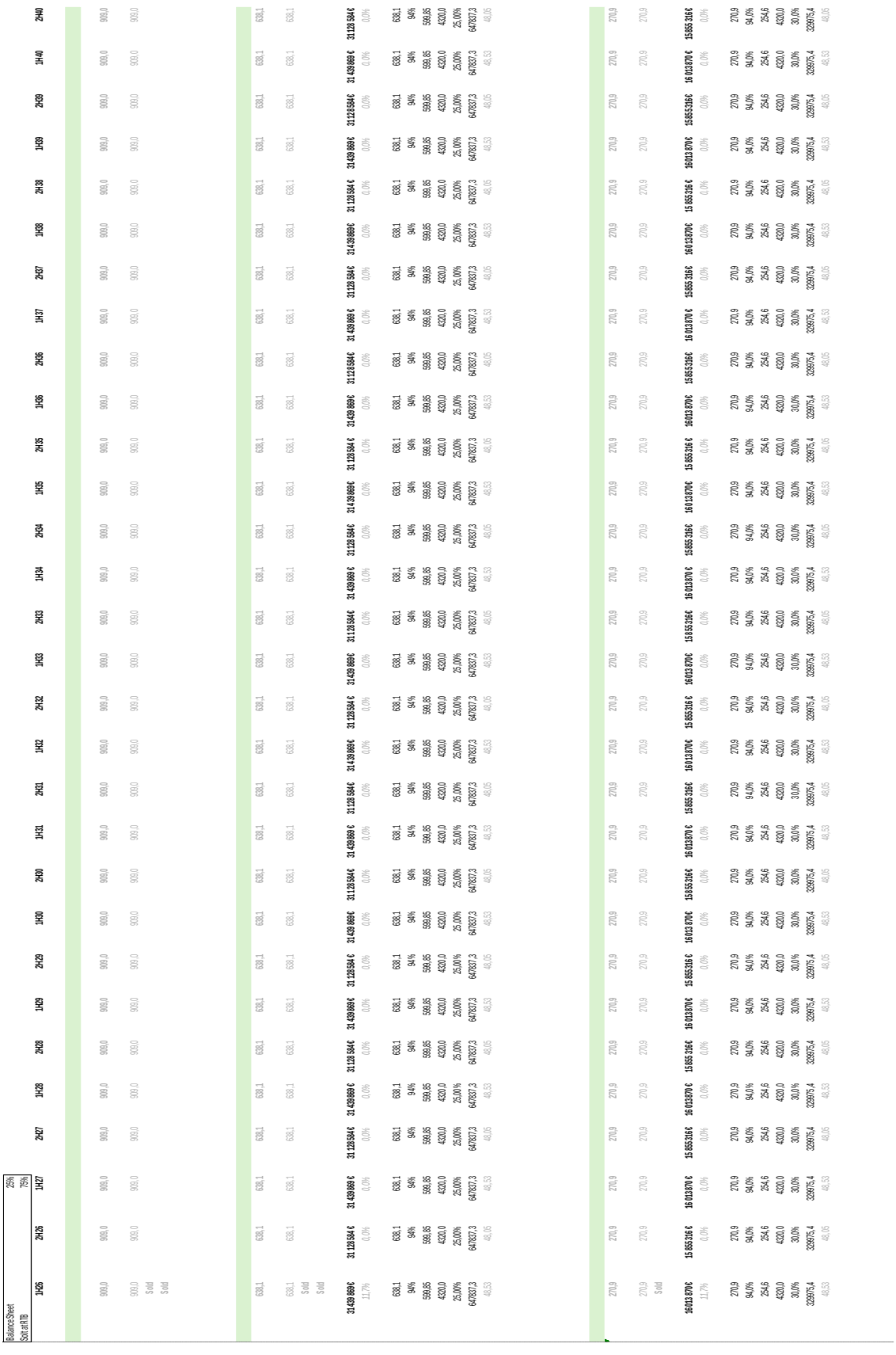
MW Solar PV	Portugal	Poland	Romania	Greece	Total	%
Under construction	0	48	0	0	48	1,89%
RTB	62	30	0	0	92	3,63%
Advanced Phase	47	672	70	116	905	35,70%
Early Stage	600	637	0	253	1490	58,78%
Total	709	1387	70	369	2535	100,00%
%	27,97%	54,71%	2,76%	14,56%	100,00%	

MW Wind	Portugal	Poland	Romania	Greece	Total	%
Under construction	0	50	0	0	50	4,65%
RTB	0	0	0	0	0	0,00%
Advanced Phase	0	267	100	74	441	40,99%
Early Stage	0	420	0	165	585	54,37%
Total	0	737	100	239	1076	100,00%
%	0,00%	68,49%	9,29%	22,21%	100,00%	

Table 5 – Other Projects Forecasted Revenue (until 2025)

		1H18a	2H18a	1H19a	2H19a	1H20a	2H20a	1H21a	2H21	1H22	2H22	1H23	2H23	1H24	2H24	1H25	2H25
Solar PV and Wind																	
utility-scale																	
MWs expected to be developed until 2025									190	190	190	209	209	934	934	379	379
Total									**190,0**	**237,8**	**285,7**	**352,0**	**404,5**	**1182,0**	**1416,9**	**1096,9**	**1192,2**
MW	Balance Sheet								47,8	47,8	47,8	52,5	52,5	235,0	235,0	95,3	95,3
MW	Balance Sheet cummulative								47,8	95,7	143,5	196,0	248,5	483,4	718,4	813,7	909,0
MW	RTB								110,6	110,6	110,6	121,4	121,4	543,4	543,4	220,3	220,3
MW	Portugal PV								31,6	31,6	31,6	34,6	34,6	155,1	155,1	62,9	62,9
Solar PV																	
utility-scale																	
Total									**142,8**	**176,4**	**209,9**	**257,4**	**294,3**	**876,0**	**1040,9**	**788,8**	**855,7**
MW	Balance Sheet								33,6	33,6	33,6	36,8	36,8	165,0	165,0	66,9	66,9
MW	Balance Sheet cummulative								33,6	67,2	100,7	137,6	174,4	339,4	504,4	571,2	638,1
MW	RTB								77,6	77,6	77,6	85,2	85,2	381,5	381,5	154,7	154,7
MW	Portugal PV								31,6	31,6	31,6	34,6	34,6	155,1	155,1	62,9	62,9
	Revenues from Balance Sheet								**1 637 893 €**	**3 308 543 €**	**4 913 678 €**	**6 778 161 €**	**8 508 422 €**	**16 721 204 €**	**24 602 874 €**	**20 144 386 €**	**31 128 584 €**
	Annual Growth %									*100,0%*	*104,9%*	*73,2%*	*146,7%*	*189,2%*	*68,3%*	*26,5%*	
MW/	Power Generation Capacity								33,6	67,2	100,7	137,6	174,4	339,4	504,4	571,2	638,1
	Availability								94%	94%	94%	94%	94%	94%	94%	94%	94%
MW/	Available Power Generation								31,56	63,12	94,69	129,32	160,96	319,03	474,10	536,97	599,85
h	Hours of work per semester								4320,0	4320,0	4320,0	4320,0	4320,0	4320,0	4320,0	4320,0	4320,0
	Annual Load Factor								25,00%	25,00%	25,00%	25,00%	25,00%	25,00%	25,00%	25,00%	25,00%
MWh	Actual Generation								34087,3	68174,5	102261,8	139668,1	177074,3	344550,4	512026,5	579931,9	647837,3
€/MW	Futures Price for Renewables (Germany)						48,05	48,53	48,05	48,53	48,05	48,53	48,05	48,53	48,05	48,53	48,05
	CPI rate (aka inflation)																
	Proceeds from RTB and Portugal								**10 648 409 €**	**10 648 409 €**	**10 648 409 €**	**11 685 228 €**	**11 685 228 €**	**52 317 315 €**	**52 317 315 €**	**21 212 752 €**	**21 212 752 €**
	Annual Growth %									*0,0%*	*0,0%*	*9,7%*	*9,7%*	*347,7%*	*347,7%*	*-59,5%*	*-59,5%*
Wind																	
utility-scale																	
Total									**47,2**	**61,5**	**75,7**	**94,6**	**110,2**	**306,0**	**376,0**	**308,1**	**336,5**
MW	Balance Sheet								14,3	14,3	14,3	15,6	15,6	70,0	70,0	28,4	28,4
MW	Balance Sheet cummulative								14,3	28,5	42,8	58,4	74,0	144,1	214,1	242,5	270,9
MW	RTB								33,0	33,0	33,0	36,2	36,2	161,9	161,9	65,7	65,7
	Revenues from Balance Sheet								**834 259 €**	**1 668 204 €**	**2 502 778 €**	**3 452 450 €**	**4 333 757 €**	**8 516 931 €**	**12 531 452 €**	**14 335 318 €**	**15 855 316 €**
	Annual Growth %									*200,0%*	*104,9%*	*73,2%*	*146,7%*	*189,2%*	*68,3%*	*26,5%*	
MW/	Power Generation Capacity								14,3	28,5	42,8	58,4	74,0	144,1	214,1	242,5	270,9
	Availability								94,0%	94,0%	94,0%	94,0%	94,0%	94,0%	94,0%	94,0%	94,0%
MW/	Available Power Generation								13,4	26,8	40,2	54,9	69,6	135,4	201,2	227,9	254,6
h	Hours of work per semester								4320,0	4320,0	4320,0	4320,0	4320,0	4320,0	4320,0	4320,0	4320,0
	Annual Load Factor								30,0%	30,0%	30,0%	30,0%	30,0%	30,0%	30,0%	30,0%	30,0%
MWh	Actual Generation								17362,3	34724,6	52086,9	71138,8	90192,7	175496,5	260800,2	295387,8	329975,4
€/MW	Futures Price for Renewables (Germany)						48,05	48,53	48,05	48,53	48,05	48,53	48,05	48,53	48,05	48,53	48,05
	CPI rate (aka inflation)																
	Proceeds from RTB and Portugal								**8 321 565 €**	**8 321 565 €**	**8 321 565 €**	**9 131 822 €**	**9 131 822 €**	**40 885 161 €**	**40 885 161 €**	**16 577 433 €**	**16 577 433 €**
	Annual Growth %									*0,0%*	*0,0%*	*9,7%*	*9,7%*	*347,7%*	*347,7%*	*-59,5%*	*-59,5%*

Table 6 – Other Projects Forecasted Revenue (2026-2040)



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