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Team D

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PHOTON ENERGY

PHOTON ENERGY GROUP

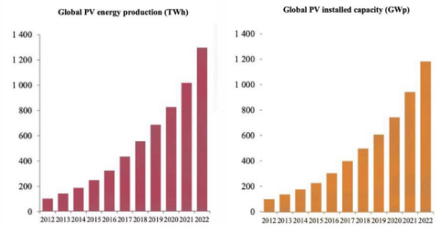
"The Icarus of Europe - will Photon Energy Group reach the sun before burning its wings?"

RECOMMENDATION: BUY

Date: 21.12.2023

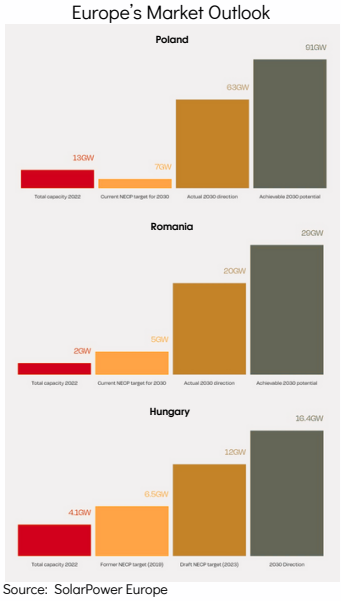
RECOMMENDATION	BUY
Exchange	Prague Stock Exchange
Ticket Symbol	PEN
Industry	Electrical Utilities & IPPs
Sector	Utilities
Market cap (Mil CZK)	2,982.32
Shares included	61,238,521
Current price	**46.00 CZK**
Target price	**75.99 CZK**
Upside (%)	**65.2%**

Figure 1: Global PV energy production & installed capacity



Source: SolarPower Europe

Figure 2 : NECP targets vs. SolarPower Europe's Market Outlook



Source: SolarPower Europe

Photon Energy Group provides Photovoltaic (PV) solutions, offering a wide range of products and services covering the whole lifecycle of Photovoltaic (PV) systems. It operates in 11 countries in 2 continents. They own a portfolio of PV power plants which has grown from a capacity of 51.7 MWp to 123.4 MWp in less than 5 years. Their growth won't stop here...

INVESTMENT SUMMARY

We initiate coverage of Photon Energy Group with a BUY recommendation and a 1-year target price of 75.99 CZK, representing an upside of 65.2% on the closing price of 46 CZK on December 21st 2023.

An early player positioned to expand in the renewable transition

The global cumulative capacity of PV systems grew from 41.4 GW to 1,177 GW from 2010 to 2022 (Figure 1). Looking at the EU, it has committed to a renewable energy future, with a goal of 45% of renewable energy in the energy mix by 2030. Photon Energy benefits from the renewable transition by offering a wide range of products and services in the downstream segment of solar energy: design and building of PV installations (Engineering), sale of PV components (technology), Operations and Maintenance of PV systems (O&M), and optimization of renewable energy sources (Lerta).

In order to achieve the EU's 2030 goal, each country sets NECP targets and achievement rate. For Photon Energy, their focus for future growth lies on the Hungarian, Australian, Polish, and Romanian markets. These key markets present big growth opportunities since the countries must reach their NECP targets by 2030, but the market outlook seems even more generous (Figure 2). As for Australia, according to Mordor Intelligence, the annual growth rate in the next five years is expected to be 14%. Photon Energy is not exploring uncharted territory with these markets, the company owns PV power plants in all of the aforementioned countries, as well as active participations from their other business segments, giving them an early player and experience advantage, they are experienced with project development, legal proceedings, grid connection application, financing securing, and location scouting.

Synergetic Business Model

All of Photon Energy's business divisions work together over the life-cycle of a PV installation (Figure 3). Photon Energy manages the whole lifetime of their energy projects through a vertically integrated value chain, which has led to a 30% increase in project delivery timeframe efficiency. Project development starts with the acqusition or initiation of a PV project for a client (legal, financing, location, grid connection). Once this is done, The Engineering division designs and build the PV power plant, with components procured by the Technology division. After the PV plant is connected to the grid, Operations and Maintenance would operate and take care of the facility over its useful life.

Strategic Business expansion: From Lerta to RayGen Technology

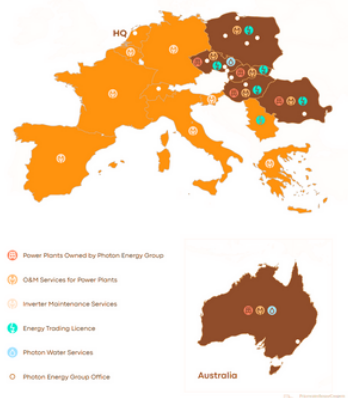
Photon Energy benefits from an extensive geographical diversification of sales which allows for less volatile revenues. This mitigates the risk of regulatory changes in individual markets such as those backed by government-support mechanisms. In addition to this, the company is diversifying and expading their sources of revenues and streghtening their business model:

- Lerta's full acquisition: Lerta is an energy company that forecasts and optimizes the output of PV power plants and other renewable power plants thorugh their A.I. digital platform. This, in turn, makes power plants assisted by Lerta more effective, optimizing energy costs and more efficient energy production. Lerta's strategic addition to the portfolio will improve Photon Energy's 96 PV power plants grid contribution.
- RayGen (stake of 7.6%): An issue with solar energy is that there is a timing disparity between supply and demand: daily peak supply is at noon, while daily peak demand is in the evening. RayGen created the PV Ultra system, which cogenerates electricity and heat, it then stores the energy in two reserves with different temperatures each. The heat stored in these reserves can be converted into electricity at any given moment, overcoming this supply and demand disparity.
- Photon Water and PFAS remediation technology: Photon Water accounted for less than 3% of the group's revenues in 2022. Nonetheless, the company is working on a technology patent to clean PFAS contamination, a toxic chemical present in ground-water.

Figure 3 : Photon Energy's divisions

Source: Company Data

Figure 4: Photon Energy's Markets



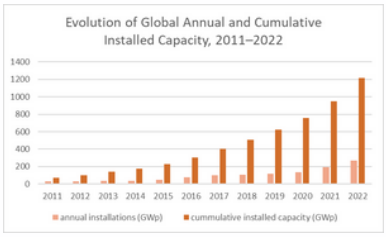
Source: Company Data

BUSINESS DESCRIPTION

Business Units & Geographic Reach

With its two main business sectors, Electricity Selling and Energy Solutions, Photon Energy Group sets itself apart. Their Electricity selling division (investment) is in charge of solar power plants portfolio expansion with a considerable total capacity of over 123.4 MWp (Figure 5). Simultaneously, this division is actively building projects with a total capacity of over 595 MWp in strategic Australian and European markets. Renowned for its extensive EPC services, the Energy Solutions sector has provided turnkey solar project solutions as well as proprietary solar-hybrid systems to meet the growing need for renewable energy in the market. Photon Energy operates in a number of key regions; 35% of their potential development activities are centered in Australia, while 45% of their pipeline of projects is concentrated in Hungary, Poland, and Romania (Figure 6).

Figure 5:

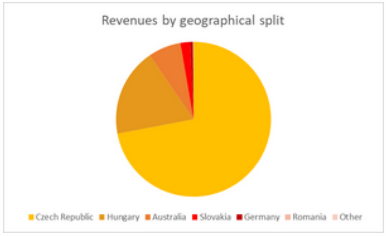


Source: SolarPower Europe

Company Strategy

Photon Energy Group's strategy objective strongly emphasizes on sustainable growth, with a particular focus on expanding its Independent Power Producers (IPPs) portfolio. The latter mentioned has grown by 40% in the last year. They have increased their profitability by leveraging a merchant model, seeing a 25% year-over-year raise in return on investment. PEG's strategy emphasizes on project development lifecycle control, guaranteeing long-term asset supervision from conception to construction, supported by a comprehensive internal development and engineering skill set.

Figure 6:



Source: Company Data

Customer Base

PEG provides services to a wide range of clients, including commercial and government organizations, accounting for 45% of their income, and public utilities, making up 55% of their revenue. Their reputation as a dependable energy partner that can provide customized solutions across a range of industry verticals has been reinforced by the successful completion of over 75 projects by their EPC division.

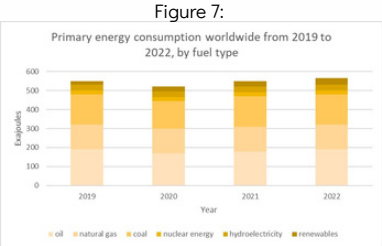
Ownership share

70% of the company's shares are owned by the CEO and CTO.

INDUSTRY OVERVIEW & COMPETITIVE POSITIONING

There's an urgent global consensus on transitioning to renewable energy especially due to escalating climate change and the Russian-Ukrainian conflict. This crisis, which heavily affected the European Union, has influenced the shift towards alternative energy sources. Highlighting the vulnerabilities of traditional energy sources, this situation has reinforced EU's commitment to a sustainable energy future aiming for 45% renewable energy by 2030. Notably, solar energy costs decreased by 82% from 2010 to 2020 (figure 10), and with its rapid growth, solar power is surely to become a formidable competitor in the energy sector.

Figure 7:

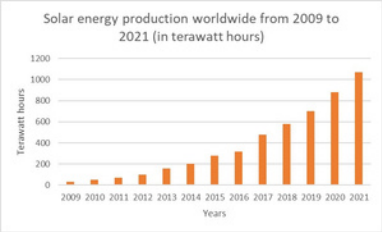


Source: SolarPower Europe

Market Trends

The global photovoltaic (PV) sector is set for significant growth and technology development by 2023. Despite initial high module prices, the sector, driven largely by China and Europe, remains competitive due to consumer participation and market conditions with an annual capacity of more than 1TW. The reduction in solar power costs has been remarkable, thanks to market oversupply, large-scale production investments, and substantial financial input from China. Grid infrastructure has increased pressure as a result of this growth, necessitating significant investment in well-planned transmission upgrades to effectively manage the rising PV capacities. In the European Union (EU), the PV market is projected to expand significantly by 2023 thanks to rising energy costs as well as geopolitical tensions. Germany led the way with Spain, Poland, Netherlands, and France in the EU's highest-ever increase in solar electricity generation witnessing a 24% rise in 2022. However, it is the Netherlands that stands out among countries with rooftop solar generation. Australia expects its market to grow from 36.50 GW in 2023 to 70.49 GW by 2028, driven by favorable government policies and major solar projects. With one of the highest per capita rooftop solar usage, Australia aims for 82% of its electricity to come from renewables like solar by 2030, with large-scale solar installations leading this charge.

Figure 8

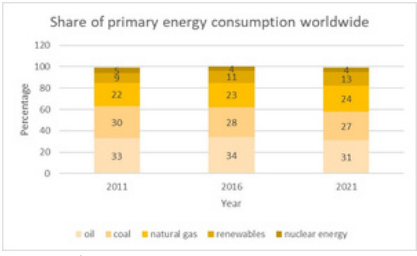


Source: SolarPower Europe

Energy Prices Dynamics

Photovoltaic systems are becoming more in demand due to the increase in energy prices. However it is important to note that solar energy has a complex relationship with its market. For instance, its increasing demand attracts more investments that further reduce its costs. Therefore, understanding the dynamics of energy prices is crucial for the PV sector. If we look at the EU, energy inflation peaked at over 40% in June 2022 due to the Russian-Ukrainian conflict before dropping to 16.6% by February. It is also important to take in consideration the disparities in EU energy prices. While the Czech Republic faces higher energy purchasing costs, Hungary, Romania and Slovakia profit from lower natural gas prices. It isn't only the EU that's facing high energy prices. If we look at Australia for example, we can see projections of up to 23.90% increases in electricity rates in certain areas for 2023 with the average annual gas and electricity costs are $816 and $1,376 per household. We can see a significant turn in global energy trends. Despite the expected decrease in energy prices the shift towards renewable energy sources has already been set in motion reflecting a growing commitment to sustainable energy solutions.

Figure 9

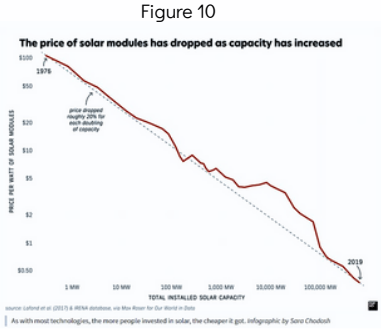


Source: SolarPower Europe

Legal Environement

EU countries along with Australia extend supportive incentives for companies and individuals engaged in investing in or utilizing PV systems: The Czech Republic is simplifying permitting processes and financially supporting renewable projects aligning itself with EU renewable energy goals. Slovakia is offering €140 million ($156.1 million) in 2023 for rebates on residential renewable energy installations, including solar panels, heat pumps, and biomass systems. The promotion of renewable energy in homes is hoped to be achieved by covering 50% of installation costs. Poland increased assistance in its Mój Prąd program for home solar panels and energy storage, with over 410,000 applications funded since 2019, also hoping to reduce CO2 emissions. Hungary is rapidly growing its solar energy capacity, already adding over a gigawatt last year towards a 6 GW target. Despite the country facing challenges such as grid capacity limitations and changing government policies, Hungary is investing in grid upgrades and assistance for solar installations and home renovations.

Figure 10



On June 10, 2023, Romania passed a law that simplifies the approval process for large-scale solar and other renewable energy projects making it faster and easier to develop these projects on land under 50 hectares. The Australian government is helping over 100,000 households with a $1 billion low-cost loan program to implement energy-saving measures like solar panels and double glazing.

Competitive Poisitioning

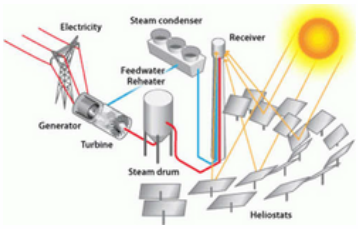
Figure 11

Photon Energy is standing out in the solar energy industry due to its investments in new technology. It is geographically diversified across Europe and Australia and is involved in every aspect of the photovoltaic system. Those factors gives the company competitive advantage

Investing in New Technologies

Photon Energy's diverse investments in innovative technologies and strategic partnerships highlight its dynamic approach in the renewable energy sector, encompassing solar energy, smart grid management, and water sustainability. Photon Energy's strategy is driven by its electricity-selling investment segment, a major contributor to its EBITDA. With 96 solar power plants totaling 123.4 MWp, they plan a 9-fold capacity increase through a pipeline project. Key developments include completing Romanian plants (20.1 MWp) for a significant 51.6 MWp expansion, a 54 MWp utility-scale project in Romania. The acquisition of Lerta bolsters Photon Energy's grid flexibility and energy management capabilities, with Lerta's technology providing predictive generation supply and demand balancing. A significant share of Lerta's revenue is derived from the Polish Capacity Market, underscoring its economic impact. In addressing the solar energy supply-demand mismatch, Photon Energy's 7.6% stake in RayGen Resources, worth EUR 5.5 million, is pivotal. RayGen's advanced PV Ultra system (figure 12) integrates the cogeneration of electricity and heat with efficient energy storage, playing a key role in Photon Energy's development of utility-scale projects with a planned capacity of 455 MWp. and finally Photon Water, which contributes around 1.3% of Photon Energy's revenues, focuses on innovative water sustainability solutions, particularly in PFAS contamination treatment. Its technology is currently being piloted in significant projects, including collaborations with the Australian Department of Defence and Czech water management authorities.

Figure 12



Scheme of energy production and storage in CSP technology

Photovoltaic cycle

A major competitive advantage is provided by Photon Energy's comprehensive approach to every stage of the life-cycle of a photovoltaic (PV) system. This strategy, especially in the Operations & Maintenance (O&M) segment that also provides services to third parties, guarantees smooth transitions and maximizes costs through economies of scale. Photon Energy ensures rapid project completion and customized solutions by handling every aspect of project creation, maintenance, and quality control in-house. Long-term client connections and trust are fostered by this one-stop shop strategy, which also strengthens its competitive edge by enabling swift adaptation to market changes. Furthermore, providing O&M services to other parties helps Photon Energy stay ahead of the curve in the business by always improving its offers and diversifying its revenue sources.

Geographical diversification

Photon Energy's competitive advantage is significantly enhanced by its strategic diversification across various international markets, each offering unique growth opportunities for photovoltaic (PV) generation. In Australia, they are positioned to capitalize on an impressive 14% expected annual PV market growth over the next five years, aiming to tap into the approximate 70 GWp market potential by 2028. The country's high solar radiation and advanced photovoltaic technology make it an ideal market. In Europe, Hungary presents a promising landscape intending to reach 6.5 GWp in solar capacity by 2030, of which more than 50% has already been achieved. Romania is experiencing a solar PV boom, aiming for a 5 GWp capacity by 2030, with 35% already accomplished.

The country benefits from 1,900-2,400 annual sunlight hours, indicating significant natural potential for solar development. Similarly, Slovakia, with its ambitious target of 12 GWp by 2030 and nearly half already achieved, shows great potential. Photon Energy's exploration extends beyond these regions to other parts of Central, Eastern, and South-Eastern Europe, as well as to new frontiers in the Middle East, Africa, and Asia. This broad focus not only allows Photon Energy to leverage diverse solar potentials and adapt to various market dynamics but also provides a hedge against regional fluctuations. By spreading its operational reach across different geographical areas, Photon Energy ensures a robust and resilient competitive stance in the global solar industry, harnessing key data and market trends to drive sustainable growth and innovation.

Figure 13

Source: Company Data

Figure 14

Source: Company Data

Figure 15

Environmental Data	2022	2021
Percentage of revenues connected to activities which create sustainable value	100%	100%
Clean energy generated by our Proprietary portfolio of PV power plants	121.6 GWh	103.3 GWh
Assessment of our carbon footprint across scope 1 and 2 emissions (CO2e tonnes)	409.6	342.8
CO2e savings	49,013 tonnes (+11.7%)	43,867 tonnes (+47.8%)
Social Data		
Number of full-time staff / number of employees	212 / 220 (96%)	141 / 144 (98%)
Percentage of female employees	37%	37%
Number of employees who completed training courses	145 / 220 (66%)	64 / 144 (44%)
Turnover ratio	23%	36%
Gender Pay Gap between male and female employees as a % of male gross salary) * *analysis performed based on comparable job positions*	2.3%	na
Lost time injuries	0	0
Governance Data		
Contributions to political parties as percentage of total revenues	0%	0%
Claims against the Company ruled by a court as a percentage of total revenues	0%	0%
Gender equality Board of Directors (Female/Male)	0%	0%
Gender equality Supervisory Board (Female/Male)	33%	50%
Responsible procurement, subjected to due diligence	100% of our technology purchases	98% of our technology purchases

Source: Company Data

ENVIRONMENTAL, SOCIAL & GOVERNANCE

Environmental Initiatives

PEG's core values are firmly anchored in environmental sustainability portrayed in its operations and corporate framework. The company prevented 49,013 tons of CO2 emissions in 2022 by producing 121.6 GWh of clean electricity, a major step toward environmental conservation. This accomplishment demonstrates the company's dedication to reducing greenhouse gas emissions and developing renewable energy sources, such as energy storage technologies.

Scope 1 Emissions (Direct Emissions): The main source of Photon Energy Group's emissions is its operational activity, which includes the fuel consumption of its vehicle fleet. In 2022, the company kept a careful eye on fuel consumption across 5 countries of 78 vehicles that add up to 91,147 liters. Through this approach, they are attempting to control and possibly lower the direct greenhouse gas emissions brought on by their operations.

Scope 2 Emissions (Indirect Emissions from Purchased Energy): The electricity used by the business for on-site activities and offices contributes to its indirect emissions. According to PEG, in total, their offices consumed 107,092 kWh in 2022, with an estimated 469 MWh of electricity being used on-site.

Scope 3 Emissions (Other Indirect Emissions): PEG's dedication to sustainable waste management and avoiding the use of chemical fertilizers or pesticides in landscape management suggests a proactive approach to reducing these indirect emissions. Recycling and environmentally friendly sound disposal of PV components are among the company's waste management practices, demonstrating its commitment to minimizing its environmental impact throughout the supply chain.

The company's environmental responsibilities extend to its field operations, complying with local environmental regulations and employing sustainable waste management practices. For instance, in PEG recyclable materials are sorted and recycled, chemical fertilizers or pesticides are avoided, and PV panel cleaning is done using environmentally friendly methods. Additionally, Photon Energy undertakes biodiversity studies and community consultations to minimize the ecological impact of new power plant constructions.

Social Responsibility

Photon Energy Group exhibits a great dedication to its employees members by promoting an inclusive and sustainable culture. The latter mentioned factors are reflected in the results of the 2022 Employee Engagement and ESG Survey:

More than 100 workers (63% of the organization) responded to the survey, which revealed a 13% rise in worker satisfaction with Occupational Health and Safety (OHS) training and policies in 2022.

Important to mention that 98% of respondents claimed that cases of bribery, acts of harassment, and gender-based violence are handled appropriately. Additionally, 98% of workers stated they were given equal opportunity without facing discrimination, and 97% reflected they were treated with dignity and respect.

On the other hand, PEG recognizes the need to improve in areas such as goal-setting and training, considering that from 71% of employees in 2021 and 83% of employees in 2022 have a clear goals set and 66% has received some form of training in the past year.

Governance

The highly skilled management team at Photon Energy Group is the basis of the organization's governance system. Their team has significant experience navigating the constantly evolving and complex field of renewable energy. The executive team, led by CTO Michael Gartner and CEO Georg Hotar, has a great deal of expertise in the photovoltaic sector, which is essential for the company's ability to make strategic decisions and run its operations effectively.

Following corporate governance guidelines, the board of directors plays a key role in guiding the business toward its long-term objectives. Their combined monitoring and experience guarantee that Photon Energy Group stays true to its goals and adaptable to market changes and obstacles. A publicly traded firm must adhere to ethical business practices and regulatory restrictions, which demonstrates the organization's commitment to effective governance.

Photon Energy Group's executive compensation and incentive programs are likely set up to support both the company's strategic goals and the interests of its shareholders. These strategies are crucial for keeping important managers motivated and ensure that their objectives align with the company's long-term performance.

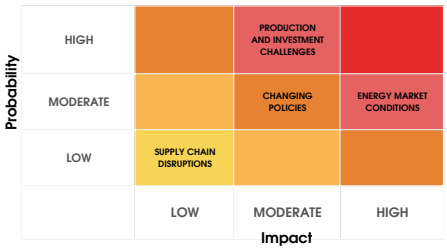
The proportion of internal and external ownership in Photon Energy Group's shareholder structure is balanced, indicating that the company's stakeholders and leadership are in satisfactory agreement. Maintaining this equilibrium is essential to upholding investor confidence and supporting the business's growth and value-creation plans.

In conclusion, the governance structure of Photon Energy Group is distinguished by competent leadership, strategic board oversight, and a mutual alignment of interests between shareholders and management. The company's strong governance framework plays a crucial role in navigating it through its growth trajectory and maintaining its dedication to sustainability and moral corporate conduct in the renewable energy industry.

INVESTMENT RISKS

Operational Risks

Figure 16: Risk Matrix



Production and Investment Challenges: Photon Energy has to deal with risks related to high investment needs and challenges in forecasting production levels across the photovoltaic sector. These operational challenges may have an effect on solar project efficiency and return on investment.

Weather Dependence: Meteorological conditions have significant effects on the volume of generated solar energy. Due to the large fixed costs associated with the electricity generation segment from PV power plants, unpredictable weather patterns may result in lower energy output and revenue, which would have a substantial impact on profitability.

Delays in commissioning: Photon Energy is experiencing delays in commissioning new power plants in Romania. Facing uncertainties related to the approval procedure for constructing photovoltaic installations is feeding into this matter. Before a new power plant can start operating, several legal and administrative procedures need to be fulfilled during the commissioning process such as obtaining permits, environmental assessments and etc. A delay in one of the steps could cause an overall lengthening of the timeline and power plants' ability to realize revenue. The company's goal to achieve 600MW of generation capacity by 2024E, meaning almost sevenfold growth of its production capacity, may not be reached if delays occur either from the company's side or the third parties.

Supply Chain Disruptions: Some of the disruptions could include shortages or delays in the delivery of essential elements or equipment required for the construction of photovoltaic installations. The latter mentioned, could significantly impact the construction timeline, while it is important to follow project timelines and meet contractual obligations.

Financial Risks

Interest Rate Fluctuations: Photon Energy is sensitive to the risk of increasing interest rates because of the significant amount of debt financing it currently relies on for its fixed assets. This could result in higher financing costs, a decline in financial performance, and a limitation on the company's capacity to fund new investments. The value of the company's photovoltaic projects could also potentially be lowered by an excessive amount of debt and rising market interest rates. Fluctuating interest rates could also influence the financial results, bottom line, and in general, future project plans and considerations.

Exchange Rate Volatility: Photon Energy operates in a number of foreign markets and is subject to risks associated with changes in currency exchange rates. Despite the fact that it is currently insufficient, this risk could increase if the business enters new markets, particularly in emerging economies.

Inflation Rate: Depending on the existence of governmental support of a project, inflation poses dual risk for Photon Energy. A safeguard for state-backed projects in the Czech and Hungarian markets is provided by feed-in tariffs that are indexed to inflation within a predefined band. This mechanism provides a certain level of stability by ensuring that they are resistant to inflationary pressures. On the other hand, for projects without governmental support, projects are vulnerable to influence of lower inflation rates. The issue lies in possible deviation of calculated market prices for electricity from the planned trajectory. In case of lower inflation than initially anticipated, revenue estimates may be disrupted, posing a risk to financial viability.

Regulatory and Market Risks

Changing Renewable Energy Policies: The business works in an industry that is very vulnerable to changes in regulations. Modifications in energy policy and support systems for renewable energy, particularly in the EU, could have a direct or indirect effect on Photon Energy's performance and the demand for its goods and services.

Energy Market Conditions: The state of the energy market has an impact on the company's performance. Short-term energy shortages or oversupplies can cause market prices to fluctuate, which could have an impact on profits and income. In a market where unregulated energy sources like solar PV are becoming more and more dominant, the corporation needs to oversee these risks.

Changes in the financial and regulatory landscape in the Czech Republic present Photon Energy with several risks.

Changes in feed-in tariffs and the green bonus in the Czech Republic: These are essential elements of government assistance for solar power plants. The financial consequences for Photon Energy's projects are further compounded by the imposition of a 21% tax on green bonus revenues, which may impact the project's economic viability.

Introduction of 65% windfall taxes in the Czech Republic: These taxes on excess revenues above specified feed-in tariff or contract-for-difference prices may significantly reduce Photon Energy Group's profits that are derived from the company's endeavors. Consequently, this factor is a noteworthy financial burden and risk for the company.

Price caps on electricity prices in the Czech Republic: These specific caps on electricity prices are introduced until December 2023, with a 90% tax on revenues exceeding the set cap. The latter has a direct impact on installations with a capacity surpassing 1MWp, affecting most of Photon Energy Group's power plants in the Czech Republic. Subsequently, these regulations may pose financial challenges for the company due to the possibility of a reduction in potential earnings.

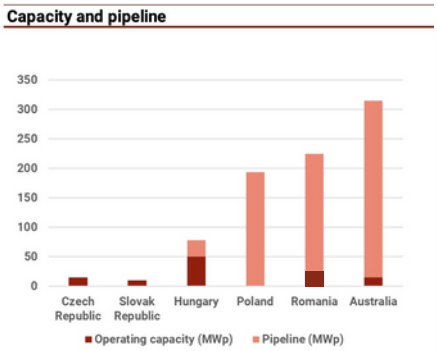
Project Development Risks

Financial Assumptions Reliability: The creation of photovoltaic installations relies on precise assumptions and economic calculations. The financial performance of solar projects could be severely impacted by incorrect forecasts or unforeseen market events. In severe circumstances, this can result in project cancellation and financial write-offs.

FINANCIAL ANALYSIS

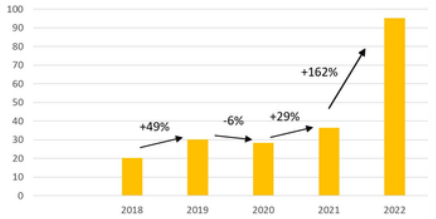
Key Financials (in EUR million)	2018	2019	2020	2021	2022	TTM	2024F	2025F	2026F	2027F	2028F
Total Revenue	20.25	30.15	28.25	36.35	95.13	59.456	96.69	118.29	135.02	257.48	447.31
Revenue Growth Rate	18%	49%	-6%	29%	162%	-	15%	22%	14%	91%	74%
EBITDA	7.94	8.15	8.44	9.58	24.31	4.75	23.21	30.76	35.10	72.09	125.25
EBITDA Growth Rate	1%	3%	4%	14%	154%	-	274%	33%	14%	105%	74%
EBIT	2.54	1.15	-0.14	-0.71	16.99	-2.52	-9.67	13.01	16.2	46.35	80.52
CAPEX	9.55	17.54	18.31	8.62	27.58	30.448	0	9.863	19.725	56.643	103.559
PROFITABILITY RATIOS											
ROA (%)	0.5%	-0.6%	-5.9%	-3.6%	2.8%	-3.6%	-1%	0.4%	1%	3%	3%
ROE (%)	1.8%	-2.1%	-22.3%	-14.0%	10.2%	-13.4%	-3%	1%	5%	8%	10%
EBITDA margin (%)	39.2%	27.0%	29.9%	26.4%	25.6%	8.0%	24%	26%	26%	28%	28%
EBIT margin (%)	12.6%	3.8%	-0.5%	-2.0%	17.9%	-4.2%	-10%	11%	12%	18%	18%
NI margin (%)	2.5%	-2.4%	-30.8%	-17.7%	6.6%	-16.1%	-2%	1%	4%	5%	5%
Asset Turnover	0.21	0.25	0.19	0.20	0.42	0.22	0.33	0.36	0.36	0.52	0.57
FINANCIAL STRENGTH RATIOS											
Interest Coverage Ratio	1.9	1.6	1.4	1.4	2.5	0.54	4.36	4.73	4.72	5.09	5.1
Current Ratio	2.8	2.6	1.6	1.6	1.9	1.53	1.7	1.6	1.7	1.5	1.5
D/E	2.6	2.7	3.0	2.8	2.6	2.94	2.97	2.99	3.01	3.24	4.01
Net Debt / EBITDA	8.1	10.5	12.9	11.7	7.1	43.6	9.88	9.12	9.11	8.47	8.49
INDUSTRY METRICS											
Net Working Capital (In EUR million)	15.4	19.4	8.7	19.9	31.0	20.8	30.68	36.38	41.27	56.05	91.56
Energy Production (in MWh)	28,500	43,800	70,000	103,300	121,600	114,800	141,827	177,150	238,117	583,171	1,224,893
Energy Production Growth Rate (%)	4%	54%	60%	48%	18%	11%	6%	25%	34%	145%	110%
Cumulative Installed capacity (MWp)	31.6	51.7	74.7	90.5	91.9	123.37	123.37	165.27	249.06	489.68	929.60
Cumulative Installed capacity Growth Rate (%)	23%	64%	44%	21%	2%	34%	0%	34%	51%	97%	90%

Figure 18 : Portfolio Capacity & Project pipeline



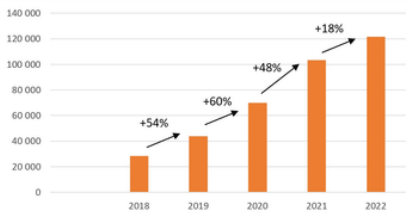
Source: Company Data

Figure 19 : Photon Energy's Total Revenues



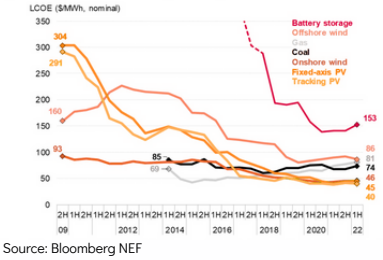
Source: Company Data

Figure 20 : Photon Energy's Energy Production



Source: Company Data

Figure 21 : Global LCOE (2009-2022)



Source: Bloomberg NEF

Solar surge: Project pipeline will unlock future revenue growth

Photon Energy's strategy revolves around energy production (electricity selling). They own 96 solar power plants with a cumulative capacity of 123.4 megawatt-peak (MWp). These figures seem modest when considering their project pipeline of 1237.7 MWp which is sufficient to increase production capacity more than 9-fold over the next five years (Figure 18).

We project that Photon Energy will be able to consolidate 929.6 MWp out of the total 1237.7 MWp pipeline. This projected capacity will increase energy production by more than 9-fold, translating to an average growth rate of 40.4% in the next five years for the company's investment segment (electricity selling). It should be noted that electricity prices will highly influence revenues as the company switches to a merchant model (selling electricity on the market) from government-support mechanisms (Feed-In Tariffs). We projected electricity prices in their key markets following the historical trendline accrodingly, while excluding years were unique events drove electricity prices up (See Appendix).

Rising CAPEX stemming from a growing PV power plant portfolio

We expect an increase in capital expenditures as the company expands its PV power plant portfolio with a 2028 figure of 103.5 million EUR. Capex will remain low in the initial years as the project pipeline goes through administrative procedures such as environmental assessments, land analysis, and grid application until the projects in development reach advanced stages, which already involve land acquisition and construction of the PV power plant. (See Appendix)

Lerta and declining Global LCOE will boost EBITDA

EBITDA's 5-year average projected growth rate of 99% is supported by 2 main factors: (1) the addition of Lerta, which accounted for 21% of the group's revenues 2023 YTD and had a notable operating margin, and (2) increasing margins for the investment segment (electricity selling) attributable to globally decreasing levelized costs of electricity (LCOE), which lowers the electricity price needed for a PV power plant to break-even (Figure 21).

Leverage & Liquidity: Navigating through High Leverage

Debt-to-Equity: Photon Energy finances its PV power plants mostly through debt, reflected in a 5-year average Debt-to-Equity ratio of 2.7. As the company rapidly expands its PV portfolio, we project a substantial increase here to reach a D/E ratio of 4.1 in 2028.

Interest Coverage Ratio: The company's financing expenses will remain high as the debt levels grow, product of an increasing PV power plant portfolio. Nonetheless EBITDA's 5-year average projected growth of 99% will normalize the company's abillity to meet their financial obligations.

VALUATION

We reiterate our BUY recommendation for Photon Energy Group with a 1-year target price of 75.99 CZK, representing an upside of 65.2% on the closing price of 46 CZK on December 21st 2023. We lined our DCF model with the company's strategy to focus on their investment segment. To verify the robustness of of our DCF and to include the previously mentioned risks, we performed a Monte Carlo Simulation and a sensitivity analysis.

Figure 21 :Degree of probability and commissioned date for individual stages

Stage in the pipeline	Probability	Commissioned date
Feasibility	60%	+5 years from today
Early developement	75%	+4 years from today
Advanced developement	90%	+3 years from today
Ready-to-build technical	100%	+2 years based on company declarations
Under construction	100%	+2 years based on company declarations

Source: Team Analysis and Company Data

DCF valuation

To arrive at the company's intrinsic value, we employed an unlevered DCF model based on Free Cash flow to the firm (See Appendix). We assigned a probability of completion and a commissioned date to Photon Energy's projects in development depending on the phase in the project pipeline; this is based on the company's historical completion rates with a risk premium to consider operational risks (Figure 21). Electricity production is directly caused by the company's increases in installed capacity. Our projected revenues for the investment segment are based on multiplying the Average Electricity price per megawatt-hour (EUR per MWh) by Electricity Production per installed MWp (in MWh). Both of these factors have their own figures for each projected year due to the changing dynamics of the electricity market and, of course, the growing capacity of the PV power plant portfolio. (See appendix)
It should be noted that Czechia and Slovakia have significantly higher average electricity prices; this is because the PV power plants owned there operate through government-support mechanisms such as Feed-In Tariffs (Slovakia) and Green Bonuses (Czechia), which allow for higher than the market electricity prices (effective until 2029).

Figure 22 : WACC inputs

Variable	Rate	Source
Risk free rate	6.13%	Average based on weighted revenue per country
Beta	1	Re-levered
Equity risk premium	8.92%	Damodaran
Cost of Equity	15.05%	Capital Asset Pricing Model
Cost of Debt	10.12%	Risk-free rate + default spread based on synthetic rating
Tax rate	25%	Applicable tax to Netherlands
Weight of Equity	28%	
Weight of Debt	72%	
WACC	**9.66%**	

Source: Team Analysis

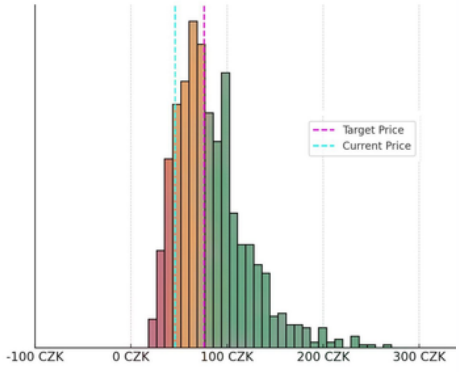
WACC

We estimate a WACC of 9.66% for Photon Energy (Figure 22). We revenue-weight the 10-year Government Bond Yield of the main countries were Photon Energy operates (>1% of revenues), to arrive at our risk-free rate. We calculated a synthetic rating for Photon Energy based on their interest coverage ratio over the years; due to their earnings volatility and increasing debt levels in the future, we decided to be cautious on our approach and give it a synthetic rating one tier below what they should have based on their interest coverage capabilities (From B to B-). This synthetic default spread plus the ris-free rate gives us the Cost of Debt. We believe the cost of debt reflects the financial health position of the company, considering further debt addition in the future to expand the PV portfolio capacity.The cost of equity is calculated with the CAPM formula, the country risk premium was calculated from professor Damodaran's 2023 databases for each country.

Monte Carlo Simulation

Our Simulation was done based on 1,000 iterations and the daily volatility average of 1.43% for the previous 5 years of the following stock indices: The PX Index for Czechia, the WIG30 Index for Poland, and the BUX Index for Hungary. We then estimated the stock's value starting with the intrinsic value of 75.99 CZK taking into account the 1.43% volatility in a 1,000 trading days sample with according monthly trading periods. Our distribution reiterates our BUY reccommendation with less than 15% scnearios yielding a SELL reccomendation.

Figure 23 : Monte Carlo



Source: Team Analysis

Terminal Growth

We expect a terminal growth rate of 3% after 2028 based on (1) it is assumed that the company will stop its project portfolio expansion, (2) electricity prices go head-to-head with economic growth, for which we use a 3% historical GDP growth to arrive at our terminal growth rate.

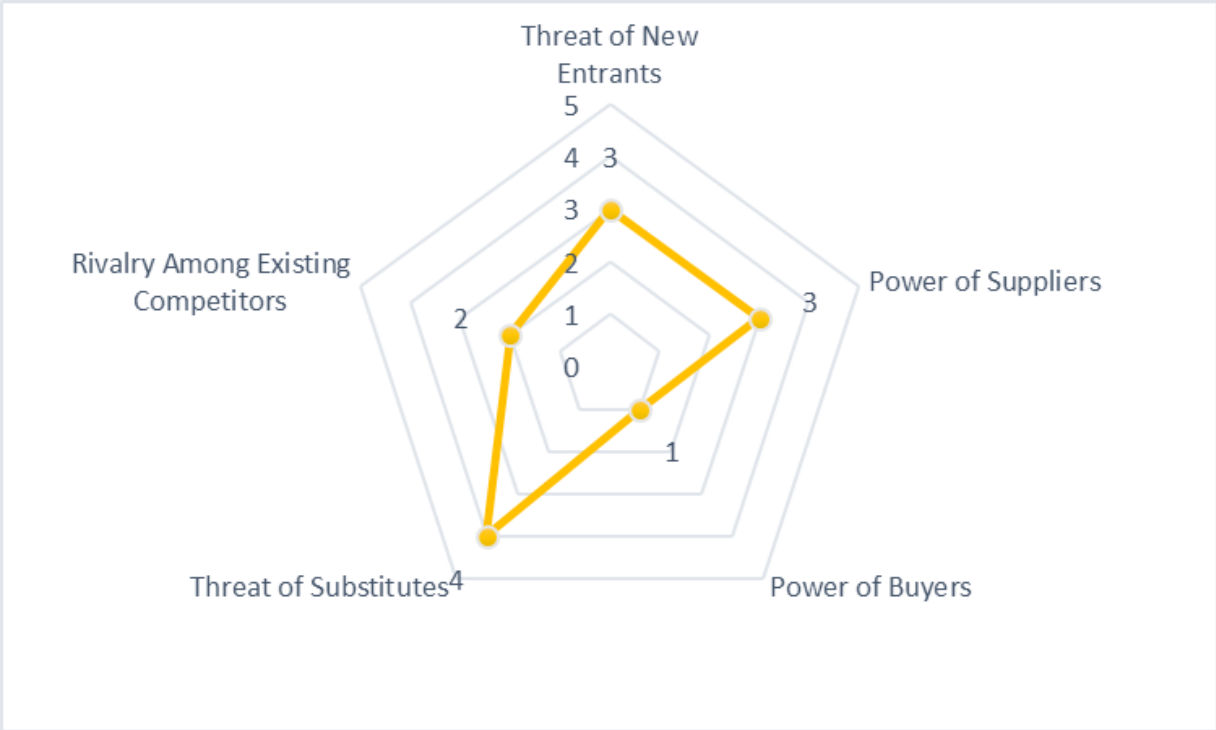
APPENDIX 1: GLOSSARY

Photovoltaic system	A special electrical system that produces energy from a renewable and inexhaustible source: the sun
MWh	Equals 1,000 kilowatts of electricity generated per hour and is used to measure electric output
MWp	An abbreviation for Megawatt peak – a unit of measurement for the output of power from a source such as solar or wind where the output may vary according to the strength of sunlight or wind speed.
Project pipeline	A tool in project management that allows project managers to track the status of all their ongoing projects in one window
LCOE	Levelized Cost of Electricity is an economic measure used to compare the lifetime costs of generating electricity across various generation technologies
Merchant basis	The portfolio of contracts whereby merchants participate in a merchant bank card processing system
Feed-in tarriff	A policy designed to support the development of renewable energy sources by providing a guaranteed, above-market price for producers
Green bonus	Refers to financial or other advantages provided by the government to encourage the development and use of renewable energy sources. This can include solar, wind, and other forms of clean energy. These incentives are often designed to make renewable energy projects more financially attractive and competitive compared to traditional, non-renewable energy sources.
Relative valuation	Involves the use of similar, comparable assets in valuing another asset

APPENDIX 2: STAGES OF PROJECT DEVELOPMENT ON THE PIPELINE

Glossary of terms	Definitions
Development phase 1: “Feasibility”	LOI or MOU signed, location scouted and analyzed, working on land lease/ purchase, environmental assessment and application for grid connection.
Development phase 2: "Early development"	Signing of land option, lease or purchase agreement, Environmental assessment (environmental impact studies "EIS" for Australia), preliminary design. Specific to Europe: Application for Grid capacity, start work on permitting aspects (construction, connection line, etc.). Specific to Australia: community consultation, technical studies.
Development phase 3: "Advanced development"	In Europe: Finishing work on construction permitting, Receiving of MGT (HU)/ATR (ROM) Letter, Finishing work on permitting for connection line, etc. In Australia: Site footprint and layout finalised, Environmental Impact Statement and development application lodged. Grid connection studies and design submitted.
Development phase 4: "Ready-to-build technical"	In Europe: Project is technical ready to build, we work on offtake model (if not FIT or auction), securing financing (inter-nal/external). In Australia: Development application approved, offer to connect to grid received and detailed design com-menced. Financing and off-take models/arrangements (internal/external) under negotiation.
Development phase 5: "Under construction"	Procurement of components, site construction until the connection to the grid. On top for Australian projects, signature of Financing and off-take agreements, reception of Construction certificate, conclusion of connection agreement, EPC agreement, Grid connection works agreements.

APPENDIX 3: PORTER'S FIVE FORCES



Threat of New Entrants - 3

Justification: The solar energy industry has high entry barriers due to the need for significant capital investment and technical expertise. However, as technology becomes more affordable and accessible, these barriers might decrease. Photon Energy's established presence in various markets offers some protection, but the industry's growth potential can still attract new players, especially in less saturated markets.

Power of Suppliers - 3

Justification: Photon Energy has a moderate rating for supplier power. By being involved in every step of the photovoltaic (PV) cycle, from research to maintenance, the company lessens its reliance on any one source and lowers some of the risks related to supply chain interruptions. Yet, suppliers still have a significant amount of sway due to the specialized nature of solar components, preserving a moderate level of supplier dominance.

Power of Buyers - 1

Justification: The power of buyers for Photon Energy is considered low. Energy prices, largely influenced by market-wide supply and demand forces, diminish the negotiating power of individual buyers. While large customers can have some influence, especially in substantial projects, the broader dynamics of energy pricing reduce the direct impact of any single buyer.

Threat of substitutes - 4

Justification: Although solar energy is becoming more and more popular as a renewable energy source, investment and development are still being fiercely competitive for other technologies like wind, hydro, and cutting-edge discoveries. Regional preferences and other technology advances may have an impact on solar energy's market share.

Rivalry Among Existing Competitors - 2

Justification: While solar energy is a growing and popular renewable energy source, other technologies like wind, hydro, and emerging innovations continually compete for investment and development. Regional preferences and technological breakthroughs in other areas could influence the market share of solar energy. Photon Energy's investment in storage technology and other innovations helps mitigate this risk.

APPENDIX 4: SWOT ANALYSIS

SWOT Analysis: Photon Energy	
Strengths	**Weaknesses**
Market Presence: Strong in established and emerging solar markets. *Portfolio Growth: Large ownership and pipeline of solar projects.* *Innovative Tech: Investments in solar technology advancements.* *Business Diversity: Multiple revenue streams across energy sectors.* *Solar Potential: Favorable conditions in key markets.*	*Capital Intensity: High investment needs and potential cash flow issues.* *Financing Reliance: Dependent on external funds for growth.* *Market Risks: New markets come with regulatory and operational risks.* *Photon Water's Impact: Currently minor with uncertain potential.* *Solar Challenges: Issues with energy supply-demand timing.*
Opportunities	**Threats**
Clean Energy Demand: Rising global need for green technology. *Tech Advancements: Opportunities to lead with new solar solutions.* *Government Incentives: Beneficial policies and targets for renewables.* *Energy Demand: High solar potential in primary markets.* *Water Tech Potential: Emerging technology for contamination treatment.*	*Regulatory Changes: Potential for adverse policy shifts.* *Price Volatility: Electricity market fluctuations impacting revenues.* *Tech Obsolescence: Rapid advancements may outpace current tech.* *Operational Delays: Risks of project setbacks and increased costs.* *Economic Conditions: Vulnerability to wider economic factors.*

Peers comparison

Company name	Location	Revenue (in million EUR)	Stock price (In EUR)	EBITDA (in million EUR)	Market Capitalization	Growth Rate
Neoen	France	503.2	29.88	414	35.634M	51%
Encavis	Germany	487.342	15.2	350.022	2.448B	46%
Solaria Energia	Spain	167.3	18.41	147.1	2.3B	51%
Grenergy	Spain	293	32.82	50.2	1 B	33%
Ecosuntek SpA	Italy	307.85M	19.45	15.88	34.706M	372.36%
Mean	-	**362.711**	**23.152**	**195.440**	-	**111%**
Photon Energy	Netherlands	95.13	1.85	24.31	2.762B	162%

APPENDIX 5 : INVESTMENT SEGMENT PROJECTIONS AND KEY ASSUMPTIONS

	Propietary Portfolio projections	2024F	2025F	2026F	2027F	2028F
INVESTMENT SEGMENT	Revenue (In EUR thousand)	22,731.55	27,809.97	31,742.05	60,532.57	105,161.03
	Revenue Growth YoY	1%	22%	14%	91%	74%
	Energy Production (in MWh)	141,827.33	177,150.79	238,117.55	583,171.59	1,224,893.65
	Energy Production YoY Growth (%)	6%	25%	34%	145%	110%
	Cumulative Installed capacity (MWp)	123.37	165.27	249.06	489.68	929.60
	Cumulative Installed capacity YoY Growth (%)	0%	34%	51%	97%	90%
	CAPEX (In EUR)	-	9,863,477.31	19,724,600.57	56,643,195.95	103,559,449.59
	CAPEX per MWp installed (In EUR)	-	59,680.99	79,196.18	115,673.90	111,402.16
ROMANIA	Cumulative Installed capacity (MWp)	31.47	69.27	138.30	206.02	213.10
	Production (In MWh)	20220.79	46290.03	90571.93	140432.14	142352.92
	Production per installed MWp (In MWh)	642.56	668.26	654.90	681.63	668.00
	Revenue (In EUR)	1,874,467.25	4,548,550.67	8,632,785.88	14,723,685.27	14,775,819.68
	Average electricity price (EUR per MWh)	92.70	98.26	95.31	104.85	103.80
HUNGARY	Cumulative Installed capacity (MWp)	51.81	55.91	58.34	58.34	80.90
	Production (In MWh)	68783.01	76452.53	76584.12	80549.64	109462.03
	Production per installed MWp (In MWh)	1327.50	1367.32	1312.63	1380.60	1352.99
	Revenue (In EUR)	5,667,720.27	6,677,669.78	6,488,488.58	7,506,908.31	10,099,414.00
	Average electricity price (EUR per MWh)	82.40	87.34	84.72	93.20	92.26
CZECHIA	Cumulative Installed capacity (MWp)	15.00	15.00	15.00	15.00	15.00
	Production (In MWh)	16670.52	17170.63	16483.81	17337.34	16990.59
	Production per installed MWp (In MWh)	1111.66	1145.01	1099.21	1156.13	1133.01
	Revenue (In EUR)	10,697,302.77	11,679,315.16	10,875,778.28	12,582,817.91	12,207,849.94
	Average electricity price (EUR per MWh)	641.69	680.19	659.79	725.76	718.51
AUSTRALIA	Cumulative Installed capacity (MWp)	14.67	14.67	23.49	173.49	446.49
	Production (In MWh)	24799.85	25543.84	39678.51	305094.98	769492.78
	Production per installed MWp (In MWh)	1690.98	1741.70	1689.45	1758.61	1723.44
	Revenue (In EUR)	1,404,911.22	1,533,882.07	2,311,174.91	19,548,131.77	48,810,127.26
	Average electricity price (EUR per MWh)	56.65	60.05	58.25	64.07	63.43
SLOVAKIA	Cumulative Installed capacity (MWp)	10.43	10.43	10.43	10.43	10.43
	Production (In MWh)	11353.16	11693.76	11226.01	11807.29	11571.14
	Production per installed MWp (In MWh)	1088.61	1121.27	1076.42	1132.16	1109.52
	Revenue (In EUR)	3,087,152.35	3,370,552.94	3,138,658.90	3,631,296.30	3,523,083.67
	Average electricity price (EUR per MWh)	271.92	288.24	279.59	307.55	304.47
POLAND	Cumulative Installed capacity (MWp)	0.00	0.00	3.51	26.40	163.68
	Production (In MWh)	0.00	0.00	3573.18	27950.21	175024.20
	Production per installed MWp (In MWh)	0.00	0.00	1018.00	1058.72	1069.31
	Revenue (In EUR)	-	-	295,164.63	2,539,727.70	15,744,737.13
	Average electricity price (EUR per MWh)	80.34	85.16	82.61	90.87	89.96

Key Assumptions	2024F	2025F	2026F	2027F	2028F
Average electricity prices (EUR per MWh)					
Hungary	82.40	87.34	84.72	93.20	92.26
Romania	92.70	98.26	95.31	104.85	103.80
Poland	80.34	85.16	82.61	90.87	89.96
Slovakia	271.92	288.24	279.59	307.55	304.47
Czech Republic	641.69	680.19	659.79	725.76	718.51
Australia	56.65	60.05	58.25	64.07	63.43

APPENDIX 6 : DCF MODEL

DCF (In EUR Thousand)	2024F	2025F	2026F	2027F	2028F
Revenue	96,690.35	118,291.79	135,017.19	257,479.82	447,310.32
Growth rate %	15%	22%	14%	91%	74%
EBIT	(966.90)	13,012.10	16,202.06	46,346.37	80,515.86
Tax on EBIT	-	3,253.02	4,050.52	11,586.59	20,128.96
NOPAT	(725.18)	9,759.07	12,151.55	34,759.78	60,386.89
Depreciation & Amortization	8,963.00	12,010.42	18,135.73	35,727.40	67,882.05
Changes in NWC					
Accounts receivable	6,437.40	(3,355.73)	(2,598.25)	(4,194.42)	(18,557.00)
Inventories	782.20	(3,320.25)	(2,570.78)	(15,564.62)	(7,263.49)
Prepaid expenses	(14.97)	(259.82)	(201.17)	(1,472.95)	(2,283.23)
Accounts payable	229.63	3,986.19	3,086.40	22,598.49	35,030.13
Accrued expenses	2.31	40.06	31.02	227.10	352.03
CAPEX	-	(9,863.48)	(19,724.60)	(56,643.20)	(103,559.45)
Free Cash Flows	15,674.39	8,996.47	8,309.90	15,437.56	31,987.93
WACC	9.66%	9.66%	9.66%	9.66%	9.66%
Present Value of FCFs	14,293.63	7,481.28	6,301.60	10,675.44	20,171.81

Target Price (In EUR thousand)	
Sum of PV of FCF	58,923.77
PV of Terminal Value	302,880.10
Enterprise Value	361,803.86
Equity Value	189,727.86
Shares Outstanding	61,238,521.00
IV per share, EUR	3.098
IV per share, CZK	75.998

Terminal Value (In EUR thousand)	
Terminal Growth Rate	3%
WACC	9.66%
Terminal Cash flow	31,987.93
Terminal Value	480,299.29

APPENDIX 7 : SENSITIVITY ANALYSIS

Terminal Growth Rate \ WACC	7.16%	7.66%	8.16%	8.66%	9.16%	9.66%	10.16%	10.66%	11.16%	11.66%
4.5%	297.42	236.49	192.27	158.73	132.43	111.27	93.88	79.34	67.02	56.44
4.0%	243.48	198.19	163.84	136.91	115.24	97.43	82.55	69.93	59.10	49.71
3.5%	204.28	169.10	141.52	119.32	101.09	85.85	72.92	61.83	52.22	43.80
3.0%	174.50	146.25	123.52	104.84	89.23	75.998	64.64	54.79	46.18	38.58
2.5%	151.12	127.83	108.70	92.71	79.16	67.53	57.44	48.62	40.84	33.93
2.0%	132.26	112.66	96.29	82.40	70.49	60.16	51.12	43.15	36.08	29.75
1.5%	116.74	99.96	85.74	73.53	62.95	53.70	45.53	38.29	31.81	25.99

We determine our DCF model robustness to changes in the following key inputs: WACC and Terminal Growth Rate, to determine their effect on our BUY reccomendation. We strongly believe that the company will grow by 3% after 5 years, however it should be noted that there a few scnearios where the price is lower than the current price

APPENDIX 8 : PHOTON WATER AND LERTA

Photon Water

Photon Water provides clean water solutions for all environments, from treatment and remediation services to the management of wells and other water resources.

We also work closely with leading academic institutions and participate in governmental research programmes to develop cutting-edge water treatment and management solutions.

Remediation

We offer a range of remediation services to eliminate contaminants from groundwater and soil.

Wells and Resources

We provide complete services for wells and water resources, from design to maintenance.

Water Treatment

We deliver treatment solutions including potable and wastewater treatment, hazardous liquid waste and industrial water treatment.

Water Resource Management

We help our customers optimise the use of water resources such as lakes, ponds and industrial water bodies.

LERTA

A recent acquisition of Photon Energy Group, Lerta delivers clean energy directly to consumers through its Virtual Power Plant. The Lerta VPP aggregates and distributes clean energy from a variety of sources, including solar, wind and biogas.

Since its founding, Lerta has grown to become Poland's third-largest renewable energy aggregator, with energy trading licenses in six countries across Central and Eastern Europe.