



Global Renewable Energy M&A Report

Insights from Asset
Transactions from 2023

Solar, Onshore Wind &
Offshore Wind



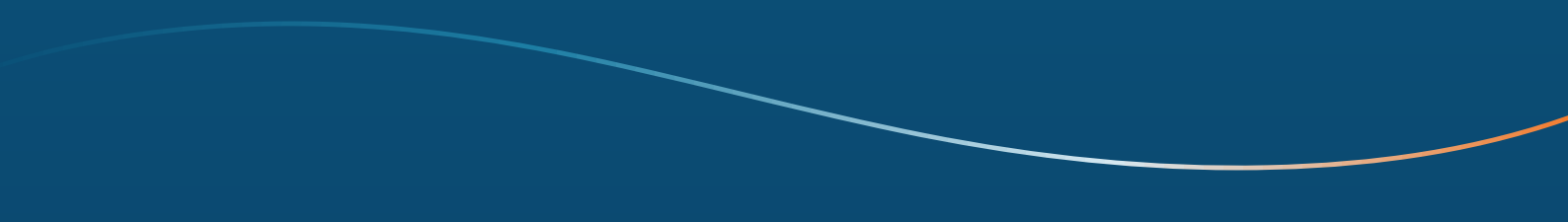
Executive Summary

Did you know?

- ... That the number of solar and wind asset transactions decreased from 393 in 2022 to 381 in 2023, and that the transacted capacity decreased by 10% over the same period?
- ... That solar photovoltaic (PV) projects accounted for almost 60% of all transactions (and transacted capacity) out of all solar, onshore wind and offshore wind transactions observed in 2023?
- ... That, in 2023, the average transaction size was 302 MW for solar assets, 221 MW for onshore wind and 721 MW for offshore wind assets?
- ... That the average transaction value per MW for offshore wind assets across all development stages in 2023 was 2.5 EURm/MW? This is significantly lower than the 3.3 EURm/MW recorded for deals in 2022.
- ... That while the average acquisition share for onshore wind assets remained stable at ~86%, the average share for offshore wind deals increased significantly from 28% in 2022 to 41% in 2023?
- ... That almost half of all transactions in 2023 involved fully operational assets? Onshore wind was a driver, with 62% of transacted assets being operational.
- ... That Europe is the frontrunner in the market for renewable energy transactions, accounting for more than 60% of the deals and more than half of the global transacted capacity?



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Introduction

The transition to renewable energy sources continues to gain **global momentum**, despite recent challenging market conditions. While the most compelling argument to date has largely been focused on the need to **combat climate change and reduce emissions**, recent global events and market developments have highlighted how the energy transition represents a broader shift in the **economic, political, technological, and social landscape**.

The aim of this report is to provide an in-depth look at the evolution of asset transactions in 2023, particularly for solar and wind projects. While the **competition for renewable energy M&A deals is increasing**, the projects are often subject to high levels of uncertainty and complex challenges, all of which are likely to impact deal activity, M&A strategies, and the overall attractiveness of the market. This report aims to contextualize recent deal activity in the industry by **highlighting key trends** and providing insights into some of the **deal drivers and challenges** currently facing the industry.

Total Deal Activity



By Technology



By Project Stage



By Geography

Mergers and acquisitions, targeting both individual assets or portfolios and developers have become an **integral strategy** for companies in the renewable energy industry. This trend reflects the dynamic evolution of the sector and the growing recognition of renewables as a **critical component in the global energy mix**. Asset transactions are often driven by the desire to diversify and expand renewable energy portfolios. Renewable energy projects, such as wind farms and solar parks, require **substantial upfront investment and expertise** at various stages of development, from planning and permitting to construction and operation. By acquiring existing projects, companies can bypass some of the initial development challenges and rapidly **expand their capacity and market presence**. This strategy can be particularly attractive to traditional energy companies looking to pivot towards renewables, as it provides a fast track to adjust their energy mix.

Corporate mergers and acquisitions are a **pathway to growth and consolidation**. The renewable energy industry is characterized by **intense competition and rapid technological advancement**. Smaller developers often possess innovative technologies or specialized knowledge but may lack the capital or operational scale to fully capitalize on their potential. Larger companies, on the other hand, have the resources but are constantly **seeking to innovate** and stay ahead of the curve. Through acquisitions, these larger entities can integrate cutting-edge technologies and expertise to **strengthen their market position**.

02 Methodology & Data

The transactions detailed in this report were sourced from publicly available sources, such as news articles and company press releases. The scope of the analysis is limited to include transactions for solar PV, onshore wind, and offshore wind assets, leaving insights into other investment trends for emerging technologies such as battery storage, hydro, geothermal, etc. for further analysis.

The data includes transactions concerning specific projects, assets, or portfolios across all project stages, from development to operational assets. The aim of the report is to offer insights into the renewable energy asset market, including market size, demand landscape and trends.

It is important to emphasize that the information gathered is based solely on publicly available data and while we strive to provide a comprehensive and complete picture, it is not guaranteed that the data contains an exhaustive list of all global asset transactions during the period under review.

Data Limitations



Pricing Details

- The assessment of deal multiples relies on transactions where price details have been disclosed. However, it is important to note that transparency and financial disclosure are not mandatory for all transactions, which limits the availability of information.



Exclusion of China

- Finding details and public announcements of asset transactions in China has proven challenging.
- While China is a global frontrunner in the renewable energy industry, transactions involving Chinese assets are not included.



Regulatory Approval

- Certain M&As are subject to approval by various antitrust and competition regulatory authorities.
- Transactions are included in this report at the time details are publicly announced and some transactions may be pending final approval.



Corporate M&As

- As the focus of the assessment is on asset transactions, corporate M&A deals are only included if the transaction involved tangible projects or assets and details on these were disclosed.



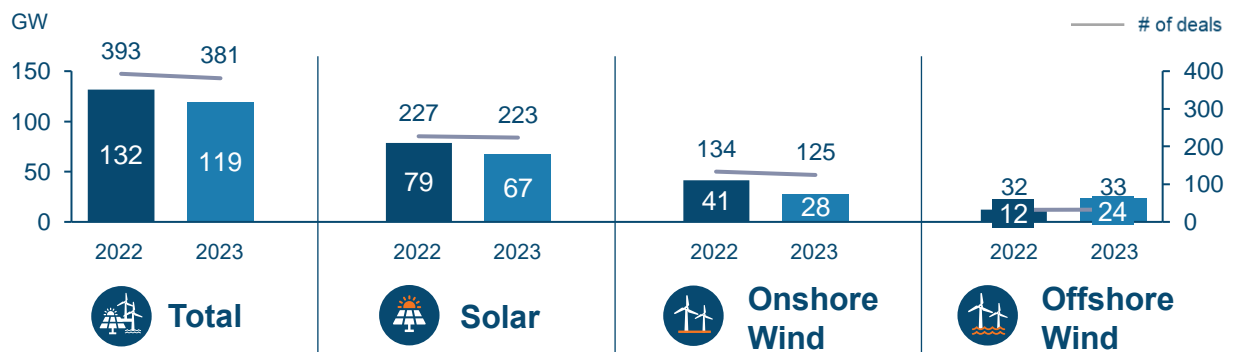
Mixed Technology Portfolios

- Transactions involving portfolios of mixed technologies and technologies not otherwise included in the scope of the analysis, and where the split between technologies is not disclosed, have been excluded.

Deals by Technology

- The total number of recorded transactions for solar and wind assets decreased slightly from 393 in 2022 to 381 in 2023. Over the same period, the capacity transacted for solar, onshore wind and offshore wind decreased by 10%, indicating a lower average transaction capacity in 2023 compared to 2022.
- The split of deal activity between solar, onshore wind and offshore wind assets can provide valuable insights into the market dynamics, investment trends, technology adaptation, policy impacts and varying risk assessments within the renewable energy industry.

Deal Count & Transacted Capacity by Technology, 2022-2023



Solar PV

- In both 2022 and 2023, solar assets dominated the deal activity, accounting for nearly 60% of both the deal count and deal capacity in 2023.
- The number of solar asset deals fell from 227 in 2022 to 223 in 2023, a decrease of 2%. Over the same period, the transacted solar capacity decreased by 15% from ~78.7 GW in 2022 to ~67.3 GW in 2023. This decrease indicates an overall reduction in the average transaction size from 347 MW to 302 MW.

Onshore Wind

- Onshore wind witnessed the largest decrease in deal activity, continuing the downward trend seen in recent years. Deal frequency decreased by 7%, from 134 deals recorded in 2022 to only 125 deals in 2023. Over the same period, the amount of transacted onshore wind capacity decreased significantly from ~41.2 GW to ~27.6 GW, a decrease of 33%.
- The changes in deal frequency and capacity, translate into a decline in the average capacity acquired from 307 MW per deal to 221 MW per deal. Over the same period, the average acquisition percentage has remained stable, indicating a decrease in the total capacity of transacted assets.

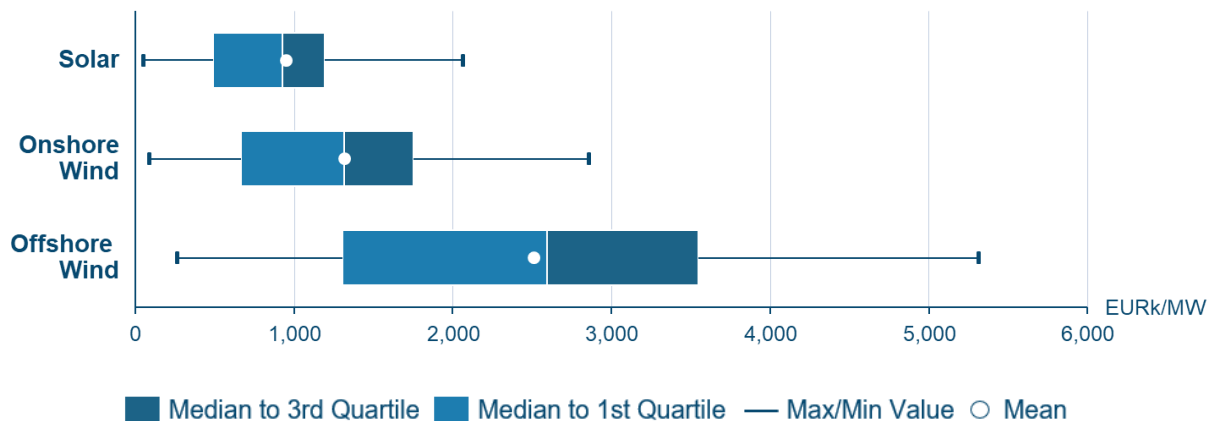
Offshore Wind

- The number of deals recorded for offshore wind assets has remained stable at 32 in 2022 and 33 in 2023. While the frequency of deals has not changed notably, the market has seen a significant shift in the transacted capacity, doubling from ~11.9 GW of transacted capacity in 2022 to ~23.8 GW in 2023. This shift indicates a significant increase in the average deal size for offshore wind projects, from 371 MW in 2022 to 721 MW in 2023.

Deal Multiples

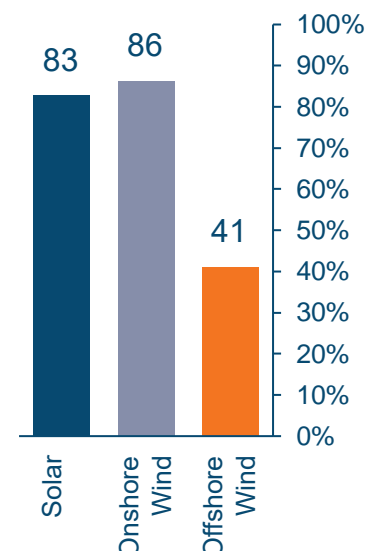
- Similar to overall deal volumes, the valuation of renewable energy assets is influenced by a variety of market dynamics, including regulatory frameworks, government incentives, technological advances and investor sentiment.
- The value range of the deals varies significantly across all technologies. Part of this variation can be attributed to the inclusion of transactions of projects at different stages: Fully operational assets, no longer subject to the inherent risks of development and construction, typically command higher values on average. Other variations can be attributed to, for example, differences in CAPEX scopes and subsidy schemes across markets.
- Based on disclosed deal values from 2023 transactions, the average value per MW multiple indicates a higher average valuation for offshore wind assets at 2.5 EURm/MW, compared to solar and onshore wind assets at 0.95 EURm/MW and 1.3 EURm/MW, respectively.
- While the multiples for solar and onshore wind have remained stable from 2022 levels, the multiple for offshore wind has decreased significantly from 3.3 EURm/MW in 2022, a decrease of 24%.

Deal Multiples by Technology, 2023



Average Acquisition Shares

- Acquisition sizes in renewable energy asset transactions provide valuable insights into the varying capital intensity and complexity of different technologies and reflect the diverse investment strategies prevalent in the industry.
- In 2023, the trend towards higher ownership stakes in solar and onshore wind assets was prominent. This trend is underlined by the significant proportion of deals involving the acquisition of 100% ownership – 80% for solar and 81% for onshore wind.
- Offshore wind projects tend to exhibit lower acquisition percentages. Higher capital expenditure, operational complexity and the less mature nature of offshore wind technology encourage consortium-based investments or partial stake acquisitions. In 2023, only 12% (4 out of 33 deals) involved the acquisition of 100% of the offshore wind asset, while the overall average acquisition percentage was 41%.



Deals by Project Stage

- Demand for the acquisition of renewable energy assets at **various stages of development** is shaped by the **strategic objectives, risk tolerance and expertise** of the investors and developers involved.
- Each project phase presents **unique opportunities and challenges** that influence the decision-making process of stakeholders and the associated deal multiple. This **nuanced demand landscape** underscores the market's ability to accommodate and cater to a diverse range of investor preferences and risk appetites.

Development

43%

Of transactions involved projects in development

- Development stage projects involve securing land rights, obtaining necessary permits, and conducting preliminary studies and assessments. Demand for development stage projects is particularly high among players seeking **high-growth opportunities** and those willing to navigate the associated risks and uncertainties.
- In 2023, almost 40% of offshore wind deals involved development projects. Offshore wind developers may adopt a 'farm-down' strategy, selling part of their stake before completion to **manage risk, improve finances, and form strategic partnerships**. Buyers enter projects pre-completion to secure higher returns, influence development, access prime assets, leverage incentives, diversify portfolios, and actively manage risk. As offshore wind technologies are maturing, lenders are becoming more **comfortable with offshore investment** and the willingness to invest prior to COD is increasing.
- Solar development assets are seeing a **significantly higher transaction rate** compared to onshore wind due to shorter development cycles, quicker returns, fewer siting and permitting challenges, lower technology requirements, and broader investor participation, making solar development projects **more accessible** and attractive.

Construction

9%

Of transactions involved projects under construction

- Projects in the construction phase have **passed the initial planning** and permitting hurdles and are in the process of being physically built.
- Acquiring a project at this stage allows investors to **avoid some of the risks** and uncertainties of early-stage development, while still offering the potential to add value through **efficient project execution** and management.
- The proportion of assets being transacted while under construction is relatively stable at around **9% across all technologies**.

Operations

48%

Of transactions involved fully commissioned projects

- The **attractiveness** of fully operational assets remains high across all technologies. Over 62% of deals in onshore wind involved operational projects, while the figures for offshore wind and solar were lower at 52% and 38% respectively, reflecting the **higher transaction rates for development projects** within these asset classes.
- Demand for fully operational projects, regardless of technology, is particularly strong among institutional investors, utilities, and companies looking for **stable, long-term returns with lower risk profiles**.
- Fully operational projects are **less susceptible** to the inherent risks of development and construction, such as cost overruns or delays. This stage is particularly attractive to investors seeking to **diversify** their asset portfolios and generate stable income, as well as those with a more **conservative investment approach**.

Deals by Geography

Americas 27%

Number of deals: 94
Capacity: 31.967 MW

Europe 53%

Number of deals: 233
Capacity: 63.435 MW

Asia-Pacific 17%

Number of deals: 41
Capacity: 20.346 MW

Africa 3%

Number of deals: 13
Capacity: 3.138 MW

*Excl. China

Europe

- In 2023, Europe maintained its dominant position in global renewable energy transactions, accounting for 53% of the transacted capacity, reaffirming the continent's strong position in the industry.
- This leadership is evident in Europe's advanced renewable energy market, characterized by decades of investment resulting in sophisticated infrastructure, technological know-how and operational expertise.
- Notably, deal activity in Europe in 2023 was concentrated in key markets such as Germany, Poland, Spain, and the UK.

Asia-Pacific

- In 2023, the Asia-Pacific region contributed 17% of the total capacity transacted. Deal activity in the region decreased slightly compared to 2022. This is in line with the overall downward trend.
- Deal activity is particularly concentrated in Australia, Japan, Vietnam, and India.
- Transactions in APAC are dominated by solar assets, accounting for 70% of deals and 50 % of transacted capacity.
- Offshore wind assets account for only 2.4% of deals, but a significant 17% of capacity transacted, highlighting the presence of large-scale offshore wind projects in the region.

The Americas

- The Americas, particularly North America, play a significant role in the global renewables industry, accounting for 27% of the total capacity transacted in 2023.
- Robust investment volumes, driven by supportive policies, have fueled the growth of renewable energy projects.
- While deal activity in 2023 is largely led by the US, Latin America is also contributing to the continent's expansion of renewable energy asset transactions.

Africa

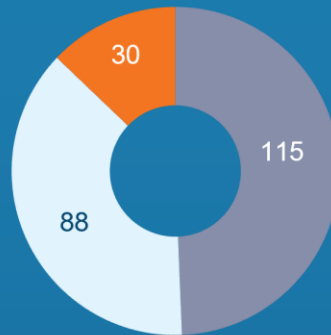
- Africa's role in asset deals remained modest in 2023, accounting for just 3% of recorded transacted capacity.
- Despite its current under-representation in global asset deal activity, a positive trend is emerging. The number of recorded deals involving African assets increased from just 2 in 2022 to 13 in 2023, indicating a growing interest in investing within the continent.
- With some of the world's richest renewable resources, Africa is an emerging market with huge untapped potential, particularly in solar and onshore wind.



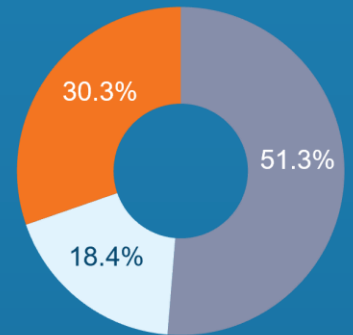
Regional Deal Decomposition

EUROPE

Deal Count

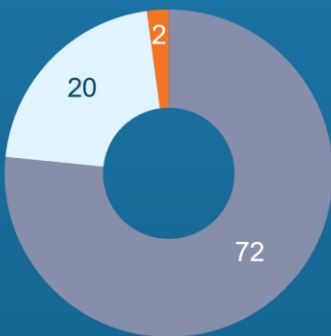


Deal Capacity

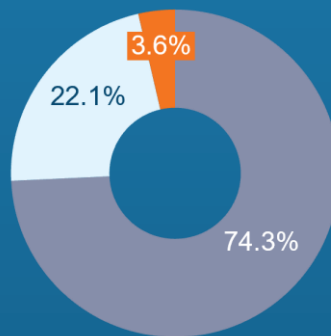


Solar Onshore Wind Offshore Wind

Deal Count



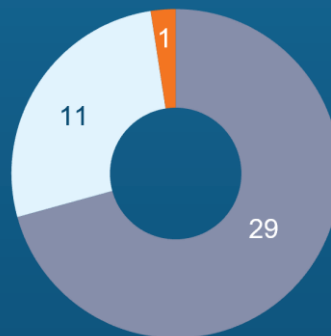
Deal Capacity



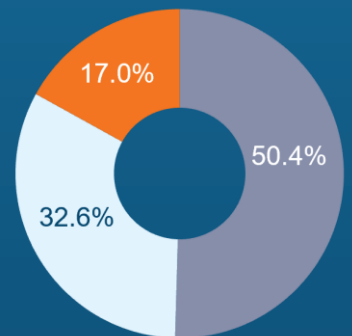
Solar Onshore Wind Offshore Wind

THE AMERICAS

Deal Count



Deal Capacity



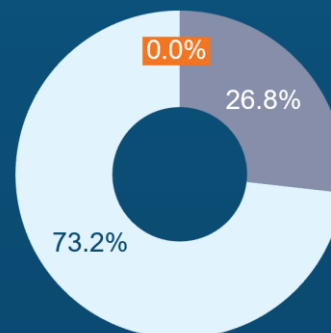
Solar Onshore Wind Offshore Wind

ASIA-PACIFIC

Deal Count



Deal Capacity



Solar Onshore Wind Offshore Wind

AFRICA

07 Selected Deal Highlights

- In March 2023, Mainstream Renewable Power and Actis completed the transaction to sell the Lekela Renewables platform to Infinity Power.
- Lekela was established in 2015 and is today the largest pure-play renewable energy IPP in Africa.
- The platform consists of more than 1 GW of fully operational onshore wind assets in South Africa (624 MW), Egypt (252 MW) and Senegal (159 MW).
- The transaction was valued at an enterprise value of 1.49 EURbn and represents the largest renewable energy deal in Africa to date.

Solar PV
260 MW (100%)



- Deal value: 323 EURm
- Deal Multiple: 1.24 EURm

JAN '23

Onshore Wind Portfolio
1035 MW (100%)



- Deal value: 1.49 EURbn
- Deal Multiple: 1.44 EURm

MAR '23

Solar PV Portfolio
1100 MW (100%)



- Deal value: Undisclosed

JUN '23

Offshore Wind
1100 MW (25.5%)



- Deal value: 601.3 EURm
- Deal Multiple: 2.14 EURm

DEC '23

Offshore Wind Portfolio
4200 MW (100%)



- Deal value: 1.1 EURbn
- Deal Multiple: 0.26 EURm

DEC '23

Vattenfall x RWE

- In December 2023, RWE Renewables announced the acquisition of Vattenfall's 4.2 GW Norfolk Offshore Wind Portfolio.
- The projects were suspended in July 2023 due to challenges related to rising inflation, capital costs and supply chain issues.
- In 2022, one of the projects won a Contracts for Difference (CfD) in an auction, but the following deterioration of the global financial situation indicated that the expected losses were likely to exceed the costs of pausing the project.
- The deal value of 1.1 EURbn relates mainly to the development costs already incurred.
- The deal multiple of 0.26 EURm/MW is significantly lower than the average for the offshore wind sector, likely influenced by Vattenfall's challenges and the current development.

Deal Drivers & Challenges

- Transactions activity is closely linked to the broader state of the industry, as macroeconomic factors can either enhance or deter investor interest in renewable energy assets. Understanding the key drivers and challenges is essential for stakeholders to efficiently navigate the evolving market.
- These factors not only shape investment strategies and decision-making, but also serve as key indicators of market trends and potential pitfalls.

Deal Drivers

Deal Roadblocks



Technology Advancements

Technological improvements in solar and wind energy have led to higher efficiencies and lower LCoE, making these asset classes more lucrative for investors.



Macroeconomic Factors

Increases in inflation and interest rates have had a significant impact through higher cost of capital, lower returns, higher costs at all project stages and higher overall investment risk.



Policy & Regulatory Support

Favorable policies, subsidies, and regulatory frameworks incentivize investment in renewable energy assets. Conversely, policy uncertainty is likely to inhibit investment and M&A activity in the industry.



Supply Chain Issues

Recent years have highlighted supply chain vulnerabilities. Rising material prices, highly concentrated supply chains and manufacturing bottlenecks are leading to project delays and cancellations.



Focus on Energy Security

Geopolitical tensions have highlighted the consequences of reliance on imported fossil fuels. The need to ensure future energy security and independence is driving ambitious targets for green energy expansion.



Labor Shortage

The rapid growth in the industry is leading to a shortage of skilled workers to deliver the ambitious pipeline of renewable energy assets. The workforce gap is expected to grow significantly in the future.



Social Awareness & Demand

Social demand is increasingly becoming a driver of green energy. It is driving a shift in corporate strategies towards sustainable practices and is channeling funds towards renewable assets.



Logistics

As the size of turbines installed in offshore wind farms continues to increase, the availability of suitable vessels for transport, installation and maintenance is expected to be a challenge for project execution.

09 Concluding Remarks

The analysis of transaction data for 2023 indicates an **overall downward trend in investment activity** for global solar and wind assets. This trend is represented by a decrease in deal frequency and transaction volume for solar and onshore wind projects, while investment in offshore wind assets has seen an increase in transaction volume, primarily **driven by larger deals**. However, despite this increase in volume, the deal multiples recorded for 2023 deals suggest a significant **decrease in offshore wind valuations**, with a 24% reduction compared to 2022 deals.

The downward trend in deal activity is likely a **response to recent macroeconomic instability**, characterized by **rising inflation and interest rates**, combined with industry-specific hurdles, such as supply chain disruptions. These challenges are likely to be causing some investors to adopt a more **cautious approach**, delaying investment decisions until they have greater confidence in the long-term financial viability of their investment.

Despite the slowdown in transaction activity in recent years, rapid global expansion, supported by the addition of new capacity, continues. As a result, **competition for investment opportunities** within the industry is expected to intensify going forward.

The state of the market and the close correlation with transactional activity highlights the importance of conducting thorough **due diligence**. Due diligence helps to **identify and assess the potential risks** associated with a renewable energy investment. Understanding the technical, financial, legal and commercial risks, allows investors to develop **risk mitigation strategies** to safeguard their investments and **optimize returns**. Through the due diligence process, investors gain transparency into projects fundamentals, operations and performance metrics. This **transparency fosters accountability** among project developers and stakeholders, promoting integrity and trust within the investment ecosystem.

Summary of Key Findings from 2023 Asset Transactions

	Solar	Onshore Wind	Offshore Wind
Deal Count	223	125	33
Transacted Capacity	67.3 GW	27.6 GW	24.8 GW
Average Deal Size	302 MW	221 MW	721 MW
Average Deal Multiple	0.95 EURm/MW	1.3 EURm/MW	2.5 EURm/MW



How can PEAK Wind support your transaction?

The Due Diligence & Transactional Services team at PEAK Wind can support with various services throughout the acquisition lifecycle for solar PV, onshore wind, and offshore wind projects. If you are interested in further details or a list of the transactions recorded for 2023, please feel free to reach out.



Commercial & Technical Due Diligence Advisory Services

- Detailed contractual review of major project agreements (e.g., SAA, TSA, etc.)
- Validation of financial model inputs (e.g., Production, Availability, CAPEX, OPEX)
- Review/preparation of O&M Strategy
- Detailed bottom-up OPEX modelling
- Offshore wind OPEX benchmarking based on historical actuals
- Installation and O&M performance data for all offshore projects
- Operational and technical integrity assessment
- Maintenance needs and failure rate assessments
- Production and availability performance analysis
- Lifetime extension assessment

PEAK Wind Experience & Capabilities

- PEAK Wind currently employs +200 industry leading, dedicated professionals with vast experience from major utilities, developers and OEMs within the renewable energy industry.
- In the role as Technical Advisor, PEAK Wind offers unique commercial and technical due diligence for transactions within renewables whether they involve overall companies, assets under development, construction or operation by utilizing a wide range of internal competencies, expertise and the latest industry insights.
- PEAK Wind due diligence advisory has been relied upon and approved by investors in several major transactions.

Contact



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[Learn more](#)