Renewables Market Scanning Report

October 2024

Foreword

Investment in renewable assets is no longer a niche market. Substantial capital is attempting to identify the best opportunities, and new markets are entering the race to decarbonise their power sectors. Most notably, the passage of the Inflation Reduction Act has turbo-charged the energy transition in the US and the profitability of US investments. In this increasingly competitive, and global market for green capital, identifying and comparing opportunities is critical to secure the best returns.

Baringa's Global Renewables Market Scanning Report leverages Baringa's exceptional depth of insight, market intelligence and analytics across 60 markets and 5 continents to provide an objective and cross-country comparison of investments' attractiveness. It enables investors and developers to easily compare the attractiveness of renewable power assets across a range of parameters and markets.

Our Renewables Market Scanning Report leverages Baringa's extensive power market analysis and draws on our projections of capacity evolution, capture prices and costs in each market; analysing over 60,000 data points. Our proprietary assessment considers six dimensions:

1. Capacity Growth
2. Profitability
3. Market Liquidity
4. Ease of Development
5. Policy Environment
6. Macro Risk

Collectively, these scores provide granular insight on the strengths, and weaknesses, of key markets from an investment attractiveness perspective.

- **Part 1: The Ranking & Regional Commentary**
  This section outlines the overall ranking of the 60 markets modelled, with commentary from our regional experts.
- **Part 2: Thematic Insights**
  This section highlights thematic stories and trends that emerge from the database from which our Index draws.

Mark Turner
Partner, Expert in Power Markets

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Partner, Expert in Economics Finance, Regulation and Policy

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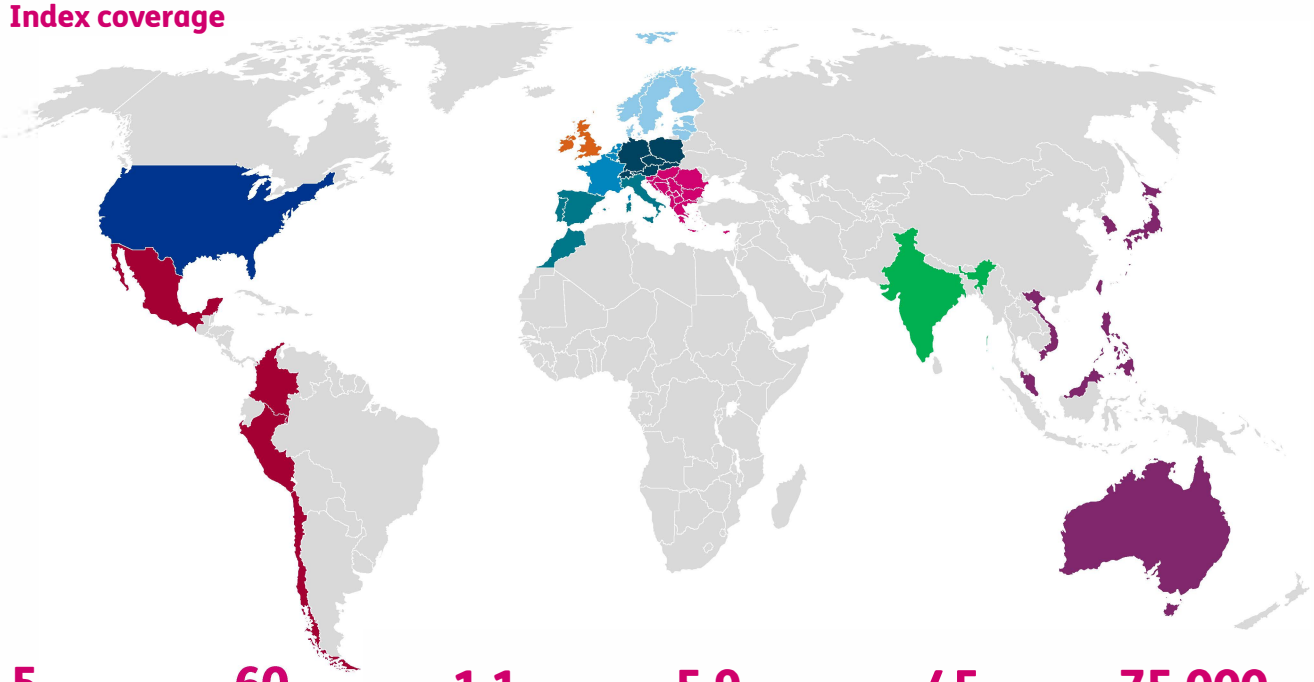

5
continents

60
markets

1.1
TW of renewable capacity in 2024

5.9
TW of renewable capacity in 2050

~45
Percent of world primary energy consumption

75,000
TWh primary energy consumption

The United States

Tom Harper
Power Market Expert

Central & Western Europe

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Power Market Expert

Northern Europe

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Methodology

Baringa's Global Renewables Attractiveness Index ranks the investment attractiveness of 60 markets (covering Europe, the United States, parts of APAC and South America) across three technologies: solar PV, onshore and offshore wind. Markets are scored based on six criteria, as outlined below:

1. Capacity growth

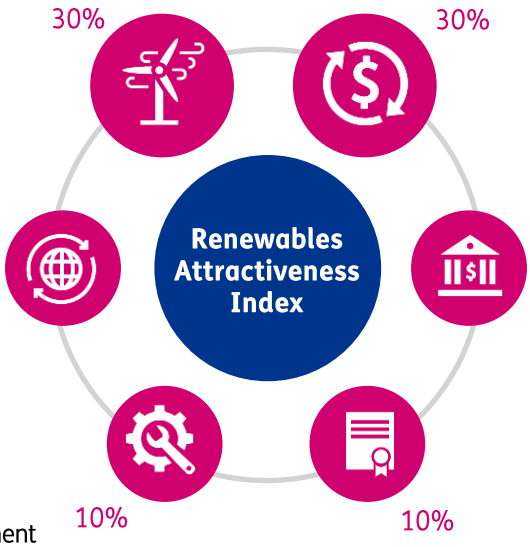
We evaluate the size of the opportunity based on installed capacity and future growth until 2050 (both absolute and relative), based on Baringa's industry-leading market projections and expert knowledge.

6. Macro risks

We analyse macroeconomic and political risk through World Bank indicators on regulatory quality, government effectiveness, political stability, corruption and rule of law as well as credit ratings, inflation and growth projections.

5. Ease of development

An assessment of barriers to development (e.g. permitting and other timelines, grid connection queues) is carried out leveraging Baringa's in-house market experts.



2. Profitability

Profitability across markets is compared using a profitability ratio defined as realised price / LCOE. Realised prices consider the stream of capture prices over the economic life of the asset, discounted with project WACC.

3. Market liquidity

This criteria looks at the volume and value of transactions in renewable energy in the relevant market over the last two years.

4. Policy environment

This criteria looks at how stable and supportive the current policy environment is, using Baringa's Credibility and Durability assessment.

Top performers by market scan component

1. Capacity growth

1st	United States
2nd	India
3rd	Great Britain

2. Profitability

1st	Singapore
2nd	Taiwan
3rd	Morocco

3. Market liquidity

1st	United States
2nd	Spain
3rd	Great Britain

4. Policy environment

1st	CAISO
2nd	Germany
3rd	Spain

5. Ease of development

1st	Chile
2nd	Philippines
3rd	Vietnam

6. Macro risks

1st	Singapore
2nd	Denmark
3rd	Norway

Note: profitability refers to a merchant route to market.

Renewables Market Scanning Report Ranking – Merchant

#	Geography	SOL	ONW	OFW	Final score
1	US (whole)	111	169	63	169
2	*India - Western Region*	*74*	*168*		*168*
3	India (whole)	146	117		146
4	Great Britain	68	74	140	140
5	Germany	131	134	117	134
6	Japan	123	67	63	123
7	*India - Northern Region*	*120*	*86*		*120*
8	*India - Southern Region*	*87*	*113*		*113*
9	Spain	92	100	66	100
10	*U.S. ERCOT*	*61*	*92*		*92*
11	*U.S. MISO*	*65*	*91*		*91*
12	France	80	87	74	87
13	Italy	83	65	52	83
14	Australia	61	80	58	80
15	*U.S. SPP*	*45*	*77*		*77*
16	Netherlands	60	48	74	74
17	Taiwan	71	54	74	74
18	*U.S. PJM*	*74*	*63*	*65*	*74*
19	South Korea	74	48	54	74
20	Vietnam	72	57	73	73
21	*U.S. CAISO*	*67*	*58*	*66*	*67*
22	Singapore	66			66
23	Sweden	41	63	42	63
24	*India - Eastern Region*	*63*	*29*		*63*
25	Poland	56	57	59	59
26	Mexico	58	53		58
27	Chile	54	57		57
28	Denmark	44	48	56	56
29	Norway	34	45	55	55
30	Philippines	55	40		55
31	Serbia	55	41		55
32	*U.S. NYISO*	*53*	*47*	*43*	*53*
33	Portugal	49	51	41	51
34	Finland	39	50	37	50
35	Belgium	40	39	49	49
36	*U.S. ISONE*	*48*	*48*	*45*	*48*
37	Greece	47	43	40	47
38	Malaysia	47			47
39	Switzerland	46	42		46
40	Cyprus	46	36		46
41	Peru	45	33		45
42	*India – NE Region*	*45*	*28*		*45*
43	Colombia	45	41	36	45
44	Austria	41	45		45
45	Ireland SEM	42	45	44	45
46	Morocco	38	44		44
47	Czech Republic	44	44		44
48	Slovakia	42	41		42
49	Romania	40	42	34	42
50	Hungary	40	41		41
51	Slovenia	39	41		41
52	Kosovo	41	32		41
53	Montenegro	40	34		40
54	Croatia	39	38		39
55	Bulgaria	38	36		38
56	Bosnia and Herzegovina	37	33		37
57	Lithuania	37	31	32	37
58	North Macedonia	36	30		36
59	Albania	36	31		36
60	Estonia	33	31	31	33
61	Latvia	32	29	30	32

SOL = Solar
ONW = Onshore wind
OFW = Offshore wind

Renewables Market Scanning Report Ranking – Subsidy

#	Geography	SOL	ONW	OFW	Final score
1	Great Britain	70	77	145	145
2	Germany	132	137	119	137
3	Spain	93	103	70	103
4	*U.S. ERCOT*	63	96		96
5	*U.S. MISO*	68	93		93
6	France	81	90	78	90
7	Italy	84	67	56	84
8	*U.S. CAISO*	83	66	74	83
9	*U.S. PJM*	79	68	67	79
10	*U.S. SPP*	48	79		79
11	Netherlands	60	50	76	76
12	*U.S. NYISO*	66	59	50	66
13	Sweden	41	66	45	66
14	*U.S. ISONE*	62	63	53	63
15	Poland	56	59	62	62
16	Norway	35	48	61	61
17	Denmark	45	50	59	59
18	Serbia	57	43		57
19	Portugal	50	54	45	54
20	Finland	38	53	40	53
21	Belgium	40	41	52	52
22	Greece	48	45	44	48
23	Morocco	41	48		48
24	Cyprus	48	38		48
25	Austria	41	47		47
26	Switzerland	47	44		47
27	Ireland SEM	42	46	47	47
28	Czech Republic	44	46		46
29	Romania	42	44	40	44
30	Slovakia	43	44		44
31	Hungary	41	44		44
32	Slovenia	41	43		43
33	Kosovo	42	34		42
34	Montenegro	42	37		42
35	Croatia	41	41		41
36	Bosnia and Herzegovina	39	36		39
37	Bulgaria	39	38		39
38	North Macedonia	38	33		38
39	Albania	37	34		37
40	Lithuania	37	34	36	37
41	Estonia	34	34	36	36
42	Latvia	32	31	33	33

This ranking focuses on the effect of subsidies on renewable power generation in Europe and the US. Thanks to the revenue certainty provided by many subsidies in Europe (e.g. CfDs, FiT), WACC of the subsidised asset is lower, decreasing LCOE. In the US, tax credits have a direct effect on reducing LCOE.

SOL = Solar
ONW = Onshore wind
OFW = Offshore wind

Section 2: Regional Insights

Regional scoring

Using our index, we have aggregated regional scores to compare larger regions and have heard from our market experts to explore market context for each of these regions.

At a glance

Region	Page	Market size	Profitability (Merchant)	Market liquidity	Policy environment	Ease of development	Macro risk
The US	8						
Central & Western Europe	10						
The Nordics	12						
Great Britain & Ireland	14						
Southern Europe	16						
South-Eastern Europe	18						
Australia	20						
APAC	22						
India	24						
Latin America	26						

RAG refers to colour coding of average numerical scores for each region.

The US

Market size	Profitability (Merchant)	Market liquidity	Policy environment	Ease of development	Macro risk
●	●	●	●	●	●

A word from the regional lead

Tom Harper
Partner,
Expert in Power Markets

- From a renewable investor's perspective, the US is a collection of different markets and thus opportunities for deploying capital into the energy transition. While all markets have a common underpinning in federal policy (i.e. the Inflation Reduction Act (IRA) and availability of tax credits), there are notable differences across state renewable energy goals and programs, market designs, and route to market opportunities to navigate.
- These differences mean that **our investor clients tend to "hedge" across markets** – for example, taking positions in markets like ERCOT where interconnection processes are faster but where price risk is greater, while also taking longer term bets on markets which are slower to connect new projects, but which produce greater returns (e.g. PJM).
- The headline development in the US remains the **Inflation Reduction Act (IRA)** which provides **substantial incentive for renewable energy investments**, by offering **federal tax credits to uplift sector growth and supply chain development**. Since its introduction in the summer of 2022, most of the rules and tax codes have been detailed by the IRS, and a market response is clearly observable in areas such as clean energy manufacturing, clean molecules (activity in hydrogen, and CCUS), and in the growing tax credit market alongside more established infrastructure deployments in wind, solar, and battery energy storage systems (BESS).
- **However, a Republican victory in the 2024 presidential election could put some of these federal tax credits in jeopardy**, with credits targeting offshore wind and electric vehicles most at risk in our view. A slowdown in Loan Programs Office lending in the Department of Energy is another possible outcome. On the whole, we view a large-scale rollback of the IRA unlikely, primarily because the **benefits of the IRA are mostly being felt in traditionally Republican states and communities**.
- Outside of the IRA, a raft of developments from policymakers, market operators, and industry members will mean that investors need to remain astute to new risks and opportunities for development projects in particular over the next 12 months. These include:
  - The reinstitution of **trade tariffs against solar cell and module imports from Southeast Asia** – back in force from June 6 this year, placing focus on whether the domestic supply chain can deliver for late-stage development projects
  - The passing of **FERC Order No. 1920 which** instituted sweeping changes to Transmission Planning and Cost Allocation Rules, targeting regional transmission solutions which will be a boon to independent transmission developers looking to build ties between regions, and for renewable developers looking to mitigate the impacts of congestion and curtailment in certain parts of markets
  - **Lengthy interconnection queues across the country**, with ISOs reforming study processes and financial commitments from developers to streamline connections of renewable projects
  - **EPA's *"Power Plant Rules"*** lays out regulation for **existing coal-fired and new natural gas-fired power plants to control 90% of their carbon emissions based on carbon capture and sequestration (CCS)**. Further rules are also expected for existing gas plants in 2025.

The US: Deep dive

U.S. MISO will see a reduction in accredited capacity across the board, with renewables taking the biggest hit amid contentious reforms of their capacity accreditation methodology, pending approval.

A set of interconnection rule changes filed with FERC last fall aimed to decrease speculative projects in the queue. While most were accepted, an annual MW cap was rejected. MISO reapplied for this cap and delays its 2024 interconnection cycle until resolved.

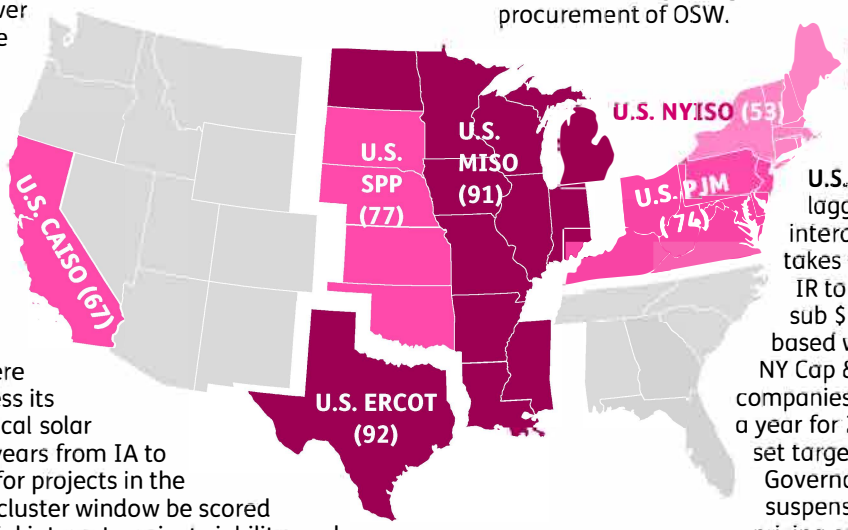
Solar PPA prices have settled just below $60/MWh, while wind PPA prices hover just above the same mark[1].

U.S. CAISO did not open an interconnection request window in 2024 as reforms were under way to address its queue backlog. Typical solar project took over 6years from IA to COD. Changes call for projects in the annual application cluster window be scored based on commercial interest, project viability, and system need. Proposed rules from CAISO are now pending approval by FERC.

Recent PPAs are priced around $20-$30/MWh aided by ITC and continued solar PV growth.

U.S. ERCOT solar generation accelerated and soon matching that of CAISO, with BESS adoption to follow.

Blowback from 2021 winter storm Uri saw legislators set up fund for financing gas CCGTs. The Texas Energy Fund authorise the state's utility regulator to give low-interest loans to upgrade or build natural gas plants via 20yr 3% interest loans.



RES Index Scoring – Subsidy

Least Attractive — Most Attractive

U.S. ISO-NE is undergoing changes in resource accreditation for capacity markets, and a shift to a seasonal versus annual procurement.

Decommissioning of one of the largest thermal generators in ISO-NE is raising concerns about winter reliability in the region.

In 2020-2022, it took ~25-30 months for an IA to be executed; timelines are significantly longer in 2023.

States in the region agreed to coordinating the procurement of OSW.

U.S. NYISO among laggards on interconnection queue as it takes ~60-70 months from IR to COD. Solar PPAs are sub $50/MWh and land-based wind at sub $55/MWh. NY Cap & Invest would charge companies for emissions at $3bn a year for 25 years. Yet, failure to set targets for carbon cap and Governor Kathy Hochul's suspension of NYC congestion pricing over cost concerns raise issue of its political viability.

2H23 Offshore Wind reset came to a head in 1H24. As ~4GW of provisional awards with NYSERDA failed to finalise terms in April 2024.

U.S. PJM and member utilities are planning for more than 15GW of new large load interconnection from data centers which will support energy and capacity prices and strain the transmission network.

The region has also redesigned its capacity market, lowering capacity accreditation for many resources, leading to expectations of a large increase in capacity market prices.

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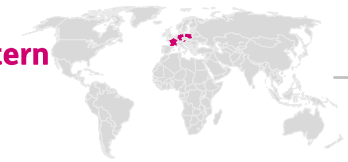
Central and Western Europe



Market size	Profitability (Merchant)	Market liquidity	Policy environment	Ease of development	Macro risk
●	●	●	●	●	●

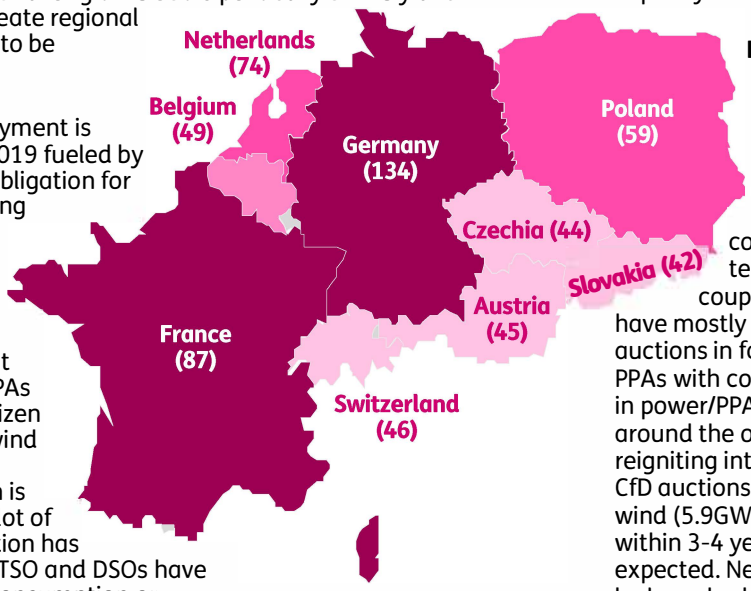
A word from the regional lead

Francesca Tedeschi
Partner,
Expert in Power Markets

- Central and Western Europe offers a highly differentiated environment for renewable energy investing. From historically more mature and/or sizeable markets, such as France, Germany, Benelux and Poland, to Switzerland, Austria, Czechia and Slovakia, where deployment opportunities are much lower and/or in their early days in relative terms.
- **The markets in the region also have very different starting points as part of their decarbonisation and renewables journey.** The historically coal-driven markets are marked by a large-scale transition away from coal-based generation with Germany making an accelerated shift ahead of a similar path expected for its neighbours to the East. **Germany, the largest energy market in the region, has been a leading force in renewables deployment in Europe**, with over 50% of electricity generation coming from renewables, driven by the support mechanisms through the renewable energy law (EEG). Although non-subsidised routes-to-market have increased in significance in particular for offshore wind and large-scale solar PV, **the EEG support remains the key force behind renewables deployment in Germany** on the way to ambitious target of 80% renewables share by 2030. However, as economic growth in Germany has slowed and there is an increasing strain on public finances, there is uncertainty around the extent and shape of future support mechanisms for renewables. Overall, **there is currently a lot of uncertainty around items on the policy and regulatory agenda that can affect the business case for renewables**.
- **While being a much-decarbonised grid – thanks to its significant nuclear and large hydro fleet – France has adopted ambitious renewables targets over the years through its Multi-year Programmes (PPE).** It is still unclear when an updated, long-awaited, edition will be published, in particular in light of the complex Government-Parliament impasse triggered by the EU parliamentary elections and subsequent national snap elections. In this edition France may aspire to deliver by 2035 between 70-100GW of solar, over 40GW and 15GW of onshore and offshore wind, respectively, which appear incredibly challenging given sector results to date.
- **Poland, while trailing behind the other more mature geographies, has recently experienced an incredible boost in renewables deployment, with the solar market beating all expectations.** The sector deployed over 18 GW over just a few years, driven in particular by generous net-metering arrangements for household installations, which created faster pressure on solar captured prices and, more recently, unexpectedly high grid curtailments due to (mostly) market inefficiencies. After many years of halt in deployment of onshore wind, new regulations around the spatial deployment of turbines should finally unlock significant potential that has remained largely untapped given the abundance in resource and good economics. Grid, however, is emerging as the real bottleneck for all renewables, with significant delays in obtention of connection offers. This is prompting a wave of redesigning of projects to capitalise on potential hybridization (cable pooling) opportunities.
- **Belgium and the Netherlands are predominantly focused on delivering on their offshore wind pipeline.** Both Belgium and the Netherlands have recently, or will shortly run new tenders for additional projects, amounting to c. 3.4 GW in Belgium, and 4 GW recently tendered with an upcoming 4 GW in the Netherlands, adding to the current 2 and 4 GW of operational capacity in Belgium and Netherlands respectively. Availability of land and distance to populated areas are particularly affecting the Dutch onshore market, with most PV buildout spread across small-scale rooftop installations and onshore wind expected to see very limited growth, with Belgium seeing 65% of PV installation spread across small-scale rooftop installations and limited growth for onshore wind.
- Austria has a well-defined renewable and decarbonisation objectives and significant wind and solar deployments but the growth path is more promising for solar than it is for wind, while also undergoing a lot of policy and regulatory changes. Switzerland has very little wind energy and solar is mainly driven by residential and industrial PV installations. Czechia and Slovakia are smaller markets with relatively little renewables capacity, but solar looks to have more growth potential than wind. Deployment is mainly driven by EU funded investment support schemes.

Central and Western Europe: Deep dive

Germany has already deployed with over 150 GW of wind and solar with plans to reach 115 GW of onshore wind, 30 GW of offshore wind and 215 GW of solar by 2030, in order to achieve 80% renewable share by 2030 and aim for 100% by 2035. The EEG foresees auctions for 20-year one-way CfDs for about 30 GW capacity per year in total across the different technologies between now and 2028. However, a claw-back mechanism (e.g. two-way CfD) will have to be implemented in the next years and there are currently also more extensive market design changes under consultation. Grid congestion remains a core problem in Germany, especially from the North with a lot of wind generation to the demand centres in the South and West. A price zone split has been debated for a long time but is politically unlikely and other mechanisms to create regional incentives are expected to be implemented.



Belgium: Solar PV deployment is picking up again since 2019 fueled by cost decreases and an obligation for high-electricity consuming building to install solar panels. Future offshore wind development will be supported through CfD auctions with a possibility for carving out volumes for domestic PPAs and an obligation for citizen participation. Onshore wind has region-dependent support. Grid congestion is limited in Belgium, as a lot of on-land nuclear generation has recently closed and the TSO and DSOs have many levers to control consumption or production.

France: Government-backed 20-year CfD contracts – offering indexation and some protection against negative price curtailments – are expected to remain the cornerstone for delivering on RES targets, with a much more limited role played by market-based solutions, such as corporate PPAs.

While access to grid is less of a problem than in other EU geographies, we have observed emerging practices by RTE in granting non-firm connections in exchange of (at times) speedier access to grid. The permitting process seems to have marginally picked up pace after the introduction of the Renewables Acceleration reform, albeit it remains one of the longest in Europe.

RES Index Scoring – Subsidy

Least Attractive — Most Attractive

Switzerland is dominated by hydro and nuclear generation. It has very little wind generation, while solar is mostly driven by residential or industrial PV installations, while utility scale projects remain a minority. Announcements to extend the life of the existing nuclear fleet and a push to lift the ban on new nuclear reactor constructions make it seem unlikely that this going to change.

Slovakia has very little onshore wind generation with some pilot projects in development. Interest in photovoltaics has continued to grow even though the overall levels of capacity are still relatively small.

The Netherlands supported the build-out of onshore renewables via a feed-in tariff (15-year top-up contracts) and a net metering scheme for households, to reach the highest PV capacity per capita. Grid congestion causes problems across voltage levels, and grid operators are desparate for flexible capacity. New feed-in tariff applications are increasingly restrictive, to help connect capacity while curtailment increases.

Poland: The current Government-backed CfD scheme – unique in its nature in Europe – offers very interesting commercial optimization opportunities when combined with short to long-term PPAs. While over the last couple of years, new projects have mostly shunned away from CfD auctions in favour of premium-priced PPAs with corporates, recent correction in power/PPA prices and the realisation around the optimisation opportunities is reigniting interest in the forthcoming CfD auctions. The first wave of offshore wind (5.9GW) is planned for delivery within 3-4 years, but some delays are expected. New competitive auctions will be launched from next year for an additional capacity of up to 12GW, where local Polish utilities are looking to partner up with international investors and developers. The market overall remains an interesting destination for investments.

Czechia currently has 4 GW of solar PV (of which 1 GW was installed last year) and the government aims for another 10 GW by 2030 with FiT support available. At the same time developing wind project is challenging and there is only 350 MW installed so far.

Austria has above-target solar deployment recently with over 2 GW added. There is significant wind generation but the growth path is relatively moderate due to lack of available sites. It aims for 100% RES by 2030 and has auction- and FiP- based support mechanisms but is also undergoing a lot of policy reform.

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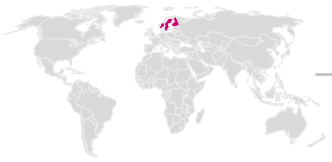
The Nordics



Market size	Profitability (Merchant)	Market liquidity	Policy environment	Ease of development	Macro risk
●	●	●	●	●	●

A word from the regional lead

Yinfan Zhang
Expert in Power Markets

- The Nordics has the most decarbonised power system in Europe, having historically developed hydro and nuclear generation (more than 220TWh and 80TWh in 2023, respectively) to meet the demand of its highly industrialised economy (Norway and Sweden in particular). Apart from excellent hydro resources, the region is also one of the windiest in Europe. Onshore wind deployment took place at a phenomenal rate over the past decade, with installed capacity rising from 6 GW in 2010 to 35 GW today (in Denmark, Norway, Sweden and Finland). The rapid expansion of this sector was enabled by early adoption of subsidy schemes, relatively stable policy environment, presence of major European turbine manufacturers, good access to land, clear and predictable permitting regime, and strong capabilities and skillsets in the sector. On the other hand, the Baltics has one of the most carbon intensive grid in Europe and have not experienced the same growth in renewables historically: onshore wind installed capacity has stayed broadly flat in absolute terms from 270MW in 2010 to 1.6GW today. However, significant growth in wind and solar is expected in the region as it looks to improve its energy self-sufficiency as well as decarbonise its power system.
- As the region with the highest proportion of low carbon generators in the capacity mix, the running cost of which is also low, the Nordics tend to see lower power prices than continental Europe. Increasing wind penetration in recent years have put further downward pressure on prices. With rising supply chain costs facing the wind industry, project economics have deteriorated. This has driven a slowdown in final investment decisions (FIDs) made over the last 18 months.
- Despite the “headwind”, there is still significant interests from investors in the Nordic onshore wind sector. Expectations of rising electricity demand (driven by electrification of industry, heat and transport) and policy drive to shorten permitting and grid connection lead time are the key reasons that infrastructure funds and private equity continue to deploy capital into development portfolios and platforms. There is also great interests from investors in deploying capital into the Baltic renewables, to meet the region's energy security and sustainability ambitions.
- Demand growth is therefore key to the future success of renewable technologies in the Nordics. Onshore wind is not expected to benefit further from government subsidies, given the electricity sector is largely decarbonised already. Instead, public monies and policies are likely to be directed to support hard-to-abate sectors such as steel, chemicals, manufacturing and transport. The continued growth of the onshore wind industry is therefore contingent on the success of policies driving further decarbonisation of the Nordic economy.
- The Nordic governments have ambitious climate decarbonisation targets and specific offshore wind targets (e.g. Norway plans to develop 30GW of offshore wind by 2030), with each country developing its own regulatory framework. Offshore wind cannot be economically developed under merchant power prices today. Similar to onshore, under current policies offshore wind projects are unlikely to benefit from direct government subsidies. They have to instead find corporate and industrial customers to offtake their electricity at prices that ensure a reasonable return on their investment.
- Solar has often been overlooked in the Nordics, but significant deployment has already been achieved in Denmark, and development activities are picking up pace in the southern parts of Norway, Sweden and Finland. Load factors in these parts of the region are on part with the UK and the northern parts of continental Europe. Falling CAPEX over the recent years has gradually improved solar project economics.

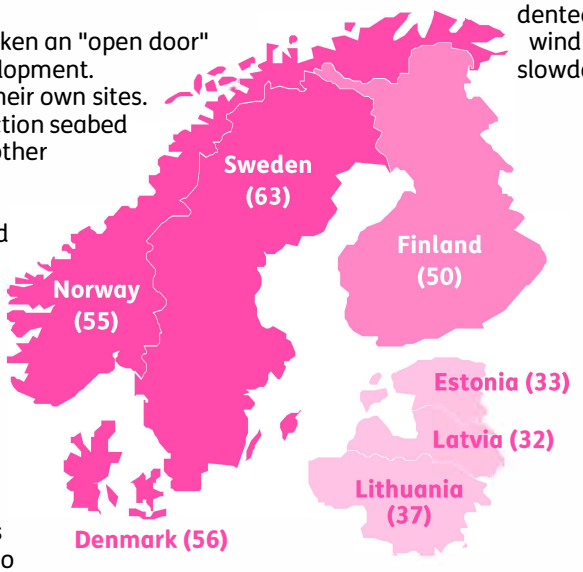
The Nordics: Deep dive

Sweden has been a European leader in onshore wind deployment. Installed capacity grew from 7.2 GW in 2018 to 16.3GW by the end of 2023. Over the last five years, deployment has largely been on a subsidy free basis, with power purchase agreements (PPAs) providing some level of revenue certainty for the majority of projects. However, the increase in supply chain costs and the decrease in power prices have created challenges to the economics of Swedish onshore wind projects today.

The Swedish government has taken an "open door" approach to offshore wind development. Developers are able to choose their own sites. There is currently no plan to auction seabed or offer subsidies, unlike many other European countries.

The country is currently engaged in a political debate about the future of nuclear and the role of the state. The government is in favour of expanding the nuclear fleet to have the equivalent of 10 new reactors by 2045.

Alongside Sweden, **Finland** has seen significant growth in onshore capacity in recent years. With the commissioning of Olkiluoto 3 nuclear plant, the country has turned from a net electricity importer to a more supply-demand balanced nation. However, similar to Sweden, rising supply chain cost and lower power prices have dented the economics of new onshore wind projects, causing a significant slowdown in new investment.



Historically laggards in renewable deployment, **the Baltics** will see a boom in onshore wind and solar build-out in the coming years, driven by the need by the region to decarbonise and become more self-sufficient.

Currently part of the Russian-Belarusian power grid, the region will desynchronise from it in 2025 and synchronise with continental Europe instead. The ensuing market reforms, such as introduction of new ancillary services, could open more opportunities for revenue optimisation by renewable assets.

Onshore wind development has virtually halted in **Norway** due to strong local oppositions to new projects. The government also introduced resource rent tax for the onshore wind sector in 2024, further deterring investors from entering the market. Offshore wind is likely to be the main growth node amongst renewable technologies. However, uncertainty around future subsidy regimes casts a shadow over the ambitious government target of 30 GW offshore wind deployed by 2040.

Onshore wind development has slowed down in recent years in **Denmark** due to retirement of the existing fleet, grid constraints and slow permitting time for new turbines, but could accelerate again in the future. The government aims to create "energy parks" to facilitate more onshore wind and solar deployment.

The government opened a tender for a minimum of 6 GW offshore wind in 2024 across six wind farms. However, the lack of subsidy, the intention of the state to obtain a minority stake in these projects and the need for the offshore wind farms to secure their own offtake options pose significant challenges to project developers, and thus risks to the success of the tender.

RES Index Scoring – Subsidy

Least Attractive — Most Attractive

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Great Britain and Ireland

Market size	Profitability (Merchant)	Market liquidity	Policy environment	Ease of development	Macro risk
●	●	●	●	●	●

A word from the regional lead

Vikash Ahuja
Expert in Power Markets

Great Britain (GB) is a single wholesale power market. Ireland is a single wholesale power market covering Republic of Ireland and Northern Ireland (called SEM). While very proximate geographically, with interconnection between them and a few key similarities, it is fair to say that there are significant differences between GB and SEM.

Both GB and SEM have very ambitious targets for decarbonisation, however there is scepticism around their achievability. There is renewed impetus for renewable investment in GB with the new Labour government in power, as signalled via the increase in CfD AR6 budget - but policy measures beyond AR6 still need to be put in place.

Offshore wind play is in early stages in Ireland while it is an established industry in GB. In Ireland, there is a push to kick-start offshore wind, with one completed auction providing contracts for ~3 GW of projects and aiming for connection by 2030. However, we believe very few of the projects will make this target year, with connections instead following in the early 2030s. In contrast, the real push in GB is ever-increasing and ambitious offshore wind targets as a key pillar to decarbonise power, with the key questions being supply chain capabilities and costs and the route to market (CfD versus PPA versus mechant?) for this capacity to come online.

Across both markets, planning permissions and grid connections remain the key barriers for onshore wind and solar capacity deployment. This supply constraint, coupled with a strong CPPA market driven by a significant presence of big tech company presence in Ireland in particular, and on top of the annual government subsidy auctions, can lead to strong revenues for renewable projects that can deliver. The recent Labour announcement to remove the de facto ban on onshore wind in GB is also likely to provide further impetus.

The size of the market to deploy all forms of renewables is expected to grow significantly, thus creating opportunities for players who are good at development of sites and portfolios.

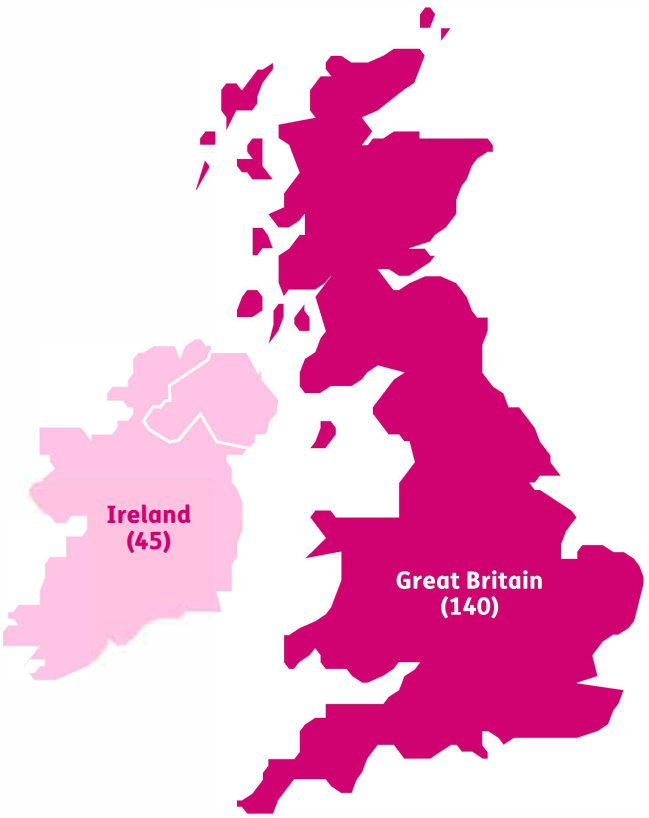
In terms of RES-supporting technologies, there is a clear push in both markets to build battery storage. The pipeline is strong with a more merchant business model in GB, while a strong pipeline of short-duration batteries in Ireland providing ancillary services (i.e. DS3) will put downward pressure on those revenues as we move to a competitive procurement process. There is a recognition of the need to provide financial incentives for longer duration storage in both markets.

Great Britain and Ireland: Deep dive

Both **Ireland** and **Northern Ireland** have challenging renewable targets, with both aiming for 80% RES by 2030. With this in mind, the Irish government have run a number of auctions for its Renewable Electricity Support Scheme in recent years. The latest of these, RESS4, took place over the sunmmer. To date RESS schemes have supported 1.4 GW of onshore wind and 3.8 GW solar since 2015, as well as 3 GW offshore wind. The CPPA market in Ireland is becoming increasingly important for renewable projects, with demand being driven by a number of major global tech companies and a strong data centre presence.

Nevertheless it is unlikely the 80% target will be met in Ireland, and it is expected many of the offshore projects in particular will face delays due to grid delays and planning objections.

In NI, renewable developments have stalled in the absence of a government support scheme. A new scheme is being progressed, with a high-level design published earlier this year.



GB is a market leader in offshore wind deployment and there is a continued push for more new offshore wind to meet Net Zero targets. The new Labour Government has a 2030 target for Clean Power which is more ambitious than the previous 2035 target. There will be major challenges in achieving this target but this is a clear signal of increasing deployment of all renewable technologies – solar and onshore wind alongside offshore wind. Higher volumes of capacity awarded under the CfD AR6 auction is a good example of this.

There is a flurry of policy activity in flight and the next 12 months will be critical in setting the stage of new renewable deployment over the next decade.

RES Index Scoring – Subsidy

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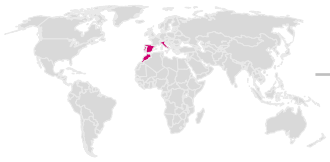
Southern Europe



Market size	Profitability (Merchant)	Market liquidity	Policy environment	Ease of development	Macro risk
●	●	●	●	●	●

A word from the regional lead

Gerardo Fernández
Partner,
Expert in Power Markets

- Southern Europe (Italy, Spain and Portugal) region has been a highly dynamic market for renewables, especially in the case of Spain which is probably a benchmark in terms of rapid development and integration within the power system. In Spain and Portugal, there has been unprecedented growth of renewable generation capacity with the deployment of around 6.4 GW/yr and 1.1 GW/yr of RES on average since 2021 in Spain and Portugal, respectively. In Italy, RES installed capacity has grown at historical of ca.1 GW/yr with a peak of +5 GW/yr in 2023. Currently, a number of key regulatory changes are being implemented, leading to some uncertainties related to support as well as market functioning mechanisms.
- Operational assets in Southern Europe leverage different route-to-markets. From historical feed-in-tariff / subsidised regimes for assets commissioned >10Y ago, to competitive auctions, corporate PPAs, and increasing interest to merchant exposure. Corporate PPAs stand as the preferred option to access the market, as provide the sponsor with stable cash-flows which enable increase gearing. Demand continues for corporate PPAs by large C&I customers seeking clean electricity to power their business activities continues, however wholesale power market signals is pressing down prices, especially in the case of Solar PV for Iberia as there is currently a massive development portfolio in advanced stage of permitting.
- Southern Europe is in a unique position to become a European green energy powerhouse. Primary Capex driving equity and debt needs will continue to flow in the region the next decade, driven by a combination of natural resources (strong solar irradiation, good conditions for harnessing wind, and access to land) and clear energy policy signals. As an example, Spain and Portugal's draft national energy plans target +€310Bn investment to drive the energy transition, +110 GW of wind and solar capacity in 2030. In the case of Italy, the national energy plan aims for an additional +60 GW of solar and wind.
- Attractiveness of the region driving investment also means a severe transformation of the energy market. Increasing exposure to merchant risk, price cannibalization (affected by Solar hourly profile), grid curtailment and permitting bottlenecks are already obliging investors to reinvent its strategies to succeed in this new playing field:
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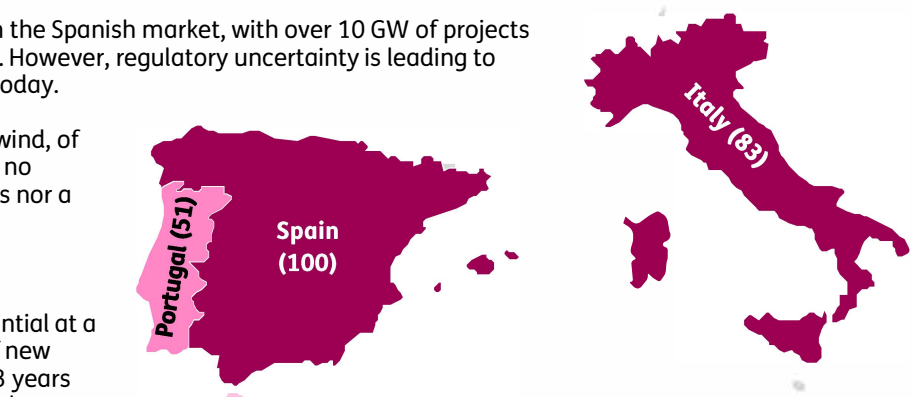
Southern Europe: Deep dive

Spain is still realizing an incredible growth in solar PV capacity, exceeding 5 GW/y over the last3 years, although a much modest growth of onshore wind, with only 3 GW having been added since 2020. This incredible growth has been followed by an update in the PPA market, which is now the most active one in Europe.

There is a growing interest in BESS in the Spanish market, with over 10 GW of projects having applied for a grid connection. However, regulatory uncertainty is leading to missing money in its business case today.

Very ambitious targets for offshore wind, of 3 GW by 2030, although there is still no framework to regulate these projects nor a clear support scheme.



Portugal is fulfilling its solar PV potential at a fast pace, averaging around 1GW of new installed capacity/year for the past 3 years between utility scale and smaller scale developments. Hydro has seen very significant additions with the Iberdrola GigaBattery flagship project adding 1.15GW alone. Wind has grown at a lower pace having added ~250MW in the same period, much of which deriving from repowering existing assets.

Similarly to Spain, the BESS business case is still being impacted by the lack of regulatory clarity and market driven incentives for the provision of certain grid services. 100mEUR worth of support grants are being issued in Q3 2024.

The offshore wind ambition has been recently downsized although retaining an ambitious level(2GW) intended to sustain a relevant industry local cluster.

Italy has ambitious targets for renewables capacity by 2030: more than doubling the solar PV (to reach 79 GW from 34 GW nowadays) and doubling wind onshore (from 13 GW today to 26 GW). A generous CfD scheme (FER-X) will support overall 57 GW of mature technology (40 GW of solar PV and 16.5 GW of wind onshore) between 2024-2028. The historical annual pace of 1 GW renewable development (3 GW in 2022 and 5 GW in 2023) needs to further increase (up to 9 GW per year) to meet the 2030 targets.

PPA market is still nascent with around 3 GW contracts signed since 2018.
Terna is going to launch the MACSE, an auction mechanism dedicated to storage technologies (target technologies are lithium-ion batteries and pumped hydro plants), aimed at procuring investments in storage technologies by providing long-term price signals. The first MACSE auction is expected to take place in Q1 2025 (and will procure 15-years contracts), and Terna's aim is to procure 71 GWh of capacity under MACSE by 2030.

Wind off-shore target is 2.8 GW by 2030 starting from 30 MW today. A subsidy scheme for less mature technologies (FER-2) will roll out in 2024-2028 with a contingent of 3.8 GW (over 4.6 GW contingent overall) dedicated to wind offshore technology.

RES Index Scoring – Subsidy

Least Attractive — Most Attractive

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Southeastern Europe

Market size	Profitability (Merchant)	Market liquidity	Policy environment	Ease of development	Macro risk
●	●	●	●	●	●

A word from the regional lead

Pavlos Trichakis
Partner,
Expert in Power Markets

- From a renewable investor's perspective, Southeastern Europe is a collection of markets with different market fundamentals, including both **EU Member States** (Bulgaria, Croatia, Slovenia, Greece, Romania and Cyprus) as well as **non-EU Member States** (Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, Serbia, Moldova). To be noted that, with the exception of Kosovo (which is a potential candidate country), all other non-EU Member States in Southeastern Europe are current candidate countries to join the EU in the future.
- Additionally, all countries stated above are part of the **Energy Community**, an international organisation that aims to extend the EU internal energy market to wider Southeast Europe by requiring its members to commit to implement relevant EU energy policy measures, to develop an adequate regulatory framework, and to liberalise their energy markets. This approach ensures that all countries keep up with the development of core EU energy legislation (the so-called energy acquis) and regularly harmonise their legal framework with the EU.
- For the region overall, the most common route-to-market option for renewables is the **merchant** business model, especially for solar PV projects which have relatively low capital cost requirements, and which is a mature technology that most lenders are already familiar with.
- In recent years, many countries in Southeastern Europe (particularly EU countries that have access to funding from the National Recovery and Resilience Plan) have implemented **competitive auctions** for solar PV and wind energy and, increasingly, for battery storage capacity as well.
- **Corporate PPAs** are also on the rise as large C&I customers are increasingly seeking clean electricity to power their business activities. However, the corporate PPA market in Southeastern Europe is growing at a considerably slower pace compared to Western and Northern Europe due to regulatory barriers, concerns around market intervention, and poor liquidity in forward electricity markets.
- Going forward, investors need to remain astute to new risks and opportunities stemming from the following key trends:
  - **Grid constraints and curtailment** are rapidly becoming the most important barriers to deployment of renewables in the region, with insufficient grid capacity also leading to longer connection queues. Whilst some types of curtailment may be compensated, managing curtailment risk (e.g. by locating renewable generation assets in less optimal load factor sites or by locating them closer to demand and strong parts of the grid) is becoming increasingly important for project sponsors and financiers
  - Additionally, concerns around **price cannibalisation** (particularly during daytime hours) combined with grid curtailment risks suggest that the battery storage co-location business model will become increasingly prevalent, particularly for solar PV projects. In addition to battery storage, project developers are also looking at co-location with demand, such as **data centres** or **green hydrogen electrolysers**
  - The proliferation of **behind-the-meter assets for industrial or commercial applications** is also continuing at pace in Southeastern Europe, as these projects have lower permitting and grid connection risks, which allows them to be brought online more easily
  - From a **project financing perspective**, raising debt is no longer as appealing as it once was due to the recent rise in interest rates. Instead, there is a growing trend towards balance sheet financing. In addition, the increase in cost of debt has led to a significant upward revision in the cost of capital

Southeastern Europe: Deep dive

Romania and **Serbia** aim to complete a new 400kV electricity interconnector between the two countries by the first half of 2025, which will increase interconnection capacity between Romania and Serbia by 600MW in each direction.

Serbia has been a net power exporter to Romania in H1 2024, with net flows averaging 104MW, switching from 80MW of net imports over H1 2023.

Romania, **Bulgaria** and **Hungary** have delayed entry to the European cross-border power balancing platform Picasso, following similar moves by other nations amid system concerns.

Curtailment regulation is in effect in **Greece**, with a new appointed a Group currently establishing a permanent framework for the distribution of curtailment in the various categories of projects.

On wind farms, the imposed grid injection cap on wind farms is 65-80% of their installed MWpeak generation capacity between hours 09:00-17:00, while the total annual curtailed energy cannot exceed 5% of annual output. For solar, a static curtailment to the grid connection is in place equal to 72% of the installed MWpeak capacity.

RES Index Scoring – Subsidy

Least Attractive — Most Attractive

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Australia

Market size	Profitability (Merchant)	Market liquidity	Policy environment	Ease of development	Macro risk
					

A word from the regional lead

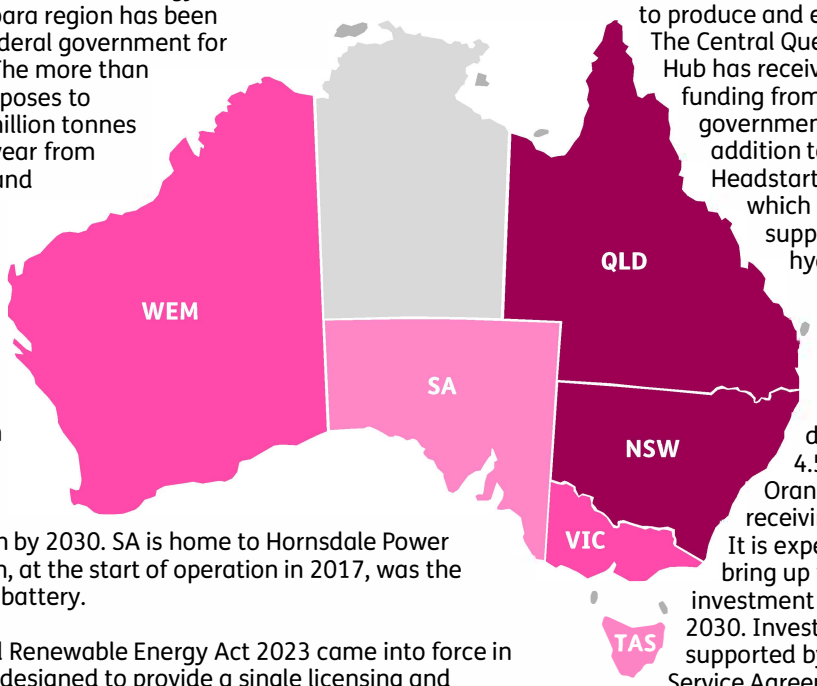
Peter Sherry
Partner,
Expert in Power Markets

- Australia has among the most advanced renewable deployment in the Oceania region and is one of the most active markets for international investors in renewable energy. **Over $12 billion in transactions have reached financial close in the last financial year**, from small standalone batteries to large renewable generation portfolios.
- The **NEM (eastern market) is one of the world's longest interconnected power systems** and is the largest grid in Australia. The WEM (western market) operates with about 10% of the NEM's capacity. Both markets face difficulties with transmission due to the size of the networks and are expecting major upgrades to interconnection in the coming years.
- The underlying driver of Australia's energy transition is the **need to replace the ageing thermal fleet (mainly coal), and to meet new demand** from electrification
- The current federal **Government has legislated target to achieve 82% renewable energy generation by 2030** (from around 45% today). Both state and federal policy is in place to help accomplish this, most notably the Capacity Investment Scheme (CIS) which came into effect late 2023 and seeks to incentivise an additional 32 GW of renewable capacity and clean dispatchable capacity by 2030. The **CIS provides underwriting for select renewable projects, providing revenue certainty to developers**, thereby encouraging additional buildout of renewable and storage assets. The latest CIS tender round in 2024 saw over 25 GW of bids for a 6 GW target, showing the high level of interest in the scheme. Tenders are intended to run biannually until 2027.
- Other notable state-based policy to support renewable development includes:
  - **Long Term Energy Service Agreements (LTESAs)** – successful bids receive options contracts underwritten by the NSW government that improve revenue certainty for investors (now being superseded by the CIS)
  - **QLD Energy (Renewable Transformation and Jobs) Act 2023** – updated policy to streamline applications and buildout of transmission Renewable Energy Zones (REZs) in QLD to help achieve their target of 80% renewable energy generation by 2035.
  - **SA Hydrogen and Renewable Energy Act 2023** – SA policy designed to provide a single licensing and regulatory process for renewable energy and hydrogen projects to streamline buildout of renewables.
- The political landscape in Australia comprises both state and federal dynamics. While there is strong ambition at state level, bipartisanship at the federal level remains elusive. The **primary political risk for renewable investment comes from the conservative opposition at the federal level, which has announced intentions to pivot away from renewables and focus on towards publicly owned nuclear power plants** in Australia if they win the next federal election (scheduled for 2025). A change in federal govt could thus create some headwinds for new renewables investment in the short to medium term. The economic case for nuclear in Australia is highly questionable, particularly given abundant domestic renewable resources, and it is generally accepted that any new nuclear capacity (FOAK in Australia) would come too late to replace the ageing coal fleet. Nevertheless, we do expect to see energy policy as a major point of differentiation in the upcoming election, which will create some uncertainty for investors.

Australia : Deep dive

WEM is projected to require substantial new investment driven by ageing thermal retirements as well and strong electricity demand growth, including for hydrogen production. Transmission upgrades have been allocated significant funding in the 2024-25 State Budget in response to the projected demand growth. An offshore wind area has been proposed which could host up to 20 GW capacity. However, approval has not yet been received and no financial support has been outlined.

A massive Australian Renewable Energy Hub (AREH) in the North-West Pilbara region has been fast-tracked by the federal government for regulatory approval. The more than $53 billion project proposes to produce around 1.6 million tonnes of green hydrogen a year from up to 26 GW of wind and solar generation.



SA has high renewable penetration – primarily wind and solar. They lead mainland Australia in terms of renewable generation targets, aiming for 100% renewable generation by 2030. SA is home to Hornsdale Power Reserve, a BESS which, at the start of operation in 2017, was the world's largest Li-ion battery.

The SA Hydrogen and Renewable Energy Act 2023 came into force in December 2023. It is designed to provide a single licensing and regulatory process for renewable energy and hydrogen projects across their life cycle to reduce barriers to development.

VIC is leading the implementation of Offshore Wind (OSW) with a legislated target of at least 2 GW of generation capacity by 2032, and 9 GW by 2040. This is being driven by pending thermal closures as well as planning delays to onshore new build. A support package is being developed for the first OSW projects to help mitigate market revenue risk.

The Victorian Transmission Investment Framework (VTIF) aims to streamline the planning and approval process for transmission infrastructure and Renewable Energy Zone (REZ) buildout across the state. Notably, this looks to mitigate the impact of delays on projects and avoid oversupply-driven curtailment in REZs.

RES Index Scoring – Subsidy

QLD has legislated their 'Energy and Jobs Plan' (QEJP), with key commitments including 80% renewable energy generation by 2035 and continued public ownership of the energy system (100% ownership of transmission, 54% ownership of generation). QLD has some of the youngest thermal coal assets in the NEM.

Pivotal to QLD's transition is their intention to produce and export green hydrogen. The Central Queensland Hydrogen Hub has received over $80 million in funding from state and federal governments. This scheme is in addition to the Hydrogen Headstart program (Aus-wide) which provides revenue support for large-scale hydrogen projects.

NSW is at the forefront of Renewable Energy Zone (REZ) development, with the 4.5 GW Central-West Orana (CWO) REZ recently receiving planning approval. It is expected that this REZ will bring up to $20 billion in private investment to the CWO region by 2030. Investment in NSW is also supported by Long Term Energy Service Agreements (LTESAs). Successful bids receive options contracts underwritten by the NSW government that improve revenue certainty for investors. The LTESA scheme will soon be subsumed by the federal-level CIS.

TAS is the only state with 100% self-sufficiency in renewable electricity generation. They are targeting 200% renewable energy generation by 2040 which offers investment potential in offshore wind and hydrogen hubs.

Generation is dominated by hydropower. Hydro Tasmania plans to enhance TAS' role in providing clean, reliable energy to the rest of the NEM by adding pumped hydro projects, positioning TAS as the 'battery of the nation'.

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Asia-Pacific (SE and NE Asia)

Market size	Profitability (Merchant)	Market liquidity	Policy environment	Ease of development	Macro risk
●	●	●	●	●	●

A word from the regional lead

Zhen Hui Eng
Expert in Power Markets

The Asia-Pacific region is a heterogenous mix of markets at differing stages of economic development and correspondingly different policies, targets and opportunities. Each market is underpinned by different sets of rules and ambitions, but what ties these markets together are their future growth potential. Among the APAC markets in focus, ambitious 2050 net zero targets have been pledged by the more economically developed markets including Singapore, Taiwan, Japan and South Korea. Conditional net zero targets are set for Malaysia and Vietnam, while the Philippines has still yet to set one.

Feed-in tariffs have previously been important routes-to-market for renewable development and investment in the region, but we observe that governments in the region are gradually moving towards other incentive structures in a bid to reduce government subsidies and lessen public burden. One such mechanism which many countries are increasingly introducing is **renewable energy auctions** – Malaysia, Japan, South Korea, Taiwan, Philippines have all recently held auctions to bring in renewable capacity.

In parallel, policy on **Power Purchase Agreements** are at different levels of maturity across APAC. Vietnam and South Korea have just rolled out their dPPA policies recently to allow energy producers to sell renewable energy directly to end users, whereas regions such as Japan, Malaysia, Singapore and Philippines have hadinnovative mechanisms include **Feed in Premiums** for example - Japan has introduced a variable payout market-based feed-in PPA policies for some time with an active PPA market.

Other premium policy on new projects, which provides price signals for producers to time-shift their supply as payouts are tied to market pricing.

Although market liberalisation and access remains uneven, new policies in the region do signal progress. Philippines has also recently allowed 100% foreign ownership of renewable projects, though restrictions remain in other countries such as Malaysia.

Greater **interregional transmission connectivity** could also present significant opportunities for renewable investment over the next decade. The potential of a Southeast Asian regional grid has drawn significant interest – proposed projects, if implemented, could bring at least 4GW of import capacity from renewables in neighbouring countries to high-demand, resource-poor Singapore. This prospect is not without significant practical challenges – the Laos-Thailand-Malaysia-Singapore Power Integration Project (LTMS PIP), a power import project widely touted as a pilot for regional power imports, has seen a mere 15% utilisation rate since its inception in 2022 and has faced difficulties in attaining renewal, demonstrating the commercial uncertainties for interregional transmission integration when it comes up against competition with local generation, fossil fuel price dynamics, and coordination between international stakeholders.

Opportunities and Risks

Looking at the next 12 months, the developments that could present opportunities and risks for investors in the APAC region include:

- **Japan's** Long-term Decarbonisation Auction (LTDA) guarantees the recovery of fixed costs over 20 years and received 7.8GW of bids for a 4GW capacity in the first round held in 2024. In the next LTDA, the bidding capacity is expected to increase to 5GW.
- **South Korea's** 'one-stop shop' wind act continues to be in gridlock within the National Assembly. If passed, this will drastically reduce the administrative burden for offshore wind developers when it comes to acquiring the necessary permits for development. Despite a movement towards nuclear energy in the draft 11th BPLE, renewable targets remain ambitious. There are plans to sunset the RPS system and move to a RE-100 compliant RECs market as well as leverage on more renewable auctions to fulfil climate commitments.
- In **Malaysia**, the details of the Third-Party Access (TPA) Framework are also set to be released later this year and are expected to provide an additional route-to-market for renewables.
- The level of reserve prices for the next few rounds of the Green Energy Auction Program (GEAP) in the **Philippines** will play a key role in determining whether the auction capacity can be fully subscribed, particularly for new technologies such as offshore wind. The third auction (GEA-3) is expected to open in August 2024, catering to geothermal and hydropower developments.
- While direct PPA contracting arrangements in **Vietnam** have been finalised, certain details and procedures such as determinations of the SMO fee and the separation the National Load Dispatch Center (the Vietnam SMO) from EVN, are necessary.

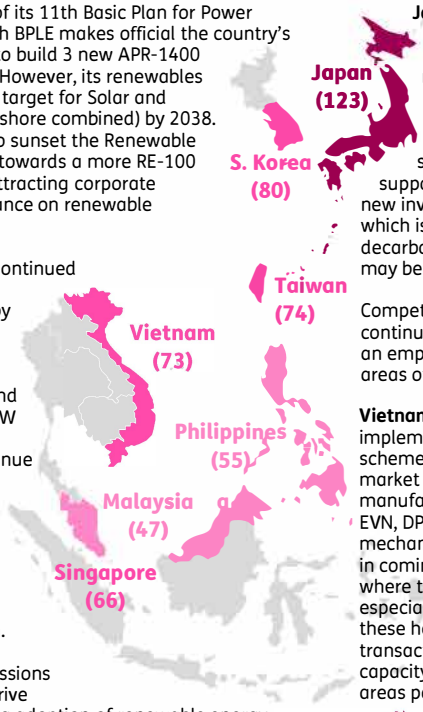
Asia-Pacific: Deep dive

South Korea has just released the draft of its 11th Basic Plan for Power Supply and Demand (11th BPLE). The 11th BPLE makes official the country's nuclear pivot, confirming that it intends to build 3 new APR-1400 pressurised water reactor units by 2038. However, its renewables target remains ambitious with a 74.8GW target for Solar and 40.7GW target for Wind (offshore and onshore combined) by 2038. South Korea has also announced plans to sunset the Renewable Portfolio Standard (RPS) system, moving towards a more RE-100 compliant RECs system in the hopes of attracting corporate demand. There will also be a greater reliance on renewable auctions to fulfill targets.

Taiwan's 2050 net zero target will drive continued deployment of renewables on the island. Offshore wind developments facilitated by auctions continue to be key, although strict local content requirements are leading to delays and higher costs of development for projects. The latest Round 3.2 offshore wind auctions awarded 2.7GW of capacity slated for deployment in 2029-2030. Solar and onshore wind continue to receive feed-in tariffs.

To support growing renewables penetration, the Taiwan government is targeting 1.5GW of BESS deployment by 2025, and 5.5GW by 2030. The main revenue stream for BESS will be through market-based ancillary services provision.

A carbon fee that will be imposed on emissions from 2024 onwards is also expected to drive industrial decarbonisation plans, including adoption of renewable energy.



Malaysia has announced ambitious plans under the National Energy Transition Roadmap to achieve 70% of renewable capacity by 2050. As part of this, 2GW of solar auctions have commenced under the Large-Scale Solar (LSS) 5 scheme.

The third-party access (TPA) framework will be implemented in 2024, availing new routes-to-market in Malaysia, such as the Corporate Renewable Energy Supply Scheme (CRESS) that enables corporate consumers to procure energy directly from renewable power producers through the existing grid network, opening the door for new DPPAs in Malaysia.

2024 also saw the development of the Energy Exchange Malaysia (ENEGEM), a platform for cross-border trade of renewable energy with Singapore and Thailand, with the 100MW pilot spanning Aug 2024 – Sep 2025.

Singapore is renewables constrained, with solar being the only viable domestic renewables resource. Under the Singapore Green Plan, the deployment target of 2 GWp of solar by 2030 (3% of projected demand) has been set by the government, nearly double the capacity in 2024. The Singapore government has held the SolarNova public tender programme since 2015, awarding 540 MWp in total and 120 MWp in the last round.

Plans for imports of low carbon electricity from neighbouring countries are complemented by its high electricity prices relative to the region, carbon prices, demand for green electricity, and a 2050 net zero commitment. These factors have driven the island's ambitions to become a regional hub in a future ASEAN power grid. Proposed power import projects amount to 4GW of renewable import capacity in the next decade.

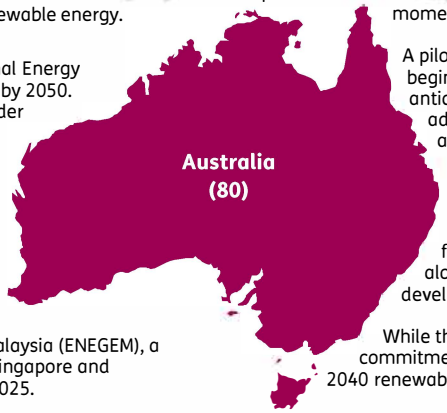
RES Index Scoring – Subsidy

Least Attractive — Most Attractive

Japan is progressing towards decarbonization with a target of net zero by 2050, and this year, the Strategic Energy Plan is scheduled to be updated to its 7th edition where renewal renewable energy targets are drawing attention. Renewables have begun transitioning from fixed-revenue Feed-in Tariffs to variable Feed-in Premiums, which are based on wholesale market prices and incorporate price signals for producers to shift supply to underserved periods. This has has led to lower support prices and stricter requirements, resulting in a shift towards new investments based on corporate PPAs and investments in BESS, which is moving through the entry phase with subsidies and long-term decarbonisation auction (LTDA). In the future, pure merchant projects may become a primary route to market.

Competitive offshore auctions held annually are also expected to continue driving the expansion of Japan's offshore wind capacity, with an emphasis on bankable corporate PPAs and expediency in CoD as key areas of focus in subsequent rounds.

Vietnam's recent finalisation of its eighth power development implementation plan (PDP8) and the direct power purchase agreement scheme (DPPA) are expected to avail opportunities for new routes-to-market for renewables, driven by green demand from large manufacturing consumers. Due to the high cost of feed-in tariffs for EVN, DPPAs and auctions are expected to become the main mechanisms for new renewable power projects in both wind and solar in coming years. Grid constraints have been a key barrier in Vietnam, where technical curtailment continues to affect renewable projects, especially both grid-connected and rooftop solar PV systems. Despite these headwinds, interest in solar has not dampened, with significant transactions made in 2023. PDP8 prioritises boosting transmission capacity between regions, including HVDC lines, with a strong focus on areas poised for off-shore wind development, expected to gain momentum in the coming years.



A pilot domestic carbon market is expected to begin operation in 2025-2027, with an anticipated 'cap-and-trade' system. This is in addition to UNFCCC carbon offsets, which are already traded in Vietnam.

Philippines removed previous restrictions on foreign ownership for renewables, opening up greater opportunities for foreign investments into the sector, alongside streamlining of renewables development processes.

While the Philippines does not have a net zero commitment, targets for 35% by 2030 and 50% by 2040 renewables generation share have been set.

Green energy auctions (GEA), where 20-year fixed price contracts are awarded, have also attracted investment amounting to more than 5 GW of capacity since 2022. The GEA complements market-based deployment of renewables, by providing revenue certainty to technologies that may not be commercially viable at present. The plan is for further rounds of auctions involving run of river hydro, impounding hydro, geothermal, LNG, co-located BESS and offshore wind.

The Renewable Energy Certificate (REC) price cap has recently been finalised, paving the way for greater trading of RECs for fulfilment of the Renewable **Portfolio Standards.**

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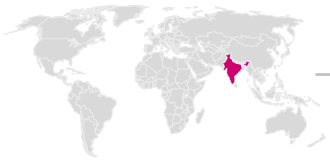
India



Market size	Profitability (Merchant)	Market liquidity	Policy environment	Ease of development	Macro risk
●	●	●	●	●	●

A word from the regional lead

Khushwinder Singh
Expert in Power Markets

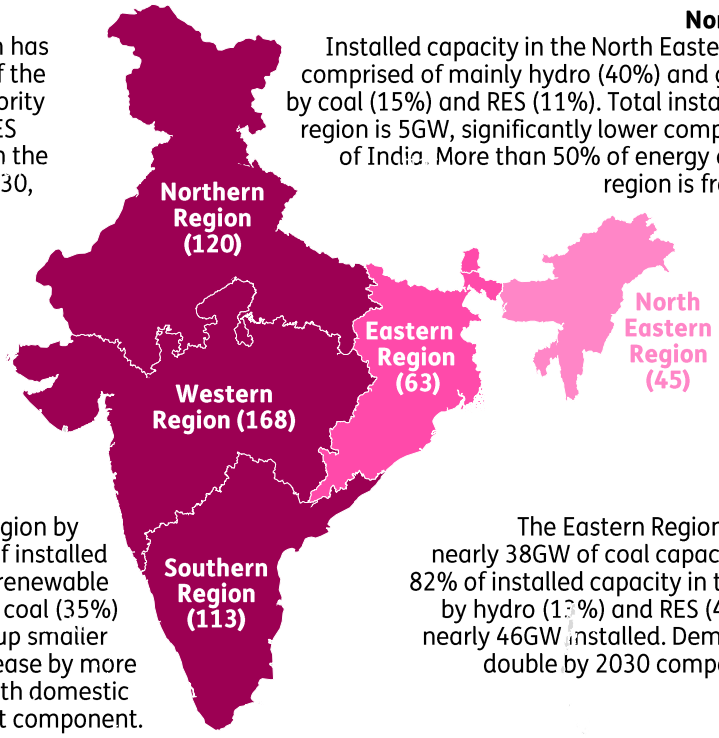
- The energy transition for India is rather a very complex one as its power generation moves from a coal-based grid (>70% share) at present to a renewable based grid in the future. India is also one of the few markets where the transition is directly from coal to renewables, with limited gas supply. This is unlike other markets where gas is a transitionary fuel in power systems.
- The transition will be entirely supported by large scale addition of renewables across solar, wind, offshore wind assets, and supported by other non-fossil development plans in Hydro and nuclear. India has an advantage here as the **solar & wind LCOEs amongst the cheapest globally**. This is further supported by policies and subsidies like waiver of transmission charges, renewable purchase obligations on consumers, dedicated markets for renewables, etc.
- Energy storage is also going to be a key component to support the energy transition, as it supports the addition of large-scale intermittent renewables in the grid. The rate of growth of storage will also be critical to support the efforts to move away from fossil fuels. The market will **attract investments in large scale energy storage** across both pumped hydro and BESS assets.
- The renewable addition is currently supported by **large-scale tender auctions** by both the central and state governments in India. The tendering and PPA contracting structure has evolved over time and provide comfort to foreign investors. These tender market continues to be a key go-to market strategy for investors, and the GW size capacities are a preferred route for large-ticket size . The government is planning to auction more than 50GW of tenders every year, in the next 4-5 years.
- India is also innovating in RE based solutions, with customised contracts like **Round-the-clock, Firm & dispatchable RE**. These hybrid solutions involve project sizing solar, wind, energy storage, to meet a customised demand requirement and involves portfolio optimization across wholesale markets. These contracts are also supporting a transition from 100% fixed PPA contracts, to a contracts which has some exposure to merchant markets.
- In the short-medium term **energy security is going to be a priority** for government, given the fast-growing GDP and electricity demand. This will provide a lot of opportunities for green investments, but also allow existing coal assets to continue for longer.
- India also boasts of large opportunities in green hydrogen due to lower LCOEs of renewables, and the ability to provide round the clock renewable power. This makes India a **priority market for green hydrogen and green ammonia exports**.
- India is also building manufacturing capabilities in solar, BESS, electronics, etc. to boost **supply chains for the energy transition**. This will also ensure a reduced dependence on global supply chains for India.
- Financing this complex energy transition will be dependent on large scale capital deployment and is supported by stable returns based on supportive contracting structures, government policies and tenders. This provides excellent investment opportunity for investors and banks.

India: Deep dive

Northern Region

Installed capacity in the Northern region of India is primarily coal-based (46GW), followed closely by RES (39GW) and Hydro (20GW). Given the significant RES buildout, India's central government has approved a new Inter State Transmission System (ISTS) scheme worth nearly US$1.6bn, set to allow the transmission and evacuation of renewable power towards industrial centers. The majority of the funding is focused on the Rajasthan renewable energy zone (part of the Northern Region), designed to evacuate 4.5 GW of renewable power. This includes 1 GW in Fatehgarh Complex, 2.5 GW in Barmer Complex, and 1 GW in Nagaur Complex. Completion of the project is expected by 2026.

Western region
With more than 156GW, this region has the largest installed capacity out of the five regions of India. The large majority is coal-based (54%), followed by RES (32%). Total energy consumption in the region is set to nearly double by 2030, with industry projected to make up 40% of needs.



North Eastern Region
Installed capacity in the North Eastern region of India is comprised of mainly hydro (40%) and gas (33%), followed by coal (15%) and RES (11%). Total installed capacity in this region is 5GW, significantly lower compared to other parts of India. More than 50% of energy consumption in this region is from domestic users.

Southern region
This region is the second largest region by capacity, with more than 122GW of installed capacity. Nearly 45% comes from renewable energy sources. This is followed by coal (35%) and hydro, gas and nuclear make up smaller proportions. Demand is set to increase by more than 50% over the next 5 years, with domestic consumption remaining the largest component.

Eastern Region
The Eastern Region of India possesses nearly 38GW of coal capacity. This constitutes 82% of installed capacity in the region, followed by hydro (13%) and RES (4%). This region has nearly 46GW installed. Demand is set to nearly double by 2030 compared to 2022 levels.

RES Index Scoring – Subsidy

Least Attractive — Most Attractive

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Latin America

Market size	Profitability (Merchant)	Market liquidity	Policy environment	Ease of development	Macro risk
					

A word from the regional lead

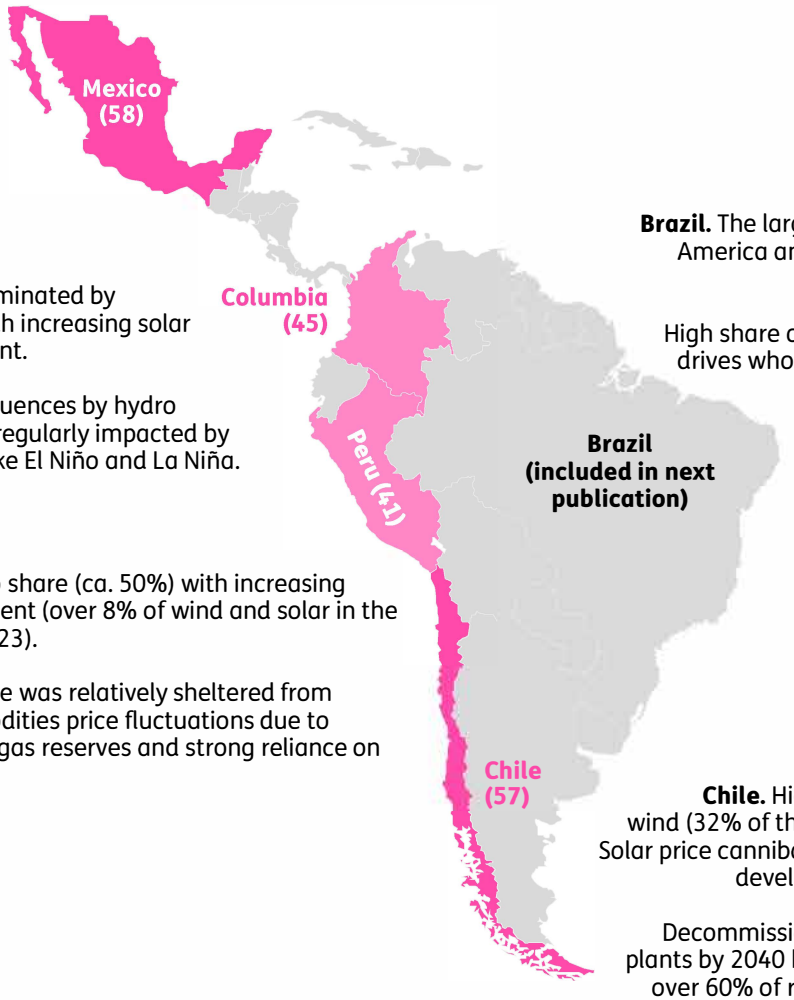
Gerardo Fernández
Partner,
Expert in Power Markets

- The Latin American region has characterised for having historical high shares of renewable generation in the power mix, mainly driven by hydroelectric resources. Even though it is a smaller energy market compared to North America, Europe or Asia-Pacific, the region has attracted large investments on solar and wind due to the high potential and the increasing demand driven by countries development and electrification of consumption.
- Brazil has highly hydroelectric mix, which represents over 60% of the generation. In the last decade, it has experienced the highest deployment of renewable resources, placed in the top 10 globally, with over 40 GW of solar and wind installed capacity by 2023, and an annual increase of over 6 GW/year since 2021.
- Chile has one of the highest share of solar and wind of the region, with over 30% of the generation mix and 13 GW of installed capacity. Since 2021, the country has installed over 2 GW/year while the country peak demand is 11 GW.
- Mexico had a relevant renewable deployment until 2021, with over 2 GW/year of wind and solar additions, but latest energy policies have increased the risk for private investors and stalled the renewable development. With the recently elected new administration, the sector expects a new impulse for private investments on sustainable solutions.
- Colombia has a relevant share of hydroelectric resources, with over 50% of the generation mix, and an incipient but increasing development of wind and solar resources, reaching over 2 GW by 2023.
- In the case of Peru, the deployment of renewable resources has lagged compared to other countries in the region due to low gas prices from local production, achieving just over 1 GW by 2023, but with expectations of a relevant increase in the following years due to decarbonization policies and demand growth.
- Most countries of the region have a relevant share of hydroelectric generation capacity, which allows most of them to currently have highly renewable power mixes, but also ease the integration of variable renewables like wind and solar by managing that variability with flexible hydropower plants and reservoirs. Moreover, most of the countries are far from experiencing cannibalization risks in the wholesale market due to the current share of variable renewable resources. Just Chile has experienced a high level of solar cannibalization given its high integration, but this has triggered already a prompt development of battery storage infrastructure to manage it.
- While the region has fewer supporting mechanisms for investments, like feed-in-tariff, CfDs or subsidies, they are highly contracted markets with long-term PPAs, which produce a suitable environment for CAPEX-intensive long-term investments in renewable assets.
- The high renewable potential a relevant capacity factors in the region has turned Latin America into an attractive region for potential Green Hydrogen and green fuels project at competitive levels. Countries like Chile, Brazil, and Colombia have defined roadmaps to boost industries for green fuels for both local consumption and exports by using the existing fuel exporting infrastructure.
- Overall, the region is placed as one of the most attractive markets to invest in sustainable solutions, especially within developing countries, considering the high renewable capacity factors, the regulatory and market certainties, and the ambitious decarbonization goals.

Latin America: Deep dive

Mexico. Renewable development have stalled in the last years due to policies to enhance the existing generating infrastructure from the state-owned company.

Incentives for further renewable investments are expected from the recently elected administration.



Brazil. The largest power market in Latin America and the 7th larger electricity consumer globally.

High share of Hydroelectric generation drives wholesale prices depending on hydrological conditions.

Colombia. Highly dominated by Hydro generation with increasing solar and wind development.

Prices are heavily influences by hydro availability, which is regularly impacted by climatic conditions like El Niño and La Niña.

Peru. Relevant Hydro share (ca. 50%) with increasing renewable development (over 8% of wind and solar in the generation mix in 2023).

Peru's wholesale price was relatively sheltered from international commodities price fluctuations due to significant domestic gas reserves and strong reliance on hydro.

Chile. High integration of solar and wind (32% of the generation mix in 2023). Solar price cannibalization has driven a rapid development of energy storage.

Decommissioning of coal-based power plants by 2040 has been accelerated, with over 60% of remaining capacity coming offline by 2026.

RES Index Scoring – Subsidy

Least Attractive — Most Attractive

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Section 3: Thematic Insights

Introduction

This series focuses on thematic stories and trends that emerge from the global energy modelling our Index draws from. This includes:

1 **Thematic 1:** Asymmetric renewable capacity growth: predicting the peak

Germany, Italy, and Great Britain's capacity growth is set to peak this decade, while several US ISOs such as MISO, PJM, SPP will experience acceleration after 2030. In contrast, India offers more long dated opportunities with capacity not peaking until after 2050.

2 **Thematic 2:** Profitability and capacity growth: a sweet spot

Market capacity growth and profitability are key investor indicators, accurately predicting the timing peak of these creates an investor sweet spot.

3 **Thematic 3:** El dorado: US subsidies turn renewables gold

US subsidies have transformed US renewables attractiveness. US profitability is more reliant on out-of-market subsidies than Europe. Once IRA and RECs (Renewable Energy Certificates) are implemented, US profitability performs above European average.

4 **Thematic 4:** Policy attractiveness differs widely by market

More mature markets, while generally providing lower returns, have greater stability for investors. The majority of Europe exhibits strong credibility and durability scores, with only Southeastern Europe at risk. However, large heterogeneity exists within regions.

5 **Thematic 5:** Liquidity deepens in mature markets

US solar and wind transactions top $65bn in 2023, followed by Western and Southern Europe. Solar PV M&A remains hot, but wind has increased significantly in Europe.

Explore this data by market with our Wholesale Power Market Reports, contact MarketReports@Baringa.com.

1 Thematic 1: Asymmetric renewable capacity growth: predicting the peak

Each country is at a different stage in their power sector decarbonisation journey, with capacity growth peaking at different points in time.

Peak of capacity growth across solar and wind, by time period and market

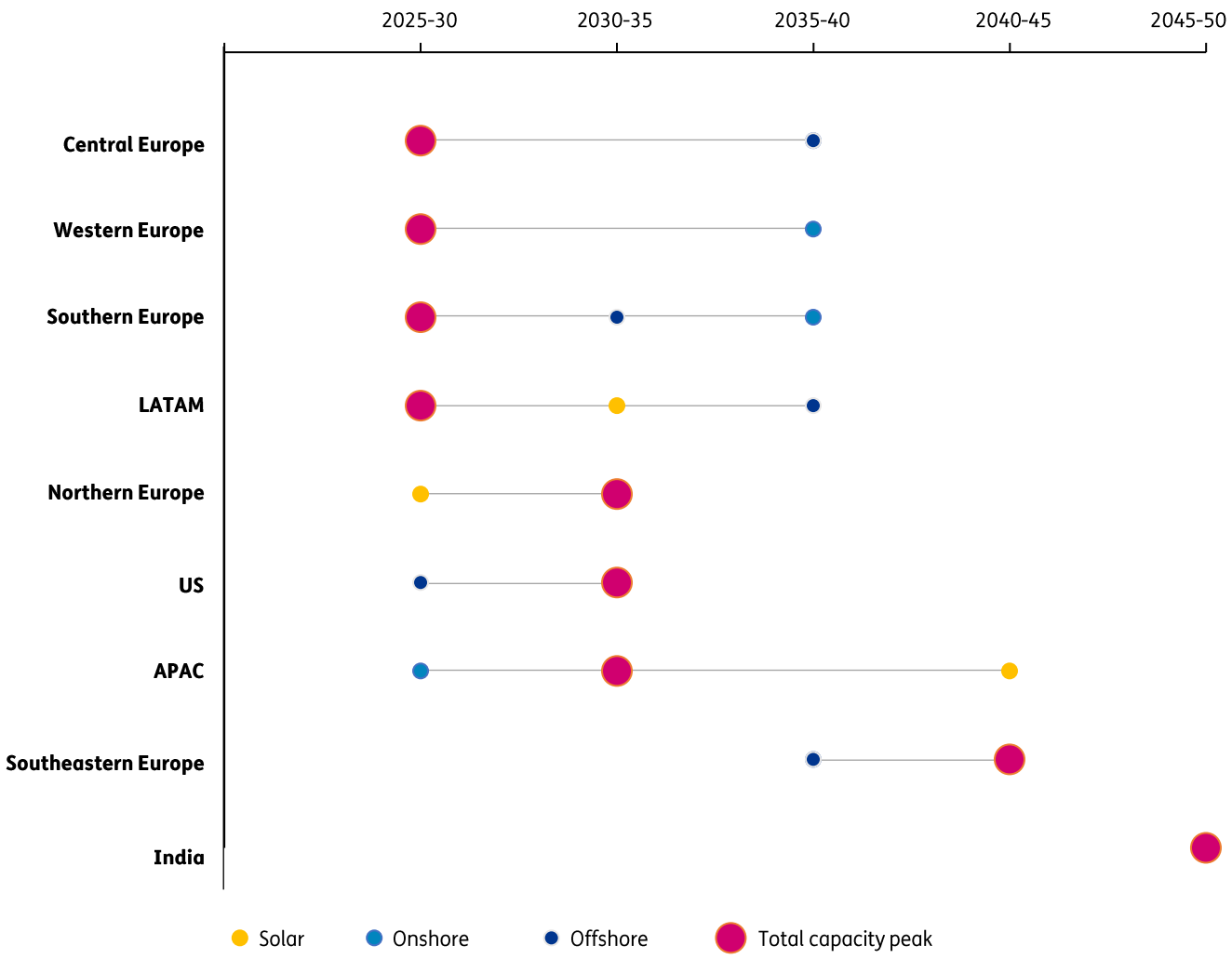
Renewable energy generation capacity is set to increase significantly over the next 20 years all over the globe. However, each country and region is on its own decarbonisation journey, with the peak of such capacity growth happening at different points in time, and even different decades.

We have analysed the GW added per country across solar and wind (onshore and offshore) over the next 25 years in five 5-year periods. Our findings show how certain mature European markets, such as Germany, Italy, Great Britain are set to peak this decade. On the other hand, several US ISOs such as MISO, PJM, SPP are experiencing high growth which is set to accelerate until after 2030, partly driven by IRA tax credits. Lastly, less established markets such as some in Southeastern Europe, as well as the majority of India are set to peak later.

The growth in capacity is not solely driven by the stage of maturity of the market but also the size of the market itself, with larger markets peaking later, broadly.

The peak of capacity growth is often different by technology, with European wind peaking later.

Peak of capacity growth by technology



Note: overall peak may include technology-specific capacity peaks

The peak of capacity growth can vary substantially by technology.

In more mature markets in Europe as well as in the LATAM market, the bulk of capacity growth has been driven by solar PV. On the other hand, wind is set to peak later compared to the overall capacity growth peak.

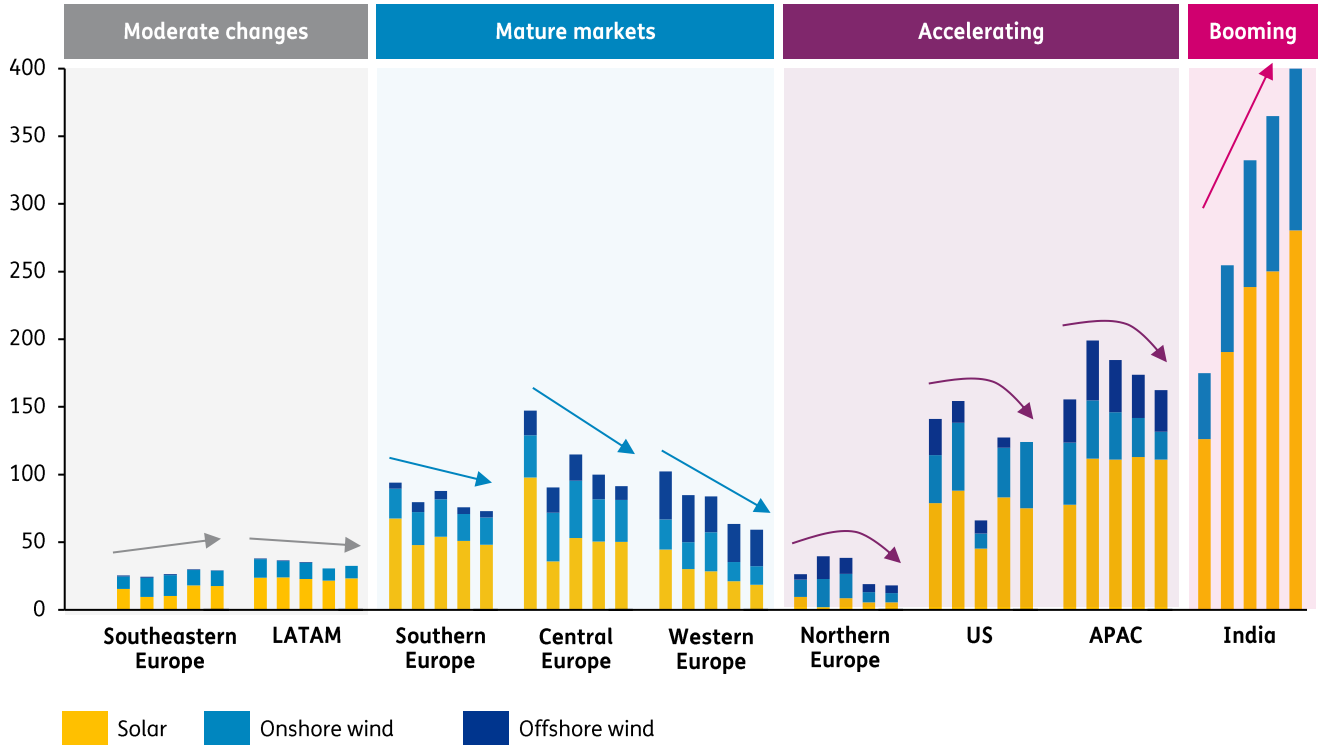
Northern Europe is a smaller market for solar PV due to relatively low solar exposure, with solar peaking earlier and wind comprising the bulk of the capacity growth.

The US' ISO analysed and APAC markets are set to peak towards the 2030s, with ambitious short-term growth in wind.

Southeastern Europe will continue to accelerate on RES capacity growth until 2040s. Similarly, the Indian market is set to continue to boom for at least the next 25 years.

Solar PV makes up the bulk of capacity growth in most markets, and the shape of capacity acceleration curves draws out key differences between markets.

Capacity additions, GW (2025-30, 2030-35, 2035-40, 2040-45, 2045-50)



Bars indicate periods: 2025-30, 2030-35, 2035-40, 2040-45, 2045-50

Capacity growth provides two key insights:

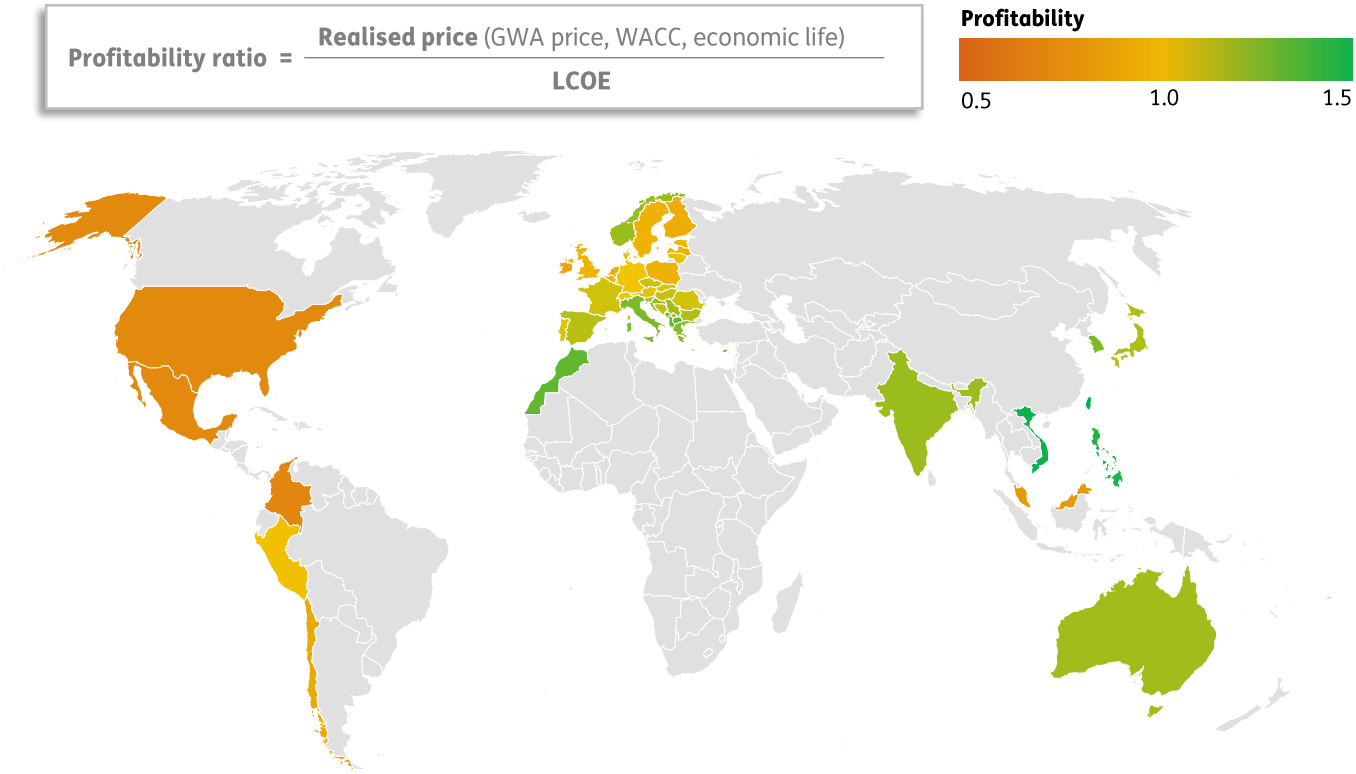
- Technology build-out: solar PV makes up the most of capacity increase for most regions, except for certain parts of Europe where solar growth is slowing down but is accompanied by sustained investment in onshore and offshore wind.
- Shape of the growth: Southeaster Europe and LATAM are experiencing moderate changes and further policy intervention might be needed. Mature markets are overall reducing their capacity growth (but technology differences are likely to exist). Northern Europe, US and APAC are accelerating and expected to reach an acceleration peak within the next 10 years. Lastly, India is an emerging market set to continue to accelerate on capacity growth to 2050.

2 Thematic 2: Profitability and capacity growth: a sweet spot

Renewables in most of Europe and APAC exhibit high merchant profitability ratios, whilst the US' are lower

2030 merchant profitability ratio

$$\text{Profitability ratio} = \frac{\text{Realised price (GWA price, WACC, economic life)}}{\text{LCOE}}$$



Note: US and India exhibit significant heterogeneity between ISO/regions, respectively.

Source: Baringa

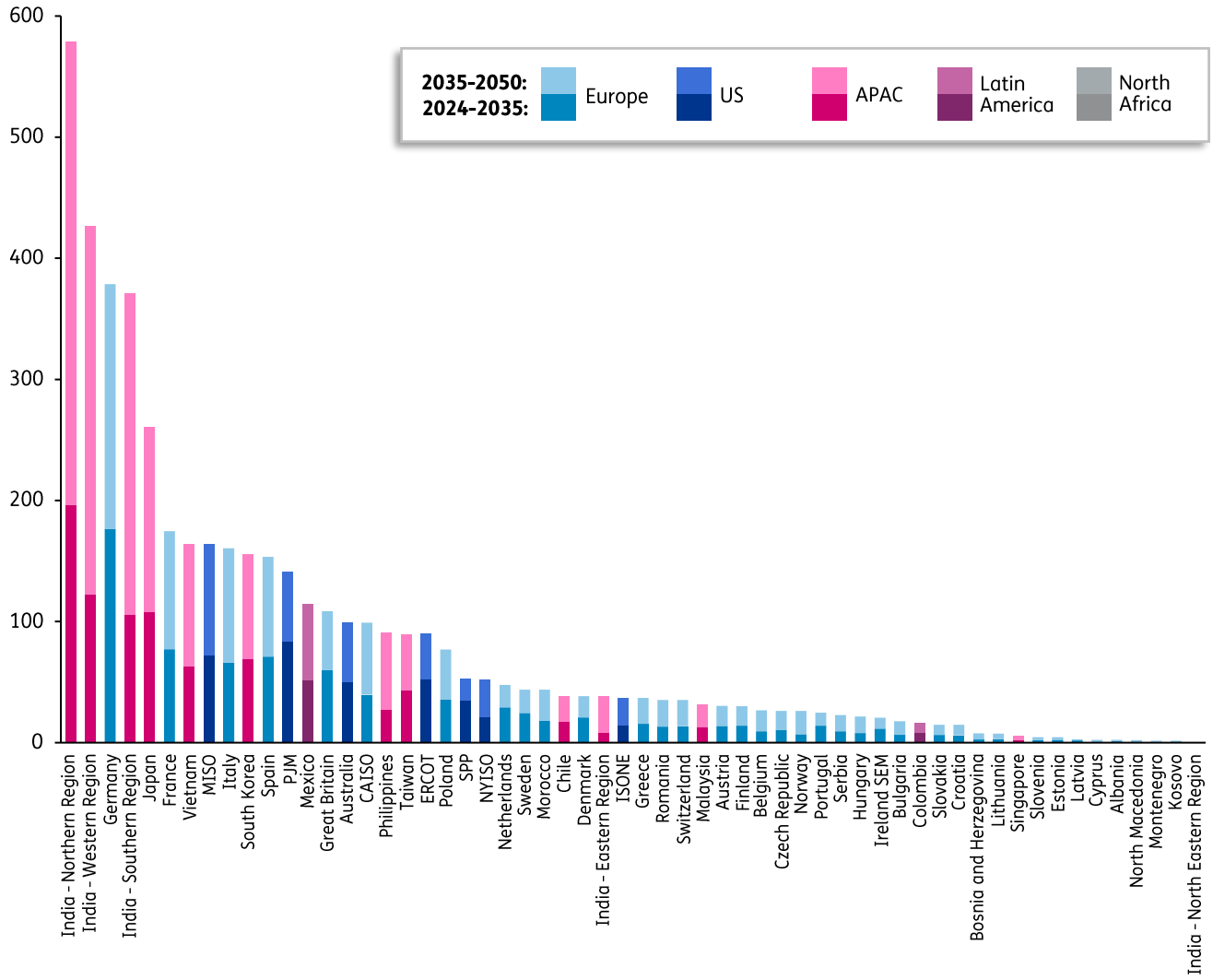
In this analysis, profitability is assessed through the ratio between realised prices, which take into account GWA (Generation-Weighted Average) prices, WACC and economic life of the asset, and LCOE.

Renewable assets in Southern Europe and large parts of APAC are set to achieve high profitability ratios on a merchant basis in 2030, relative to other regions. This is achieved thanks to sustained high levels of capture prices as well as downward pressure on hurdle rates from interest rate normalisation, and LCOE decrease.

On the other hand, US profitability ratios are lower mainly due to lower capture prices on a merchant basis. LATAM's profitability is also lower mainly due high LCOE and cost of capital in certain countries.

India, Germany and Japan are set to increase solar and wind capacity the most to 2050, while APAC is set to add the most GW, with India accounting for 60% of the growth

Capacity additions to 2035 and 2050, GW



Note: wind considers both onshore and offshore wind.

Source: Baringa

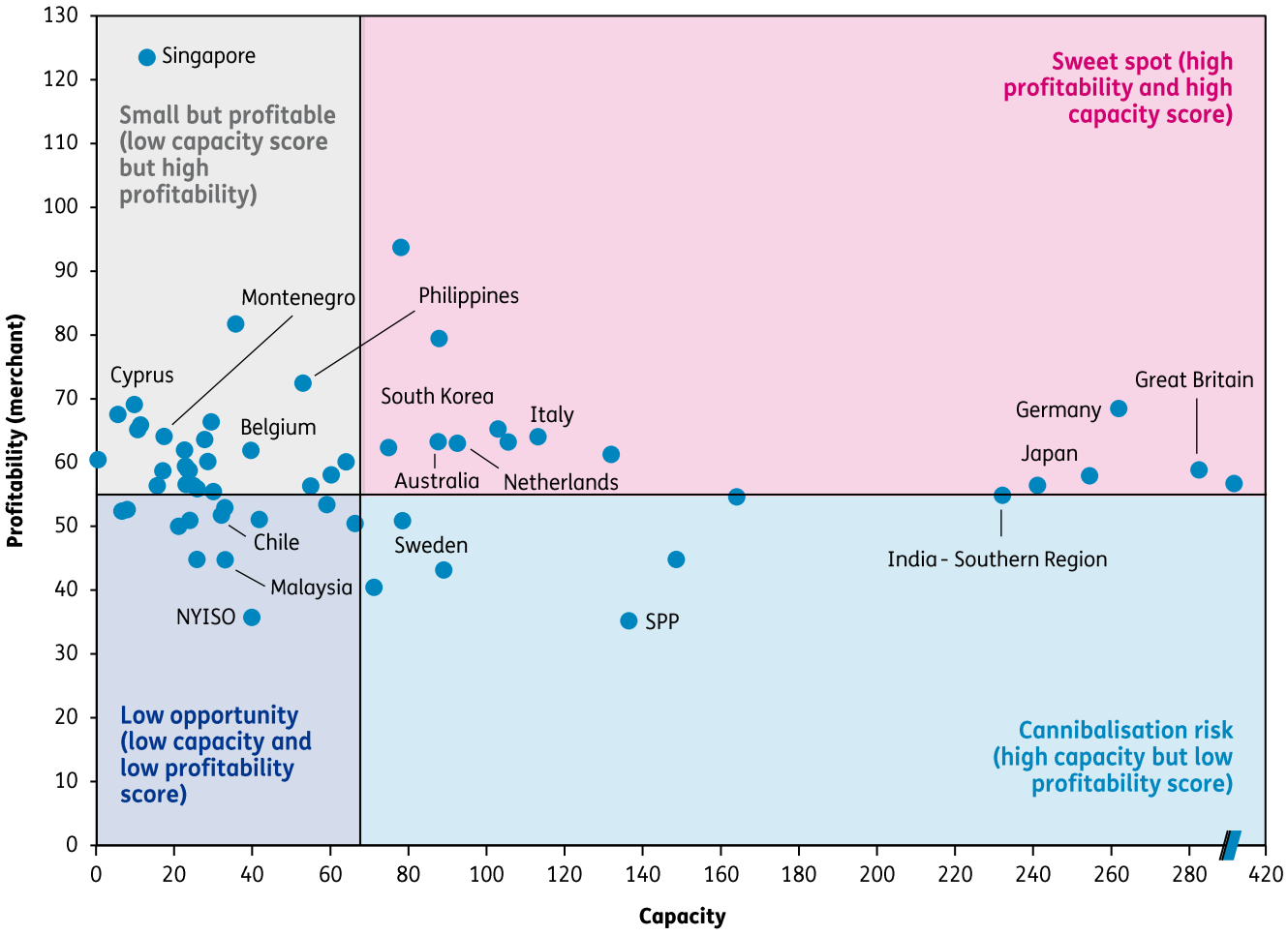
No matter the profitability of the opportunity, the size of the opportunity also plays an important role in assessing renewable the attractiveness of renewable generation across markets.

Large parts of India, Germany and Japan are set to benefit from the greatest absolute growth across solar and wind capacity to 2050.

APAC is set to add the most GW of solar and wind over the next 25 years, with India accounting for approximately 60% of the growth. Europe is the second region by capacity added, followed by the US ISOs part of this analysis.

There exists a "sweet spot" between profitability and capacity growth, with some markets exhibiting high capacity and profitability scores

Capacity vs profitability (merchant) score



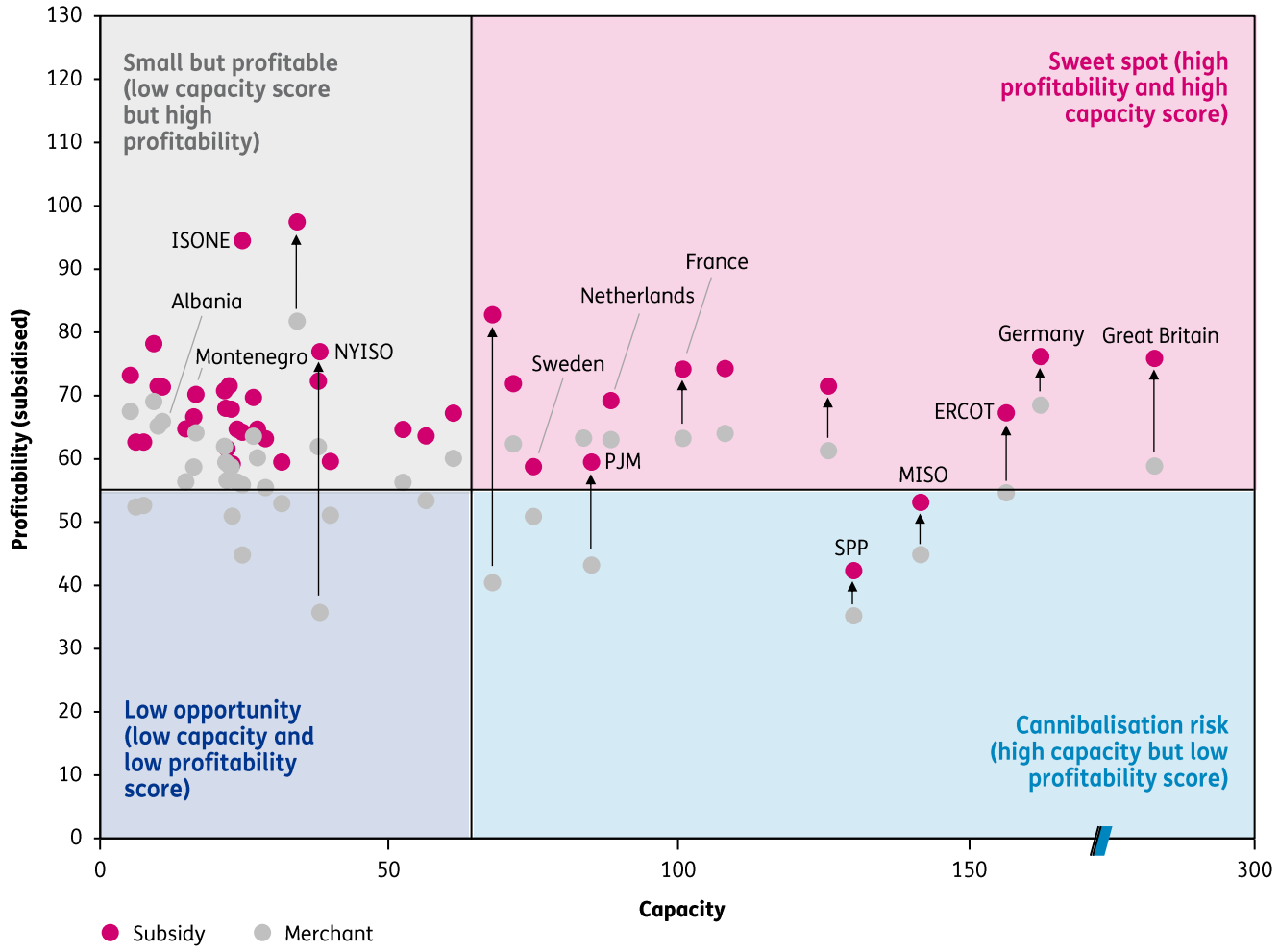
Countries with high capacity and profitability scores are likely to be particularly attractive markets for renewable investors. In this category, we find established European markets such as Germany, Great Britain, Spain but also large parts of India and Japan.

Singapore, Morocco, Belgium are among those countries where capacity growth is relatively lower but profitability scores are elevated.

US's ISO such as SPP, MISO, PJM are set to experience high renewable capacity growth but don't perform as well on merchant profitability basis. However, this changes once subsidies are accounted for.

Focusing on Europe and US, subsidies play a crucial role in improving profitability for renewable assets, moving countries away from the "low opportunity" area

Capacity vs profitability (merchant and subsidy) score, US and Europe



Once subsidies are accounted for, profitability scores increase. All markets modelled previously classed as a relatively low opportunity are lifted out of the bottom left section, thanks to the profitability boost of subsidies. This includes Ireland SEM, Latvia, NYISO and Finland, among others.

Note: the European subsidy score models the effect of the European subsidies as a risk reduction due to revenue certainty and LCOE reduction. The US subsidy score includes the effect of IRA tax credits.

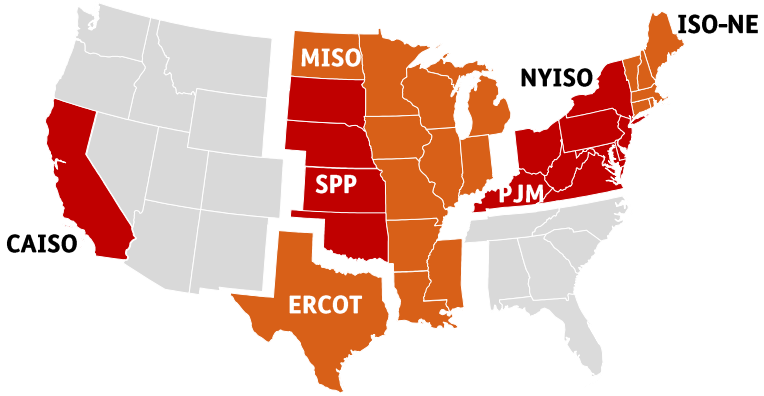
3 Thematic 3: El dorado: US subsidies turn renewables gold

US profitability is more reliant on out-of-market subsidies: once IRA's tax credits and REC trading are included, it performs as well – if not better – than Europe

US Profitability relative to European Average

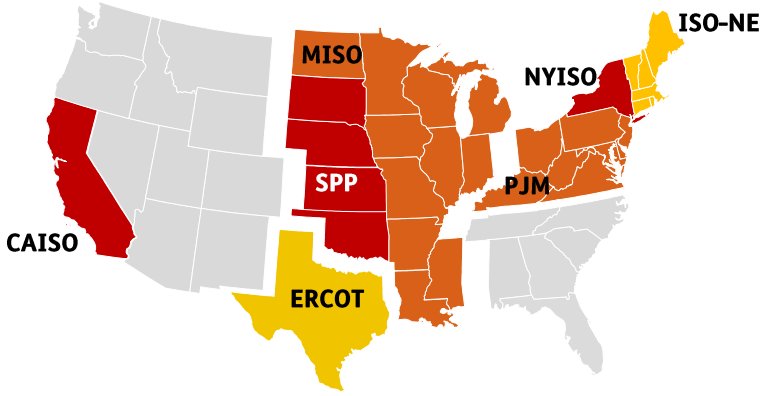
$$\text{Profitability ratio} = \frac{\text{Realised price (GWA price, WACC, economic life)}}{\text{LCOE}}$$

Less profitable — More profitable



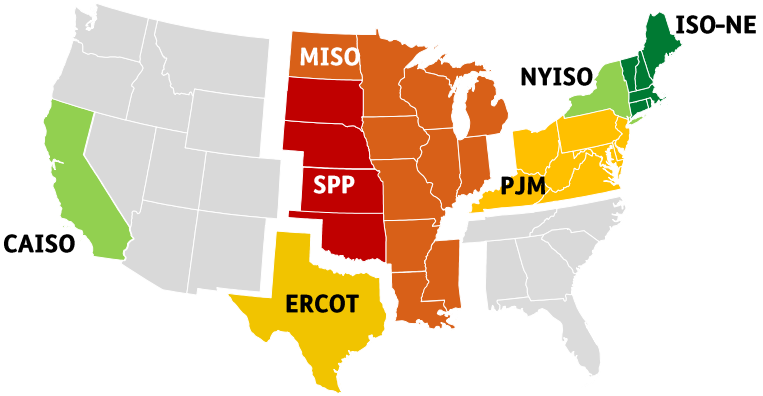
Wholesale revenues only

- Renewables profitability in our analysis is assessed through the ratio between realised prices and LCOE.
- Mainly due to significantly lower wholesale prices, profitability ratios of renewable assets are significantly higher in Europe compared to the US.



Including IRA and European subsidies

- Broadly, IRA increases average US profitability ratios of renewable technologies by more than 20%.
- ERCOT, ISONE, PJM are among the ISO where the IRA was most effective at increasing profitability.

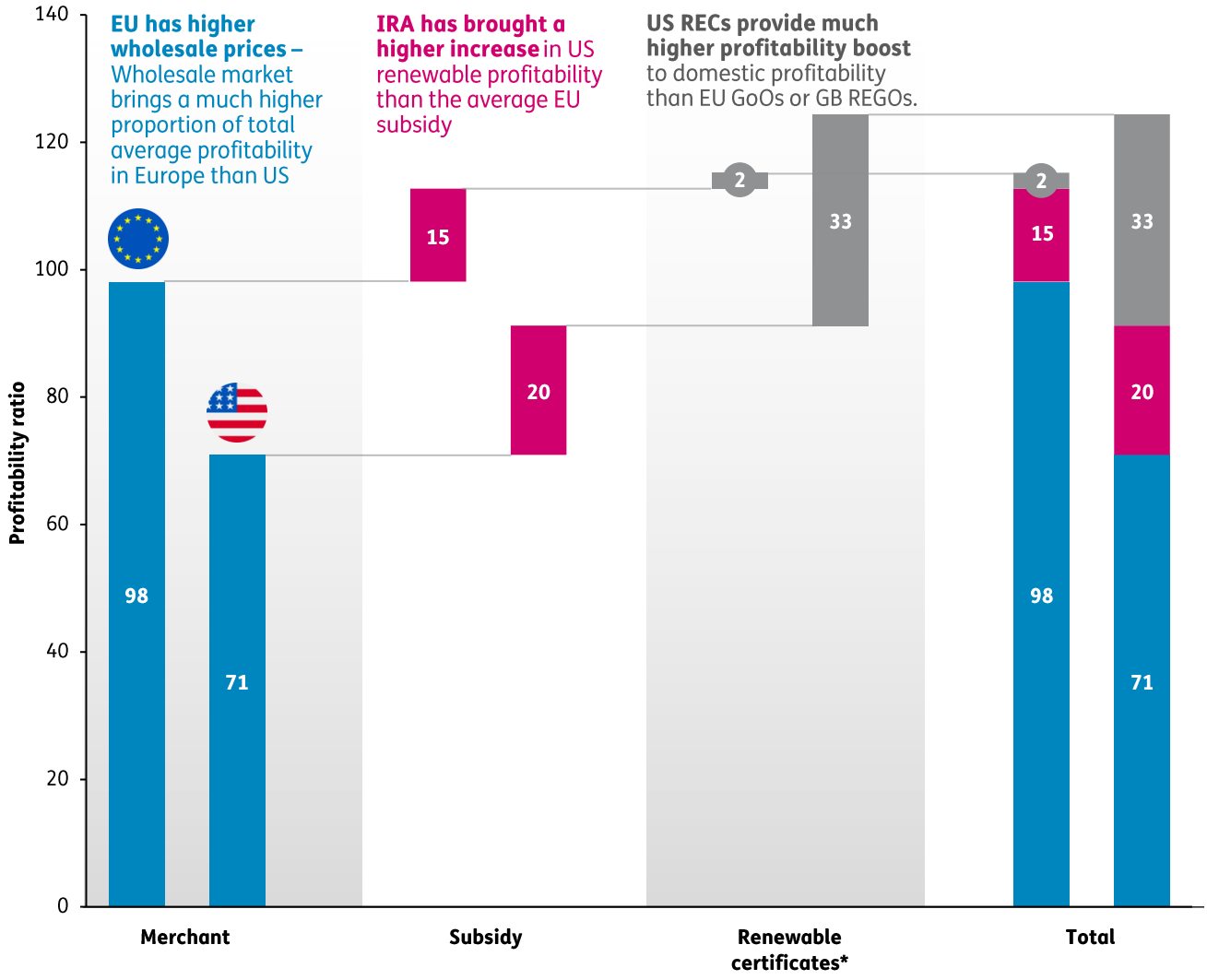


Including Renewable Certificates Trading (GoOs, RECs, REGOs)

- REC trading increases profitability ratios by approximately 30% for US renewable assets, on average.
- However, significant regional variation in US performance against European average, with US Midwest profitability significant below European average.

Notes: merchant profitability only. Capacity buildout is not incorporated in this analysis. Renewable technologies analysed are Onshore wind, as relevant. Areas shaded in grey were not assessed. ISO are illustrative only and borders are approximated.

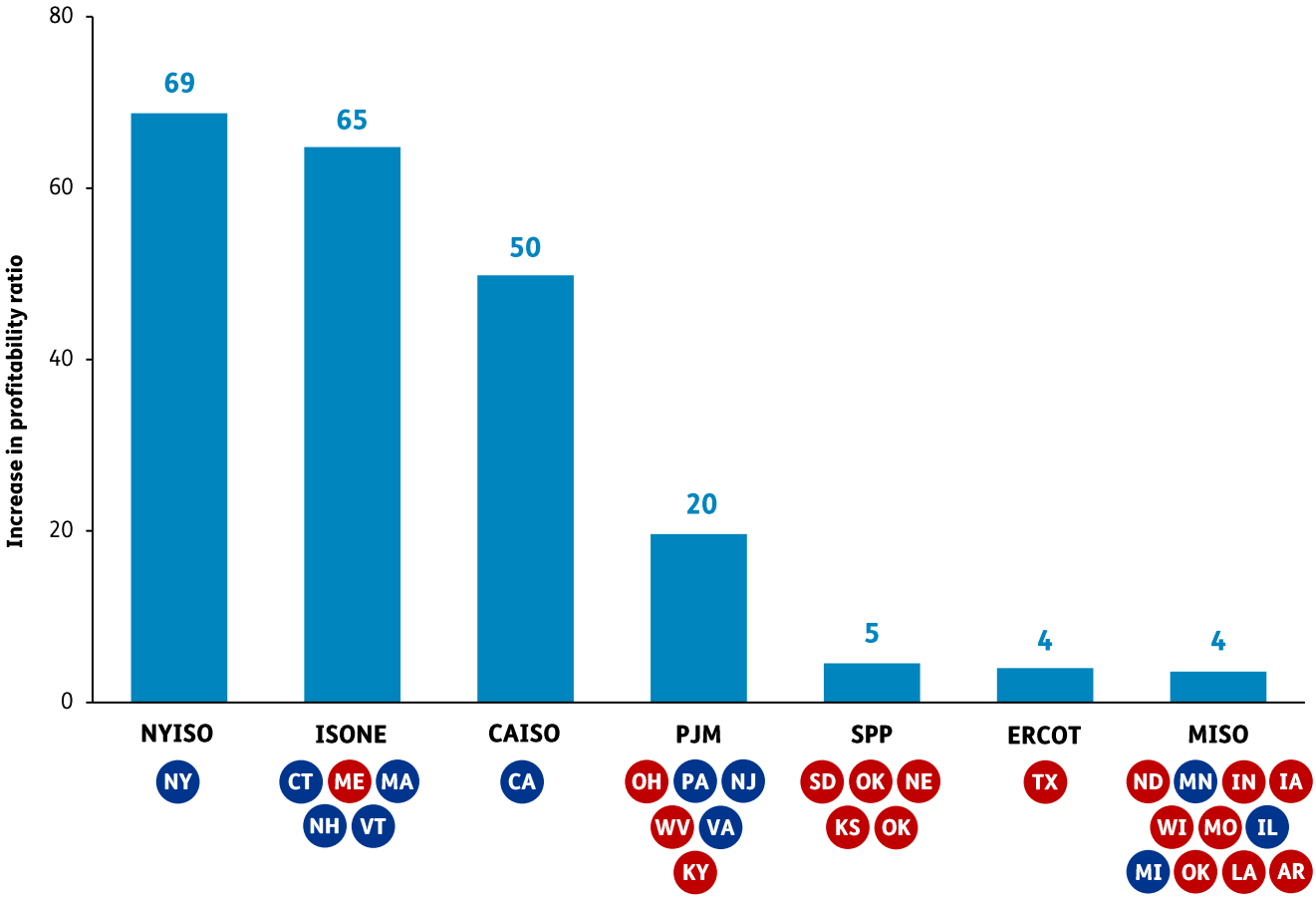
US' IRA and RECs trading are more effective at improving investment attractiveness versus European equivalents



* Includes RECs, GoOs, REGOs

Profitability remains political: REC prices depend on state policy, such as Renewable Portfolio Standards (RPSs), and are much higher in Democrat states

RECs profitability increase compared to baseline, and political affiliation



Note: Profitability baseline includes IRA subsidies, political affiliation based on latest senate election

- **Renewable Energy Certificates (RECs)** are tradeable certificates, separate from the electricity sale, representing proof that the relevant electricity being delivered to the grid is from a renewable energy source. The price of REC and associated revenue stream depends on the type of market and demand for this certificate, which is usually from electric utilities and some electricity consumers.
- Mandatory or compliance markets of RECs (as opposed to voluntary markets) are markets created by policy decisions such as state Renewable Portfolio Standards (RPSs). RPSs required certain electric service providers to have a minimum amount of renewable energy in their electricity supply.
- The price of compliance RECs tends to be significantly higher than the voluntary REC, making the profitability increase significantly higher in instances where a RPS policy is in force. Democrat states are more likely to have passed RPSs or equivalent policies.

4 Thematic 4: Policy attractiveness differs widely by market

Baringa's Credibility and Durability Assessment

Baringa's Credibility & Durability methodology evaluates national commitments on their deliverability, depth and breadth of political support.

The credibility assessment examines to what extent a policy supports a defined emission commitment, with a higher score indicating a greater likelihood that those targets will be met. The durability assessment examines the degree to which a policy will have an impact as a result of the existing political and policy environment, with a higher score denoting strong momentum in favour of decarbonisation with commitment "baked in". A high credibility and durability score signal a target is very likely to be met. A low set of scores signals a target is very likely to be missed.

Credibility: (Maturity)

"To what extent do current polices support the emission reduction target"

Durability: (Momentum)

"With what likelihood will the current policies (the credibility score) strengthen or weaken over time"

Federal policy influence on the energy transition

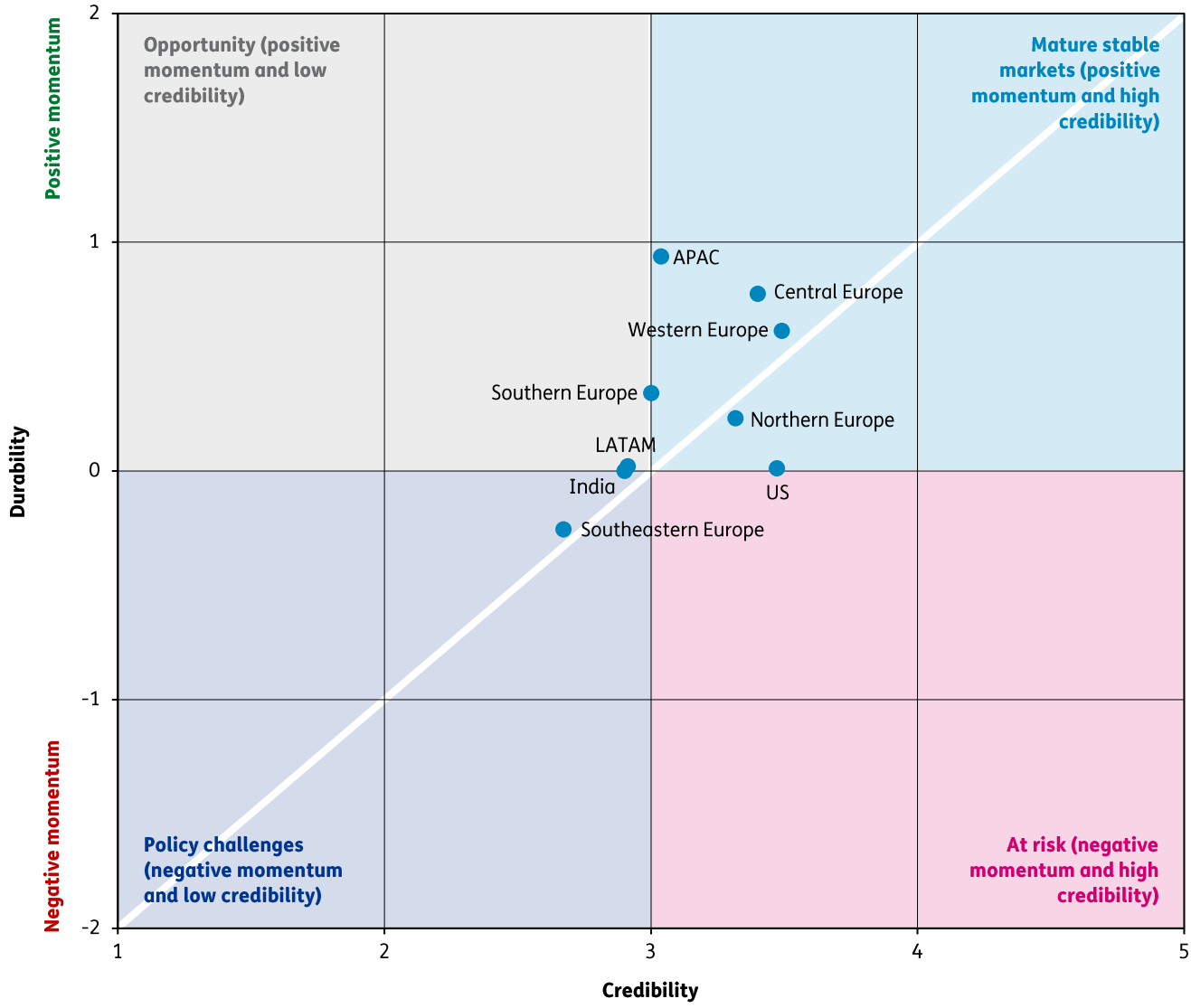
Credibility	Durability	Emissions Target Impact
HIGH	HIGH	LIKELY TO BE MET
LOW	LOW	SIGNIFICANTLY MISS

We have assessed the credibility and durability of national climate and energy policy, drawing out key differences across regions

The Baringa Credibility and Durability assessment is a framework to assess national climate and energy policy across the world.

It considers the credibility of long-term targets, including the legislative status of the target, the existence of detailed plans, as well as annual reporting and accountability mechanisms. It also considers NDCs, interim targets and different types of climate change law. Moreover, the framework also assesses the durability of climate policy by assessing support of the target across government and opposition parties as well as political volatility.

Mature stable markets feature positive momentum and high credibility of national policy and therefore have lower policy risk. On the contrary, country at risk have policy with high credibility but low durability: roll-back risks are heightened. Opportunities may lie in countries that are currently on a target with low credibility but have gained positive momentum and are likely to improve their target. Lastly, policy challenges exist in countries with policy featuring low credibility and a negative momentum.



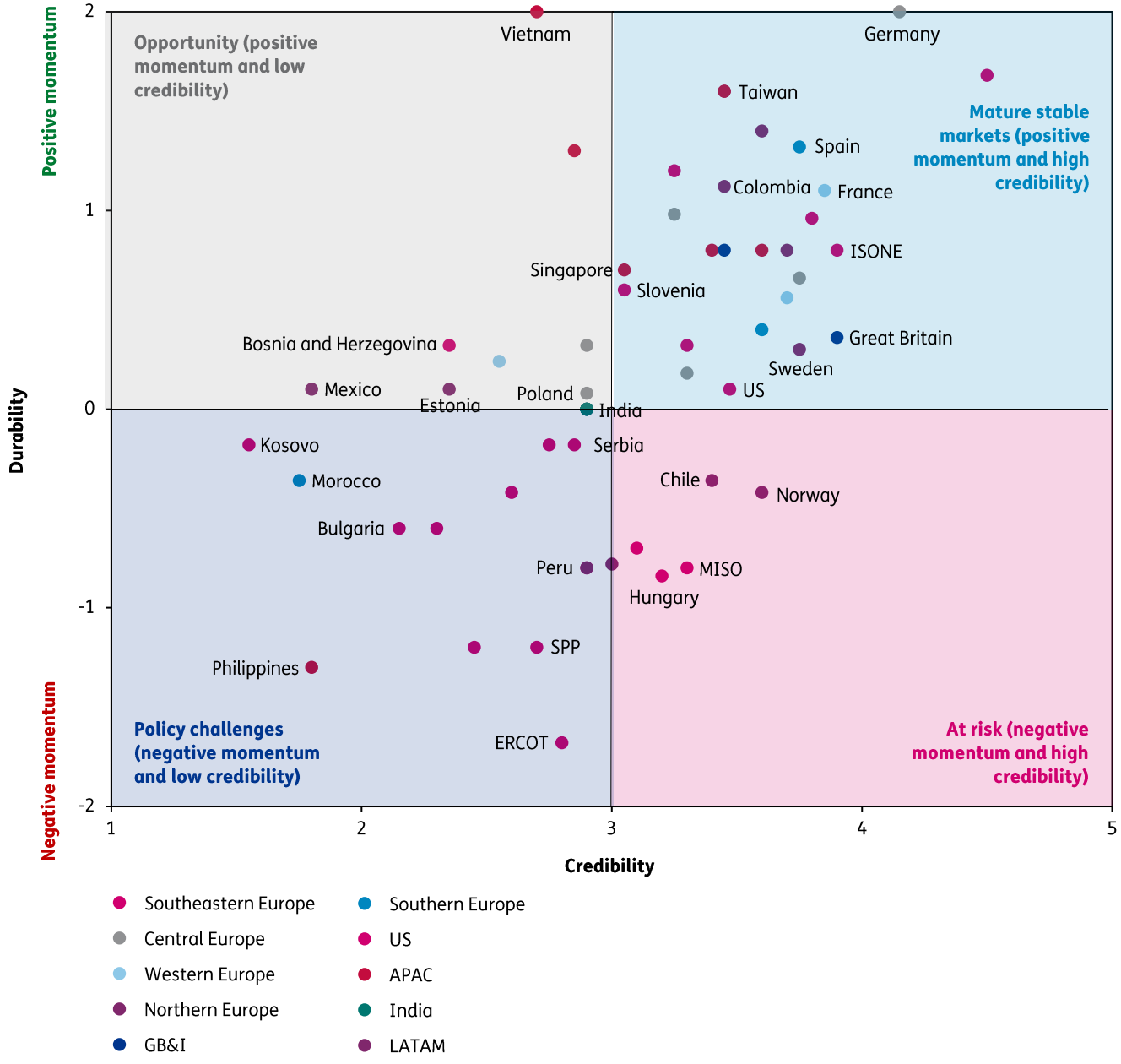
Large parts of Europe score high in durability and credibility but within region heterogeneity remains significant

It is important to note that large heterogeneity within regions exists, with policy risk always needing detailed national assessments.

Large parts of Europe, especially Western, Central and Northern Europe, feature high credibility and durability scores.

On the other hand, Southeastern Europe faces certain policy challenges. Certain parts of APAC and LATAM such Mexico, Vietnam and Malaysia are gaining positive momentum and are set to improve their policy commitment.

Countries such as Hungary and Croatia are at risk of policy rollbacks.



High credibility and durability countries demonstrate an attractive policy environment

Spain

Credibility	Durability
3.8	1.3

Certain regulatory developments are expected in the coming months to enable the execution of the revised NECP, among others:

- Increase investment cap on T&D networks as well as the revision of the TSO's pluriannual investment plan, in order to solve existing bottlenecks and connection capacity constraints both for supply and demand
- Capacity market scheme, which will provide a fixed payment pricing signal for BESS and pump-storage among others. A capacity market auction scheme is expected to be published in the coming months, once Ministry of Energy receives approval from the EC. We expect it to be in similar terms to what made public for consultation process by the Ministry of Energy in April 2021 (which follows similar principles to UK Capacity Payment market)
- Government published in July'24 the regulatory framework for the Call for subsidies for large green hydrogen valleys, as part of the NexGenEU funds. The call will have a total budget of >100 MW, and is destinated for projects with ELY capacity >100 MW, with a total budget €1.2Bn. Timeline for call expected to be launched in Q4-24.

U.S.

Credibility	Durability
3.5	0.1

- FERC Order No. 1920 is the first time in close to a decade that federal regulators address regional transmission policy – and marks the commission prioritizing a need for long-term transmission planning.
- The ruling aims to improve coordination of regional transmission planning and generator interconnection processes. Sweeping changes to Transmission Planning and Cost Allocation Rules requiring all public utility transmission providers to "conduct Long-Term Regional Transmission Planning that will ensure the identification, evaluation, and selection…of more efficient or-cost-effective regional transmission solutions".
- The increase in transmission will be a big win to move clean energy and ease congested renewable generation facing curtailment.

Japan

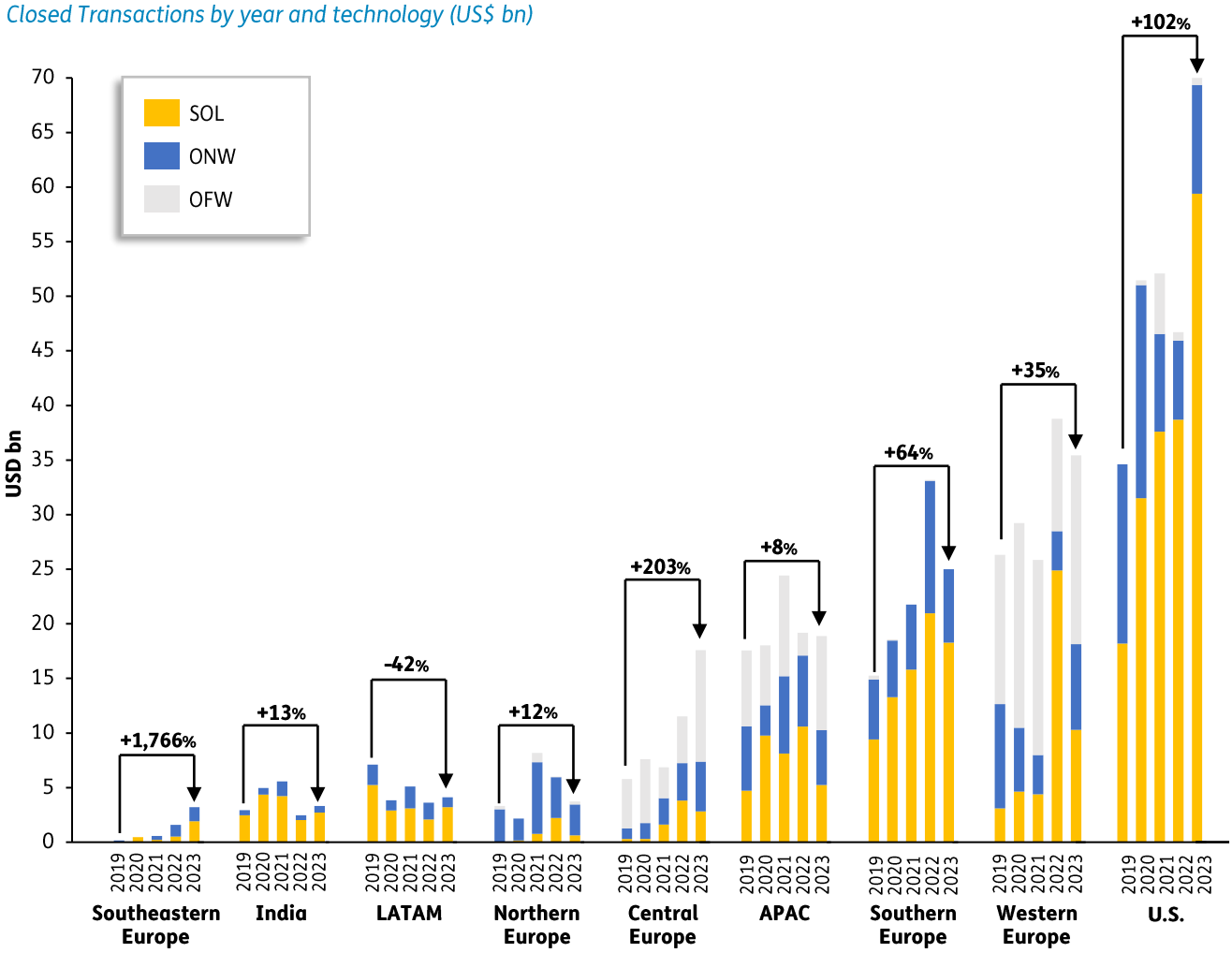
Credibility	Durability
3.6	0.8

- In FY2023, Japan held the first cross-region Long-Term Decarbonisation Auction (LTDA), a measure intended to encourage market participation and secure base-load power for decarbonisation.
- Under the LTDA, winning bids receive a 20-year capacity contract with a fixed capacity revenue component based on the generator's bid price and capacity as well as a variable component consisting of a percentage of their wholesale and balancing market revenue.
- A total of 4.01 GW of decarbonised power was awarded out of 7.8 GW bid in the first auction held in 2023, with 1.09 GW from BESS, 0.58 from pumped storage, 0.83 GW from thermal retrofits (H2 and NH3 cofiring), and 1.52 GW from other decarbonised projects. The next LTDA is expected to increase the total to 5 GW.
- The LTDA complements the existing capacity market auctions, held since 2020, which do not distinguish power generation technologies and in which fossil fuel thermal generation is the predominant capacity procured.

5 Thematic 5: Liquidity deepens in mature markets

US solar and wind transactions topped $65bn in 2023, followed by Western and Southern Europe, Solar PV M&A remains hot, but wind has increased significantly in Europe

Closed Transactions by year and technology (US$ bn)



In order to reach Net Zero by 2050, the IEA forecasts that clean energy investment worldwide will need to more than triple in this decade to US$4tn. Investor interest remains high, but volatility in financing costs have caused some short term fluctuations. Nonetheless, Energy M&A has remained a resilient sector over the last few years, with nearly all regions showing an increase compared to pre-pandemic levels. Unsurprisingly, the US dominates dealmaking activity, followed by mature markets such as Southern and Western Europe.

Note: M&A is defined as Volume and value of M&A transactions in each geography for 'renewables', which includes solar PV, onshore wind, portfolio, energy from waste, hydroelectric, biomass, floating offshore wind, solar CSP, geothermal

Thematic: 1 2 3 4 5

A selection of significant deals across global markets show increasing breadth of RES M&A transactions

KKR
ZENOBE

Deal type: Equity investment
Deal size: $600mn
Capacity: Target development of 2.5GW battery storage

PTTEP TotalEnergies

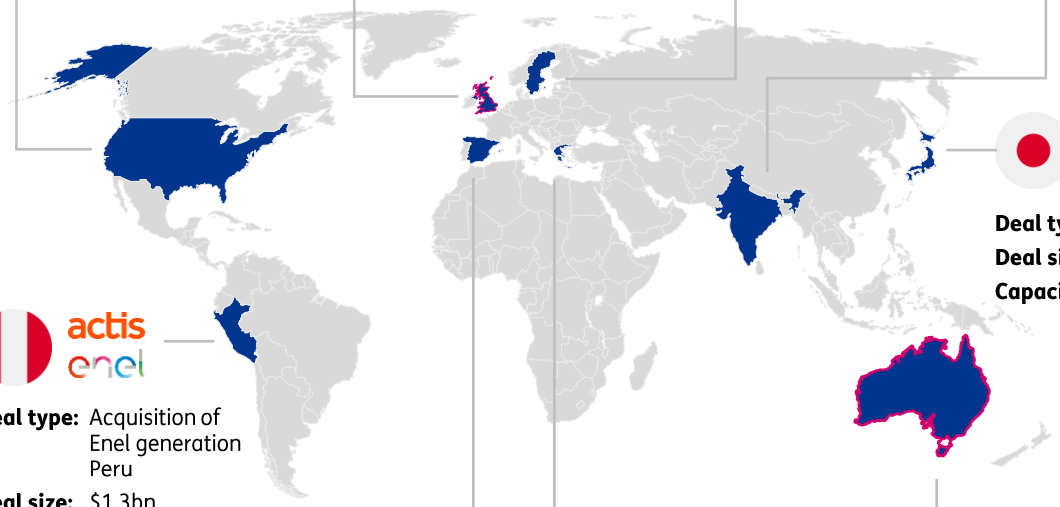
Deal type: Farm down
Deal size: £522mn
Capacity: 25.5% OF Total Energies' Seagreen windfarm

EQT
OX2

Deal type: Acquisition
Deal size: $1.5bn
Capacity: 47GW global portfolio

adani

Deal type: Significant energy transition investment
Deal size: $100bn
Capacity: 2030 RES capacity of 50GW



Green Power Green Power Investment Corporation
jera

Deal type: Acquisition
Deal size: $2.2bn
Capacity: 330MW

actis
enel

Deal type: Acquisition of Enel generation Peru
Deal size: $1.3bn
Capacity: 2.2GW

MASDAR
endesa

Deal type: Acquisition resulting in partnership
Deal size: €817mn
Capacity: 2.5GW

enel
ppc

Deal type: Acquisition
Deal size: €1.24bn
Capacity: 600MW and 5GW in pipeline

Brookfield
NEOEN

Deal type: Acquisition resulting in major shareholder ownership
Deal size: $10.6bn
Capacity: 53% of AUS portfolio

Notes: All values expressed in '$' are in US$; highlighted in **pink** refer to Baringa's involvement of the deal

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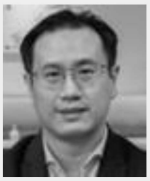

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