



Investing in the grid: no transition without transmission



Modern electricity grids are the central enabler of the global energy transition, determining how fast renewables, energy storage and the electrification of key industries can scale. William Argent and Shayan Ratnasingam share their thoughts on the investment opportunities.



The physical backbone of today's electricity systems, grids are becoming increasingly important. But after decades of underinvestment, they are now struggling to keep pace with surging demand and rapid growth in clean power.

Without a huge wave of investment in long-distance transmission and smarter distribution networks this decade, climate targets and energy security goals simply will not be achievable, because grids are becoming a bottleneck.

- More than 80 million kilometres of grid networks globally must be added or replaced by 2040 if we are to reach climate and security goals* – a distance long enough to encircle the planet almost 2,000 times.
- More than 40% of grids in advanced economies are more than 20 years old, or in the second half of their lifespans, with some grid infrastructure dating back 50 years or more*.
- The European Commission estimates that €584 billion of grid CapEx is needed by 2030, rising to €1.2 trillion by 2040**.
- In 2023 the IEA estimated that at least 3,000 GW of renewable power projects were already waiting in 'grid queues'*, with some projects taking more than a decade to connect. To put this into context, 3,000 GW is roughly 80% of China's current installed generating capacity and 2.3x the US.

The challenge

As the cost of renewable energy generation assets have come down over the past decade, we've experienced rapid growth. But that growth and the level of investment that has been undertaken, has not been mirrored in the distribution and transmission networks. We now require a transformational change in our energy system, which creates a great investment opportunity.

The first challenge is ageing infrastructure. An IEA report in early 2024 highlighted that 40% of all developed market grids are over 20 years old and at maximum capacity. They are both old and not fit for purpose to deal with the rapid load growth on the system.

Secondly, they're facing structural challenges. Because of the intermittent nature of many renewables, we need to address the lack of base load power in the system and integrate energy storage solutions such as batteries.

And thirdly, we need to think about how we expand the grid to move electrons from where assets are generated to where consumers are actually consuming that power.

The opportunity

The level of CapEx required to meet these challenges is a multi-decade investment opportunity. What's more, the sector has a number of attractive characteristics that we look for in the TM Gravis Clean Energy Income fund.



Firstly, companies operating in the sector hold monopolistic positions in regulated markets, earning a regulated return for operating and maintaining their networks. There are further opportunities to outperform the regulated returns through performance-based incentive payments and financial structuring.

Secondly, there's a level of inflation protection built into these regulatory frameworks which allow operators to recuperate the cost of any inflationary pressures.

And lastly, there is no power price exposure in the transmission network. These companies or asset owners are responsible for moving electrons across the system. They are not compensated for buying or selling power.

New fund holdings

Over the last year, we've added two new holdings from within the European grid space. We like European transmission operators because they tend to have defined renewable energy policies. They also have large, committed CapEx programmes and the European grid as a whole is moving to a more integrated mesh grid system, which requires more interconnected capacity across the Continent.

Just last month, the EU Commission published its EU Grid package that will direct €1.2 trillion through 2040 towards electricity grid infrastructure with an aim to help EU states fast-track permits for grid infrastructure and enable renewable energy, energy storage and interconnector projects.



The first name we added was Terna Rete-Elettrica, the Italian transmission system operator. Over 80% of its revenues are from regulated activities and it covers 99% of the transmission network: over 75,000 kilometres of high voltage cables across seven market zones.

Italy wants 60% of electricity demand to be met by renewables by 2030. It currently has just 80 GW of renewable capacity on the system, which roughly

meets one-third of total energy demand. By 2030, it is looking to increase that generation capacity to 132 GW.

Due to the underinvestment and lack of capacity, so characteristic of this sector globally, the queue of projects trying to connect to the grid in Italy currently stands over 300. A large amount of CapEx is therefore required to make it fit for purpose, especially when you consider that the transmission operator is looking to act as a hub for international connectivity between Europe and Northern Africa. This ambition is underpinned by the ELMED project, a 600 MW interconnect capacity which will connect Sicily to Tunisia.

redeia

The other holding we have added is Red Electrica, known as Redeia - Spain's transmission system operator. It also covers 99% of its domestic market with just over 45,000 kilometres of high voltage cable. Close to 90% of revenues are from regulated activities.

Redeia is playing a vital role in integrating the European internal energy market, with its energy system currently connected to the systems of France, Portugal, Andorra and Morocco. An inter-connected European energy network is vital for European energy security and competitiveness. It is currently building a new 400km interconnection that will support the integration of the Iberian Peninsula and the rest of the internal electricity market via France through the Bay of Biscay. This project will increase the exchange capacity from 2.8 GW to 5.0 GW, between the two countries.

Having sold a telecoms business last year, it is now focused on its regulated transmission service. Spain, like many other European countries, has well-defined energy transition targets: 81% from renewables by 2030, up from 50% today. Like Terna, it has a non-regulated part of the business: it runs Spain's largest fibre connection business and has over 53,000 kilometres of fibre networks running in parallel to its transmission network.

*Source: IEA Electricity Grids and Secure Energy Transitions

**Source: European Commission's Action Plan for Grid



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