KEYNOTE INTERVIEW

Europe enters new energised era

Infrastructure that enables electrification will be the linchpin of the energy transition, says NTR chief investment officer Anthony Doherty

Although the energy transition in Europe is dominated by images of wind turbines and solar panels, power generation is only one part of the system.

To unleash the full potential of the continent's renewable energy resources, greater investment in grids, grid-supporting technologies and heat electrification will be vital, especially with grid infrastructure struggling to keep pace with the deployment of intermittent renewables, and electricity systems facing increasing problems with curtailment. Anthony Doherty, chief investment officer at NTR, discusses how all these factors are driving investment opportunities.

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Q Could you define electrification-enabling infrastructure, and how does it help support decarbonisation?

Electrification-enabling infrastructure includes everything that allows clean electricity to be transported, balanced and consumed efficiently. That includes grid storage, flexibility and even end uses like heating.

We've done a great job in Europe on generating renewable power, particularly wind and solar. But the system itself hasn't kept pace with that. We're seeing grid congestion and curtailment, while power prices are increasingly volatile. At the same time, demand is shifting with the electrification of heating, transport and industry.

Electrification-enabling infrastructure, in my eyes, is bridging a critical and widening gap between clean power supply and demand. It ensures that clean power is actually delivered and integrated. Without it, as we've seen, you develop bottlenecks in the system. That risks slowing down the energy transition, even though Europe has the ability to add a lot more clean power.

Q Where is investment in electrification-enabling infrastructure most needed?

Grid infrastructure, which encompasses both transmission and distribution, forms the backbone of the system. But in many European markets it has simply not been built to cope with today's level of renewables penetration.

Electricity demand will also grow by 50 percent or more by 2050, driven by the electrification of mobility and industry. The European Commission estimates that €584 billion will be needed by 2030 to upgrade and modernise grids so that they can handle this increasing load.

There has already been a lot of public investment on the transmission side, but there's a huge need for private capital in particular niches such as private grids or behind-the-metre type applications.

Grid-supporting technologies is another area where investment is needed. This includes battery storage, flexibility solutions and stability assets, like synchronous condensers. We need the tools to balance the system and maintain reliability as the share of renewable energy grows. Again, private capital can play a very important role.

Another investment opportunity is around heat electrification. This is often underappreciated, but heating is one of the largest sources of emissions in Europe. Electrifying heating through heat pumps or district heating would create a very significant and stable demand base.

Q How does this type of infrastructure investment impact the case for renewable energy generation?

It is very much complementary. Electrification-enabling infrastructure strengthens the investment case for renewables. Many European markets have challenges with curtailment or negative pricing, which can ultimately impact returns from generation assets. But by investing in grids and storage, you can help reduce those challenges. The result is improved price capture, asset utilisation and overall system efficiency.

Also, there's an integration angle. When you combine generation with storage, or optimise how assets connect to the grid, you create greater resilience. Electrification-enabling infrastructure is all about unlocking the full value of renewables and enabling the next phase of growth.

Clean power is the foundation of the energy transition. That's where

Q How receptive are European governments to private investment in grids and other electrification infrastructure?

It's absolutely crucial that electrification-enabling infrastructure receives strong structural support from governments. The grid is at the intersection of energy security, affordability and decarbonisation. It's the backbone of the net-zero economy. And governments across Europe recognise that without investment in grids and electrification, they simply won't meet their climate targets.

The quantum of capital involved here is also huge – €580 billion-plus for grid infrastructure by 2030. Even with a large EU grid investment package, and further public spending at the national level, there are still plenty of opportunities for private capital, including private grid solutions and distributed generation.

Then we see countries like Germany pushing decarbonisation of heat in a big way. There's the regulatory pull factor from the target to achieve 30 percent renewable heat by 2030 (with newly installed systems having to achieve 65 percent), and 100 percent decarbonisation by 2040. Currently, the market is very fragmented, with over 3,500 smaller heat operators. The German government can provide capital grants for things like municipal heat pumps, but they still need private capital to help scale deployment.

There are opportunities right across Europe. But if you take grids, for example, in certain markets national players are very much at the fore. Places like the UK are more comfortable with private capital. Nevertheless, we're seeing increasing opportunities for the grid in France and the Nordic region.

Then on the heating side, there tends to be more opportunities in places that have traditionally relied on large district heating systems, though on industrial heat we see opportunities right across European markets. It's really a public-private dynamic, where policy provides the framework, but private capital plays an increasingly important role in delivering the infrastructure.

> *"Clean power creates the supply, but electrification enabling infrastructure ensures that that supply can be actually delivered and monetised at scale"*

the bulk of capital has gone and will definitely continue to go. But electrification-enabling infrastructure is the next phase of the same transition in my eyes. Clean power creates the supply, but electrification-enabling infrastructure ensures that that supply can be actually delivered and monetised at scale.

Q What do managers need to do to invest successfully in this sector?

It takes a slightly different skill set compared to traditional renewable investing. However, there's huge overlap in terms of skills around project development, land, planning, connecting to the grid and grid compliance.

Where it's slightly different is that electrification-enabling infrastructure can be more operationally intensive. When you get into segments like heating, for example, it's also a bit more fragmented. In addition to the standalone infrastructure assets that you need to build, it's the actual scaling and building of businesses that's important. Creating platforms for electrification-enabling infrastructure means developing local expertise or bringing operational experience to the table.

On top of that, you need to be more comfortable with integration and complexity. There's a greater need to combine generation, storage and demand-side solutions into a single system. We're seeing a lot more hybridised assets – with generation and energy storage – across a number of markets in Europe.

Stakeholder management is also always very important in clean power. But there's an added emphasis in electrification-enabling infrastructure because you're interacting and working with regulators, grid operators, municipalities and corporate offtakers.

Overall, success in this sector requires more than just passive ownership. You need to take more of an active value-creation approach through execution and integration. For example, our strong engineering heritage and having hands-on operational stewardship in our DNA are useful traits to have as a manager in this sector.

Q What are the main risks for investment managers?

Again, it's a little bit different to the risk profile for a generation asset. There's not much technology risk, as electrification technologies are very mature. Instead, the main risks are on the regulatory side, particularly for assets like electricity grids or heat networks where policy frameworks are important.

Electrification projects are complicated, so the whole execution risk is different. When you start getting into a grid-supporting technology or heat network, there could be a longer development timeline, permitting challenges, or supply chain bottlenecks with equipment like transformers, and there are multiple stakeholders that you need to work with. Labour is a possible pinch point too, since working with these assets require specialist skill sets that take years to develop.

Also, there's market design risk. As power markets evolve to accommodate more energy from renewables, we need constant evolution around offtake structures, whether it's floors or tolls for energy storage or hybrid PPAs.

Q How much interest is there from LPs?

We're seeing increasing and quite broad interest. As the generation market has evolved, LPs have recognised the need for diversification within the energy transition theme. Electrification-enabling infrastructure is the perfect opportunity from that perspective, because it brings a slightly different risk-return characteristic and diversified revenues.

It can also have an inflation linkage, which, given recent developments, can be quite beneficial. But it still provides exposure to the underlying structural demand growth from electrification, without entailing much technology risk. So overall it's becoming an important complementary allocation within energy transition portfolios.

Q How confident are you that Europe will solve its electrification bottlenecks by 2050?

It has to solve these bottlenecks – and necessity will prove to be the mother of invention. There's an ever-growing focus on energy security, and electrification-enabling infrastructure is the key to unlocking further capital in domestic renewable energy generation.

Today, there's a massive push and need for electrification. We're seeing in Europe that the focus on enabling electrification is filtering down from the EU level to national governments and they're looking to ensure a supportive regulatory environment. We're also seeing capital providers identifying opportunities, and the move beyond generation and storage towards investing in hybrid assets is happening organically.

The opportunity is clearly there. The key question is how quickly we can translate that into deployed capital and built infrastructure. ■