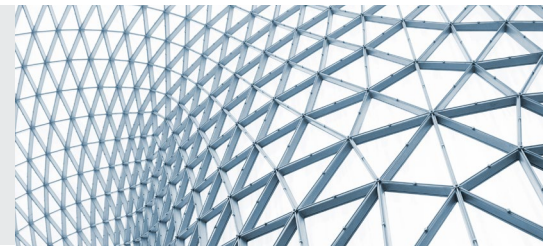


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Opportunities in next-generation energy infrastructure

Investment opportunities in the energy transition are no longer limited to the mature solar and wind segments.

Key Takeaways:

- While Mirova's early investments were focused on simple greenfield renewable energy strategies such as solar and wind projects in mature economies, Mirova's remit has expanded to energy transition (storage, biogas, hydro, hydrogen and electric mobility). The team is increasingly investing in frontier regions for green energy, including emerging Europe, and seeks a portfolio diversification by technology, by development stage and by geography.
- Regulation for energy transition has been very supportive for the asset class worldwide, driving some recent deals done by Mirova.

Nearly two decades investing in the renewable energy sector have revealed some key truths. First, there is an exponential demand for green energy to replace carbon-intensive power. Second, investments in green energy are not only good for society, but can be (and have been in most cases) very beneficial for investors. In particular, early fears that renewable energy investments would be risky and volatile have proved far from true, particularly if the investment process is robust. Third, opportunities for experienced investors in the sector are constantly expanding and evolving, providing exciting, diversified return streams for investors.

While Mirova's early investments were focused on simple – but effective – greenfield renewable energy strategies such as solar and wind projects in mature economies, our remit has considerably widened over the years. Solar and wind are still very much part of the mix, but our portfolio is increasingly populated by evolving technologies such as storage, biogas, hydro, hydrogen and electric mobility. And our focus is shifting from building facilities which supply energy directly to the grid to B2B projects, such as energy storage and installation infrastructure for electric vehicles. In other words, we have expanded our remit to energy transition.

Furthermore, we are increasingly investing in frontier regions for green energy, including emerging Europe and



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Head of Energy Transition Funds
Mirova

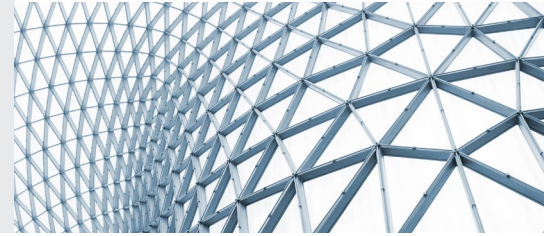
are looking to expand into Asia, to help globalise green energy impact where it is most needed as well as find new sources of income for our clients.

Energy markets are mutating at a breathtaking rate: for experienced investors who understand the risks, we think the returns on offer will comfortably outperform those of traditional assets on a risk-adjusted basis.

Diversification: biogas

To be robust, all investment portfolios should be diversified and energy transition strategies are no different. We have completed around 20 transactions in the last 18 months and the profile of each transaction reflects our requirement for portfolio diversification by technology, by development stage and by geography.

Consider a recent transaction in the fast-evolving biogas sector. We acquired a 50% stake in Dana Gaz from the French utility company Engie, which runs nine operating



units, including seven biomethane production plants with a capacity of 15.5MWg and two cogeneration plants with a capacity of 2MW.

The partnership which also includes further development enables Engie to accelerate the development of its biomethane projects with the aim of producing 5TWh of biomethane of French origin by 2030. It is now the leading biogas operator in France, active across the whole value chain from project development and construction, working alongside local authorities, farmers and industrials. The deal built on a long-standing relationship between Mirova and Engie, through previous collaboration on several wind, solar and hydroelectric projects in Europe, and we are pleased to partner with them to achieve their ambitious targets.

The risks could have been considered high for some third-party investment partners, but we were involved with another partner earlier to construct some of the assets, so the risks, spread over several assets were well known to us.

We truly believe in the potential of biogas to become a key contributor to energy transition, as a decentralized source of energy with tangible local benefits. In particular, agricultural businesses, which have been badly hit during the pandemic, will have a new and sustainable source of income.

Diversification: smaller markets

The Engie partnership is a good example of diversification by sector and technology.

Our recent wind farm transaction in Poland, on the other hand, is an example of geographical diversification in a renewable energy portfolio. Mirova provided equity financing to Akuo, an independent global renewable energy power producer and developer, to finance three wind power projects in Poland. The three power plants have a total of 53 Vestas turbines and operated by Akuo's local teams.

These projects won the tariff tender launched by the Polish government in late 2018. The Polish government's aim was to reduce its dependence on imported fossil energy, and achieve the minimum threshold of 15% of renewable energy in its energy consumption by 2020, in accordance with its legally-binding National Renewable Energy Action Plan. The transaction was a key landmark for Mirova as it represented our first investment in Poland. To diversify our risk, we have sold a portion of the equity to a dedicated EIB fund that we manage, which has allowed us to invest in a second 142MW wind project in Poland. The Polish Government energy support scheme provided considerable risk mitigation for factions within Poland which are opposed to changes in energy policy.

Regulation increasingly driving energy transition

Poland is one of many countries where government policy and regulation is driving renewable energy opportunities. Traditionally, Poland has been heavily reliant on coal, more so than most European countries. The Polish government is targeting a 60% reduction in coal as a share of its electricity production by 2030 and an increase in the proportion of renewable energy to 27% by 2040.

Mirova's biogas deal was also partly driven by regulation, with France mandating in early 2019 as part of its 10-year energy plan that 10% of gas going into the national grid must be biogas. In fact, regulation for energy transition is driving change worldwide. In Europe, the European Commission's 2030 Climate Target Plan envisages an EU-wide assessment of national energy and climate plans and will incorporate a new 2030 emissions reduction target of at least 55% by 2030, compared to 1990 levels. This target puts the EU on a pathway to reaching climate neutrality by 2050.

For many years, China has led the world in construction of new wind and solar facilities. China's energy market is a hybrid of market and administrative measures,

including administrative planning targets. Under the 12th Five-Year Plan, NEA set ambitious targets for wind and solar, supported by subsidized feed-in tariffs.

In the US, the trend towards clean or renewable energy is also accelerating despite reluctance at the Federal level. Fourteen states, plus Puerto Rico and the District of Columbia, have 100% clean or renewable energy targets. Many US utilities have likewise made commitments to 100% clean energy.

Covid has only reinforced the sense that the tide is turning, with the pandemic creating a pause in supply and consumption that has led many individuals and businesses to reassess their priorities.

A number of countries have already reaffirmed their commitment to energy transition.

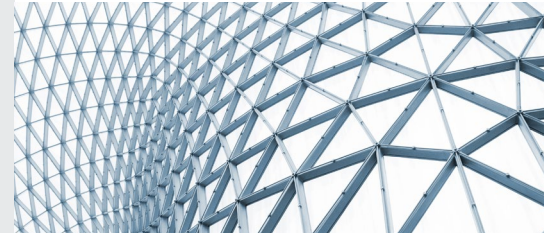
France, for one, recently submitted its national energy and climate plan (NECP) 2030 to the European Commission. The country will target 33% renewable energy in its energy mix by 2030, with wind power supplying half of it.

France joins Austria, Denmark and the Netherlands as countries pledging more recovery funds to green energy than to CO2-heavy industries¹. Meanwhile, South Korea (\$61 billion) has approved green economic stimulus and Australia has pledged A\$1.9 billion over ten years to develop clean technology in industry, agriculture and transport.

Diversification: hydro

Mirova's hydro-electric transaction in Portugal, one of the largest hydro transactions seen in the European market, has also been a good portfolio diversifier.

We like hydro assets as a rule, in particular the ones with pumping capabilities as they are a capacity asset which are a good addition to wind and solar. You can store hydro power and inject it into the network when it is needed. In the south of Europe, where it is sunnier, there is greater penetration of solar technologies. Although the price of solar power is very low in the middle of the day, it rises



considerably at times where the sun is not shining. At these times hydro power comes into its own and can command good prices.

The deal Mirova helped finance was the purchase of half a dozen hydroelectric dams from Energias de Portugal (EDP). The deal, worth €2.2bn, was financed by a consortium comprised of Engie, Crédit Agricole Assurances and Mirova. The six dams are situated in the Douro river area of northern Portugal, where grapes are grown for Port wine, and have a combined capacity of 1.7GW.

Engie will be responsible for operating and maintaining the hydropower plants over the average concession term of 45 years. The assets include three new pump storage units as well as three recently repowered run-of-river plants.

An additional benefit of such a large deal is that we were able to bring co-investors on board, including German institutional investors. These are typically investors who don't feel comfortable with investing through a fund structure. They prefer direct investment in assets but, at the same time, need guidance and due diligence capabilities from experienced fund managers.

New technologies, old heads

Experience is needed not just to perform analysis and due diligence, but to access and execute deals in a sector which can be complex to navigate. As a relatively new sector, deals are usually sourced through existing contacts among a small number of players.

As pioneers in the renewables and energy transition sectors, Mirova has a wealth of contacts and deep experience of a range of transaction types. Our first foray into renewables was back in 2002, after winning a wind technology tender from the French government and we have since undertaken more than 175 renewable energy projects, partnering with industrial companies to develop infrastructure across Europe.

Over the years, we have hired senior people from green energy development companies and utilities which enables

us to take on more development risk. Every member of Mirova's 15-strong renewable energy team has a strong background in renewable energy, as well as core skills such as project financing, technical, project development, investment management and ESG analysis. These skills and experience help to create good industrial relationships where industrial players and operators learn to trust how we do things. Trusting industrial relationships lead to strong pipelines of deals, through referrals and repeat transactions.

Our Polish transaction, for instance, involved the construction of a brand new wind farm. For inexperienced investors this could have created excessive development risk, but work on similar projects has taught us how to mitigate the risk.

The key is to be responsive and quick in execution, which is why we started construction before the deal had even closed in order to get the ball rolling. Understanding residual risk before a deal closes is important to maximise fund returns.

Risk is also mitigated when you manage a larger-sized fund. A sizeable quantum of assets allows for greater diversity, with a mix of uncorrelated risk types.

Limited partners attracted by frontier investments

Experience of established financial partners is increasingly matched by limited partners, many of whom are old hands in this market now and are comfortable with Mirova taking more development risk in order to create more value in deals.

The kind of value that can be unearthed in the green energy market is important to investors at a time where risks to the wider economy are rising. The rising emphasis by policymakers on green energy means the sector should continue to grow even if there are fluctuations in energy demand due to economic volatility. Furthermore, renewable energy is seen as a hedge to the risks of exposure to stranded assets in other parts of investors' portfolios.

Our process is well-evolved. Mirova attracts capital from large numbers of investors (over \$1.4bn deployed to date) and pools it to make equity and mezzanine climate infrastructure investments across OECD countries. It mainly invests in mature technologies at ready-to-build or operating stages, ensuring that capital can be deployed rapidly and that payback times for investors are typically starts much earlier than for investors in, say, private equity.

Each project involves a partnership – usually joint venture with industrial companies and utilities in western Europe. The assets that are created through these partnerships have a lifetime of about 25 years, but Mirova will seek to sell them within 7-10 years in order to return capital and profits to investors. In the meantime, investors receive revenues from the ongoing operation of the asset.

Returns are private equity-like in nature, except that Mirova's strategy mitigates the J-curve effect by investing some of its capital in brownfield projects, which are operational and can generate immediate income to investors.

For insurers, the all-important cost of capital under the EU's Solvency II regime is extremely low, with an SCR of about 15%. This compares to an SCR of 49% for private equity. And renewable energy projects tend to be less volatile than private equity due to the regular operating cashflows.

Conclusion: huge pools of private capital are needed

Energy transition represents a massive change for the global economy. But it requires a vast amount of capital to execute. This capital cannot be injected indiscriminately into the sector. Energy transition markets are industrial by nature, and are changing fast. Only investors who have deep experience of the sector and can anticipate the changes ahead will be able to use capital efficiently.

As energy transition matures in the coming years, Mirova's strategy will develop in tandem, offering potentially significant and consistent long-term returns to institutional investors.

Written on 18 November 2020

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French Public Limited liability company
Share Capital: €8,813,860
Regulated by the Autorité des Marchés
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