responsible investor

Clean tech private equity

Financing the next wave of innovation

Investors are starting to recognise the opportunities offered by clean technology. By **Stefan den Doelder**, Investment Manager at Robeco Private Equity

In 1972, a report by three renowned scientists from the Massachusetts Institute of Technology(MIT) shocked the world. The report, *The Limits to Growth*, alternatively known as the Meadows Report after the main author, basically stated that mankind was on an unsustainable course. In a number of decades, the world would run out of many of its key resources and the limits to growth would be reached.

More than 30 years later, we know that some of the more dramatic predictions of the report – such as the end of oil in the 1990s – did not come true. However, apart from the timing, on most accounts Meadows *et al* were right: we now live in a world with rapidly growing demand for natural resources and as a result increasing rates of depletion, rising resource prices and the first supply shortages. The rapid economic growth in the past 30 years has in effect brought the world closer to its limits.

There is now and in the future a clear need for technology that allows us to produce energy, materials, products and services in a more efficient way, thereby using less natural resources and creating less pollution and waste, while at the same time securing (uninterrupted) energy supply or stable water quality. This technology is called clean tech (from clean technology) and comprises a wide range of industry segments: from alternative energy to water purification to advanced materials. Clean technologies and products can be defined as increasing the productive use of natural resources, while eliminating or reducing waste, and adding economic value.

Drivers for clean tech: sustainable development

Clean tech is an important instrument in achieving sustainable development and a number of sustainability-related drivers fuel the growth of clean tech. One major sustainability challenge is meeting the rising worldwide demand for energy, water and other natural resources such as metals. The growth of China and India has augmented this demand and has drawn attention to the finiteness of reserves. In addition, securing the supply of these resources from politically unstable or undemocratic regimes is increasingly problematic. Climate change and attempts to combat it, such as the Kyoto Protocol, have led to a push towards 'low-carbon' technologies and products. All in all, the impetus for sustainable energy technologies and for energy production from renewable, locally available resources has never been stronger.

Meanwhile, worldwide pollution levels are still rising, and so is the resulting level of degradation of ecosystems. Our consumption patterns are unsustainable in the sense that we use more of the planet's resources than it can regenerate yearly. In response, consumer preferences are changing towards sustainability, creating a demand for green or clean tech products. At the same time, a large part of the world's population lives below the poverty line. Clearly, development of the poor is only possible if it is done in a much more resource-efficient way than the developed world did.

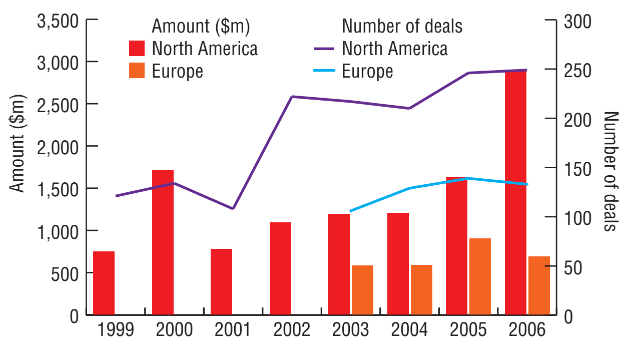
Finally, technology innovation in recent years has driven down the cost of cleaner, resource-efficient technologies, making them competitive on price and performance. Other clean technologies are not competitive yet, but will be in a couple of years given the rapid technological progress. This means that the time-to-market of numerous clean technologies has been shortened to periods that are acceptable to investors and financiers.

The clean tech investment market

Investors are starting to recognise the opportunities offered by clean tech and starting to pour money into this sector. As usual, private equity investors and venture capitalists have been early to identify and capitalise on this trend. They are also in the best position to profit from the value created within clean tech companies, long before public investors get this chance.

In a comprehensive study of the cleantech investment market, the Cleantech Venture Network found that between 1999 and 2005, more than $8.4 billion of venture capital was invested in North American clean tech companies. For 2006, this figure is $2.9 billion. A similar report on Europe,

Clean tech investments 1999–2006



Source: Cleantech Venture Network 2006.
Note: the data only covers private equity investments; project finance, debt, IPO or other forms of non-venture financing are excluded.

shows that total European clean tech venture investing from 2003–05 was over $2 billion. For 2006 the amount was $0.7 billion in total. In 2006, clean tech accounted for around 10% of overall venture capital investments in North America. Clean tech now usually ranks third in size as an industry segment, moving ahead of medical devices and equipment and semiconductors and behind only software and biotechnology.

Return drivers for clean tech

Research by the Cleantech Venture Network[1] shows that the historical returns of investing in clean tech have been good: a hypothetical portfolio of North American clean tech companies in the period of 1987–2003 would have returned an estimated 6.2 times invested capital with an internal rate of return of approximately 30%. A similar study by New Energy Finance of 129 European clean energy companies, presented at the European Energy Venture Fair 2007, showed that in the period 1999–2006 the 37 investor groups in these companies have made an overall gross IRR of 54.9%.

Robeco believes the conditions to achieve above-average returns in the future from clean tech investing are favourable:

- There is a strong demand for clean tech because of the global drive towards sustainable development. The issues regarding energy security, climate change and depletion of natural resources prompt a move towards clean tech.
- Innovation has driven down the cost of clean technologies and many are now competitive on price and performance. Many companies are therefore going from the technology development to the market development or commercialisation stage: they have developed their clean technologies and are now introducing them to the market. Examples are wind and solar technology and in the biofuels and materials segment.
- There is a strong clean tech IPO market. After a number of very successful IPOs of solar energy companies, in 2005 and 2006 we saw a large number of renewable energy companies going public, evidence of the increased investor appetite for clean tech. London's Alternative Investment Market (AIM) has proved to be a particularly attractive market for clean tech IPOs, followed by NASDAQ and Frankfurt.
- There is a strong clean tech M&A market, due to the interest that large (industrial) corporations show in this segment. They are looking to acquire clean tech, often as a complementary technology to existing ones. Major corporations making clean tech venture investments include BASF, Boeing, GE, Honda, Intel, Norsk Hydro, Mitsubishi, Motorola, Royal Dutch/Shell, Siemens and Unilever.

1 Cleantech Venture Network, *Cleantech Venture Investment – Patterns & Performance*, March 2005.

Investing in clean tech

Robeco provides its clients with the opportunity to take advantage of this development towards more resource-efficient and clean technologies. At present, a total of more than $500 million is invested in clean tech private equity and Robeco aims to increase this to $1 billion in the near future. The investment approach chosen is to invest through fund of funds, whereby Robeco selects the most prominent clean tech private equity funds in the world. In addition, Robeco selects the most attractive direct co-investment opportunities that these clean tech private equity funds offer. Thus, investments are diversified across clean technology private equity funds (70–80%) and direct (co-investments (20–30%). Investments are further diversified across private equity investment stage, geography, sector, technology and time. With respect to technology and sector, diversification is achieved across various sectors, including renewable energy (solar, biofuels, wind, wave and thermo), energy efficiency, waste-to-energy, advanced metering, material recycling and biomaterials, water technology and air treatment technology.

Robeco is advised on the clean tech characteristics of transactions as well as clean tech market developments by Rabobank, its parent company. Rabobank sees clean technology as one of its core value drivers and therefore employs a number of experts in energy and water technology and other areas in the clean technology universe. Rabobank and Robeco have been actively looking at the clean technology investment market since 2003, and they have over the past years built up a comprehensive database containing detailed information on over 200 clean technology funds and more than 100 direct co-investment opportunities.

Advantages of fund of funds approach in clean tech

Investing in clean tech through a fund of funds is a relatively novel approach. Robeco was the first globally to introduce a sustainability-driven private equity fund of funds in 2004. There are two distinct advantages of investing in a clean tech fund of funds: risk diversification and manager selection capabilities.

Risk diversification is, without doubt, a main advantage of any fund of funds. There are a number of dimensions that a clean tech fund of funds portfolio can diversify across:

- **Sector or segment:** energy, water, materials, carbon. Different clean tech funds have different strengths and expertise areas. Investing in multiple funds means tapping into the best managers for all these different areas.
- **Geography:** North America, Europe, Asia, emerging markets. Only a few of the clean tech funds have a global scope, most of them have a regional focus.
- **Investment stage:** seed capital, early and later stage venture capital, expansion capital, buyouts. We see clean tech funds specialising in different stages of the capital value chain, although many focus on venture capital.

- **Time:** multiple vintage years. By spreading investments over funds with different starting and end dates, money outflows and inflows can be more evenly distributed.
- **Manager:** Finally, by diversifying across a number of investment managers, with different views, ideas and capabilities, a fund of funds spreads its bets of investing in the next Microsoft, Google or Q-Cells.

Moreover, a fund of funds makes a much larger degree of diversification attainable for smaller institutional investors. For most private equity funds, the minimum investment size for a limited partner is between $5 million and $10 million. This means that an investor wanting to invest in clean tech and seeking diversification across a large number of funds needs to invest a substantial sum (> $100 million) in private equity. When the desired allocation to private equity is smaller (as it normally is for a specific area such as clean tech investments), a fund of funds, with a minimum investment limit of for example $5 million, is a good alternative.

Making use of best-in-class manager selection capabilities is the second main advantage of fund of funds investing. In order to select, manage and monitor private equity fund relationships, specific expertise and capabilities are required. A fund of funds manager specialises in this. The manager has to be able to identify private equity fund managers with the unique skill set to manage and exit private company investments. Also, the payoff of good selection is big: the differential between the worst and best performing private equity funds is large. Thus, manager selection matters a great deal in the realised return on investing in private equity.

We believe this argument in favour of the fund of funds approach is even stronger for clean tech private equity investing. Since it is a relatively new area, there is not that much knowledge about clean tech segments and companies available. Clean tech expertise of a fund of funds manager is therefore extremely important. Robeco has with its team of five dedicated and experienced clean tech professionals, and the active support of the larger Rabobank organisation, the required in-house expertise to select the best clean tech funds worldwide.

About the author

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Prior to joining Robeco's Private Equity department in 2006, Mr Den Doelder worked for IRIS, the joint investment research organisation of Rabobank and Robeco, where he was responsible for setting up a unit dedicated to sustainability research. Previously, he worked as a sustainability consultant, among others as founding partner of Triple Value Strategy Consulting. At Robeco, Mr Den Doelder focuses on the development and management of investment products related to sustainability and clean tech. He studied Business Economics at the Erasmus University in Rotterdam.

Founded in Rotterdam in 1929, Robeco is one of Europe's largest asset managers. The product range covers equities, bonds, money markets, private equity, fund of hedge funds, single strategy hedge funds, commodities and real estate for a worldwide-established client base. Robeco is part of the Rabobank Group, the only privately owned commercial bank in the world with the highest credit rating from leading rating agencies.

Conclusion

In the past couple of years, Robeco has built up a successful portfolio of clean tech private equity investments. Investing in a clean tech private equity fund of funds is in our view a recommended strategy to build up exposure to this sector. We expect the success of clean tech to continue and we are determined to play a trend-setting role in this. Robeco and its parent Rabobank have grown into one of the leading clean tech investment managers worldwide. We plan to consolidate this position and further enhance our knowledge and expertise. In doing so, we make a substantial contribution to sustainable development.

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