

The importance of IP

MANY RENEWABLE ENERGY COMPANIES HAVE INTELLECTUAL PROPERTY (IP) AT THEIR HEART – THE UNIQUE ASPECT OF THE COMPANY, WHETHER IT BE A NEW TECHNOLOGY OR APPLICATION. BUT DOES THIS IP HAVE THE POTENTIAL TO ATTRACT INVESTORS AND, EVENTUALLY, A MARKET? ARE YOU MAKING THE MOST OF IT? IP EXPERTS **ILIAN ILIEV** AND **MARK MEYER** PROVIDE SOME GUIDANCE ON LEVERAGING THIS KEY ASSET.

Private and public investment in low-carbon energy technology continues to grow at a rapid pace as new consortiums, research alliances, venture capital, private equity and technology innovation start-ups are established.

In recent months the role of intellectual property (IP) in low-carbon solutions, commercialisation and climate change policy has gained an unusual prominence in public debates. But beyond the headlines, how important is IP in the low-carbon energy future? And on a practical level, how can an entrepreneur or company executive maximise the benefit from patent portfolios – and use it to support the business objectives?

Entrepreneurs and business owners of any innovative company are intuitively aware of the importance of ideas and intellectual assets. They will not have forgotten that brilliant spark – often the result of months and years of painstaking research into a particular problem. So IP lies at the core of innovative companies.

Of course, IP can take many forms: trademarks, copyright, trade secrets and so on. But for technology-based companies patents are particularly important in terms of the IP asset base. So it is worth revisiting the basics: what is a patent, and how does it relate to a company's overall strategy?

A patent is just the beginning

A patent is first and foremost a legal document that entitles its owner (or "assignee" in patent-speak) to the property rights for the invention described by the patent – for a fixed term. But what you do with your patent is in no way pre-determined. It is in some ways similar to owning a big house that is expensive to maintain. As the owner, you decide whether to open it to the public as a museum, convert it to a hotel, create a Michelin restaurant, or run a language school. Or you can just keep it empty, hoping someone will buy it as an investment. Many business models can be built on top of the property rights to a house, and similarly with any innovative technology.

It's useful to look at the IP strategies supporting various corporate business models – and to note that they often took many years to evolve. For example, when the big pharmaceutical companies developed the blockbuster drugs business model, patents were the key to closing the loop in the chain from R&D to exploitation of results.

However, as these companies move away from the "blockbuster drug" model, they increasingly look at cross-licensing in key parts of their value chain to gain access to new drugs and drug delivery devices, while partnerships with generics companies can extend the lifespan of products outside of patent protection.

In the telecommunications industry, technology platform complexity and the need to build economies of scale, along with a potential global market, meant an early focus on technology standards backed by patent pools. Sound familiar...?

Whatever the dominant IP strategy model in an industry, a company's ability to articu-



Being smart about IP: The battle for IP in the clean tech sector is set to intensify – a clear trend is the convergence and increasing overlap of the value chains of industries that were fairly distinct until recently. Entrants in the smart-meter space for example (see image), include electricity utilities, mobile applications developers, telecoms equipment manufacturers, and countless disruptive start-ups. Even web-based application providers and data harvesting/advertising firms see potential markets (image, courtesy of Siemens – AMIS users can read their electricity usage rates at the push of a button. A data concentrator at a transformer substation collects data and transmits it to a control centre. Smart meter technology is just one sector being targeted by companies such as Siemens).

late its IP strategy – and how that fits in the world – is key to driving business valuations and enabling access to external finance.

What about clean technology?

For a technology-market segment like clean technology, here are some questions to ask:

- **Market assessment** – where and how should you seek to enter a market niche? Whom should you hire – or collaborate with?
- **Market entry** – which technology should you focus on, what freedom do you have to operate, how strong is your company's patent portfolio, and whom should you license technology from in order to capture market share? What are your key licensing-out options, should you choose multiple or single licenses, or should you not license out at all?
- **Market foresight** – what is your competitive advantage, and where can you expect disruptive innovation?

We know that the clean tech industry has enormous diversity in technologies, business models and types of players. But we can already see some trends that are influencing emerging IP strategy models in the low-carbon energy space.

Innovation partnerships will also continue to be a way to obtain government funding. However, multi-party collaboration presents different – and more complex – IP strategy challenges from a go-it-alone strategy

Acquisitions of IP-intensive companies is a key growth channel for large corporations

For many major corporations, the speed of market development in the low-carbon space is faster than anticipated. New competitors, regulators, institutional investors and stakeholders are putting pressures on existing business models. Therefore,



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major corporations look to acquire IP-intensive companies to complement their technology portfolios and accelerate market access. Just in 2009 we have seen:

- **ExxonMobil** sign a US\$600 million deal with **Synthetic Genomics**, a company developing an algae-based biofuels process. The founder made no secret of the importance of a strong IP portfolio in protecting his company's value;
- **BP** invest US\$90 million in a joint venture (JV) with **Verenium** for the development of cellulose-based biofuels;
- **GE** acquired **Scanwind** for US\$18.5 million, and thus gained access to direct-drive systems for offshore wind turbines – accelerating entry in the rapidly growing offshore wind space.

Many emerging market companies have also used an IP-led acquisition strategy to accelerate their penetration of developed economy markets. **Suzlon**, India's wind energy leader,

built up its presence in Europe by acquiring defunct Danish company **AE-Rotor Techniek** in 2000. Suzlon went on to raise US\$338 million in an IPO on the Indian market, and then acquired **Hansen Transmissions**, the Belgian gearbox company (though Suzlon is now busy cutting its stake in this business).

And many Chinese state-backed companies are buying up technology in the UK and Germany, particularly in the automotive space.

Cross-over innovation driving value creation

There are many instances in which market-winning innovations in the low-carbon energy space were based on technology developed and commercialised in other sectors: so-called "cross-over technologies". (Table 1 illustrates some of these crossovers in the wind energy space).

Other examples are use of "clean coal" boiler technology in biomass applications; use of

Cross-over innovation – examples in wind energy	
Wind	Wind source examples
Offshore wind	<i>Oil & gas offshore platform operations</i> such as rigging, maintenance, underwater transmission; <i>Nanotechnology</i> : such as structural resistance/strength of wind turbine blades for offshore applications;
Wings	<i>Aerospace</i> : aerodynamics, wind tunnels, advanced materials;
Gearbox	<i>Machinery & automotive</i> : gears, bearings, transmission systems;
Energy storage	<i>Electronics industry</i> : batteries
Monitoring	<i>Electronics</i> : sensing systems
Software	<i>Meteorology</i> : computer modelling and prediction of micro conditions; Optimisation of wind farms operations

Source: Chatham House and CambridgeIP research, 2009

How IP data and business information can be dynamically merged in regard to key business strategy issues.

- **White space:** When you are considering developing a product in a densely populated industry, which niches are unexploited?
- **New technology acquisition:** Large corporations typically have several options for acquiring external technology: buying a start-up/smaller company; or licensing-in technology from a university;
- **IP landscape:** Who owns what patents in your industry? What are the patenting trends? Which are the most important

patents in an industry with reference to your own technology?

- **Blocking IP:** Does your patent portfolio allow you to block competitors from entering your market niche?
- **Technology and market foresight:** What scenarios can you foresee five, 10 or 15 years ahead in terms of new dominant technologies and/or the size of markets in your areas of interest? Such scenario planning can help you better position yourself, especially if you're in it for the long-run.

“rocket engine” technology in oxyfuel coal burn; satellite technology in the solar concentrator space, and even stealth technology to help reduce the radar foot print of wind farms. Other pervasive technologies, like nanotechnology, are increasingly making their way into critical components.

In addition, Government innovation and industrial policies will increasingly focus on stimulating the conversion of old and high-carbon industries to low-carbon, potentially creating new examples of crossover innovation.

Convergence and overlap

Another clear trend is the convergence and increasing overlap of the value chains of industries that were fairly distinct until recently. For instance, leading players in the CCS space include oil and gas companies, chemical industry giants, utility companies and biotech start-ups.

Entrants in the smart-meter space include electricity utilities, mobile applications developers, telecoms equipment manufacturers, and countless disruptive start-ups. Even web-based application providers and data harvesting /advertising firms see potential markets (such as **Google**).

So far, the emerging business and IP models are unclear. When such convergence takes place, players from different industries often bring with them divergent IP strategies and business models. This may result in more difficult licensing negotiations and greater risk of litigation.

The delay in adoption of key industry standards, or the conflict of different regional standards, could further reduce both the market size and the early revenue outlook.

Accelerated adoption and definition of technology standards – backed by IP

Policy makers urgently need to ensure rapid and affordable diffusion of low-carbon technologies. They can see that the adoption of technology standards backed by patent pools has worked well in accelerating diffusion and innovation in the telecoms and semi-conductor spaces. So it is likely that major buyers and the public sector will push for early adoption of technology standards in order to achieve economies of scale. Indeed, we are already seeing such trends in the smart-meter space, with the launch of some open-source standards.

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Some implications for the IP strategy of technology companies

R&D strategy:

R&D strategies can be adapted to look for crossover opportunities i.e. technology companies or university research that is applicable to new (and often unexpected) parts of the low-carbon energy technology chain.

For example, if a company is active in maturing complex technology systems (such as wind turbines or solar panel systems), investors may

like a growth strategy that focuses on a critical niche or bottleneck in the system, rather than seeking yet another paradigm shift in PV or wind.

But companies could face a more complex and populated patent landscape – and the company may need to “license-in” some technology.

Exit strategy:

Trade sale exits and deal valuations can be accelerated by building up a stronger IP portfolio. Good trade buyer prospects include large corporations that are falling behind their competitors in key market niches and emerging market companies seeking market entry.

But a company may need to formulate an IP strategy more carefully to account for the IP practices specific to a likely trade sale buyer. For instance, if an oil and gas company “buys” carbon capture technology, it is most likely to use it in-house, while if a major equipment manufacturer buys the same company, it may well want to add it to other product portfolios.

High-carbon multinationals such as oil and gas/energy corporations will increasingly focus on acquiring “low-carbon” companies that are synergistic with their inherited infrastructures. So investors may be attracted from surprising quarters.

Partnering as a channel to growth

IP partnerships in pursuit of critical mass (or critical market value) may develop over time. It is certainly one strategy that can drive industry standards through early market penetration. Established innovation centres of excellence will be rewarded with higher flows of funding, greater synergy and better partnering opportunities; marketing of these centres may become critical in the federal funding competition.

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