



Photo: Alex Forbes

*Investment growth in clean energy plummeted from phenomenal rates of more than 50% a year in 2005-7 to just 5% in 2008. With credit hard to get hold of and oil prices languishing in the region of \$40 dollar/barrel, what does the future hold for what was a booming alternative energy industry? Michael Liebreich – founder and CEO of New Energy Finance, clean energy analysts – is surprisingly bullish.*

# Green energy test

| by Alex Forbes

When Michael Liebreich founded New Energy Finance in 2004 – to provide research services and advice to the nascent but fast-growing clean energy industry – oil price was far from being one of his main preoccupations. The price of crude was then around \$28 a barrel, a level around which it had been trading for some years. ‘Call it naïve,’ says Liebreich, ‘but oil had been trading in the \$20 per barrel range for so long that I never even considered what might happen in different oil price scenarios.’

What Liebreich had predicted correctly was that the world was about to enter a period of transition to clean energy – ‘that there was a discontinuity in the world’s energy industry, even without the oil price surging’. Five years and an oil price rollercoaster ride later it is clear that the dizzying climb that oil was about to begin, just as Liebreich was establishing his company, was to play a major role in the scale of growth in clean energy investment.

Figures published by New Energy Finance, now regarded as one of the most authoritative providers of information on the clean energy industry, show that between 2004 and 2007, investment in the industry grew at more than 50% a year, from \$35 billion in 2004, to \$59 billion in 2005, \$93 billion in 2006 and close to \$150 billion in 2007. At that level, says Liebreich, clean energy accounted for 10% of global energy infrastructure spend in that year.

Lavish |

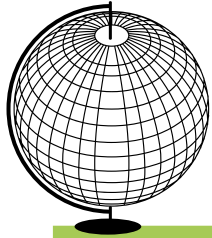
I am interviewing Liebreich over breakfast in the grounds of the Shangri-La, one of the most lavish hotels in Abu Dhabi. Across the strait that divides the mainland from Abu Dhabi island, the newly-completed Sheikh Zayed Mosque is hugely impressive in the harsh early sunshine. Clad in white marble, it is the world’s third-largest mosque – a potent reminder that the World Future Energy Summit

we are both attending is taking place in a country that happens to be one of the world’s largest producers of oil and gas.

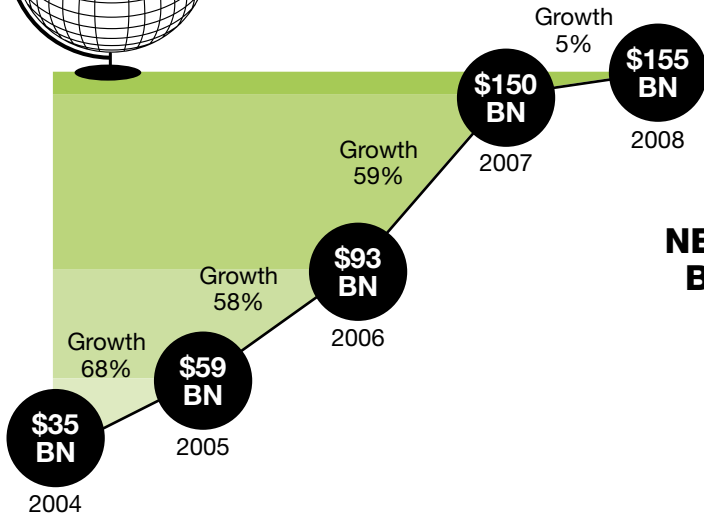
Liebreich acknowledges that the oil price surge was a factor in the rapidity of the growth of clean energy investment. ‘The price surge clearly accelerated a lot of things. It focused a lot of attention and money on the space, and it created a huge surge in demand.’ But he insists that even if the oil price had remained at \$28 the transition to clean energy would still be taking place. His view is in stark contrast to a commonly held belief that the collapse in the oil price will lead to a similar collapse in clean energy investment. As one executive commented in Abu Dhabi, ‘With oil at \$38, who cares about renewables?’ Perhaps he hadn’t spotted the Saudi oil minister Ali Al-Naimi in the front row during the opening ceremony of the event.

Nevertheless, the clean energy industry has not been immune to the economic crisis and the oil price collapse. In 2008 the growth in clean energy investment slowed to just 5% – taking the overall level to \$155 billion – and that figure masks the extent of the deterioration that occurred in the second half of the year. ‘It was very much a year of two halves,’ says Liebreich, ‘with quite a dramatic fall-off in the second half. Asset finance was down 25% from the peak in the fourth quarter of 2007. The public markets are pretty much shut. We went from \$20 billion being raised in the public markets in 2007, to just \$10 billion in 2008, and very little of that in the final quarter.’

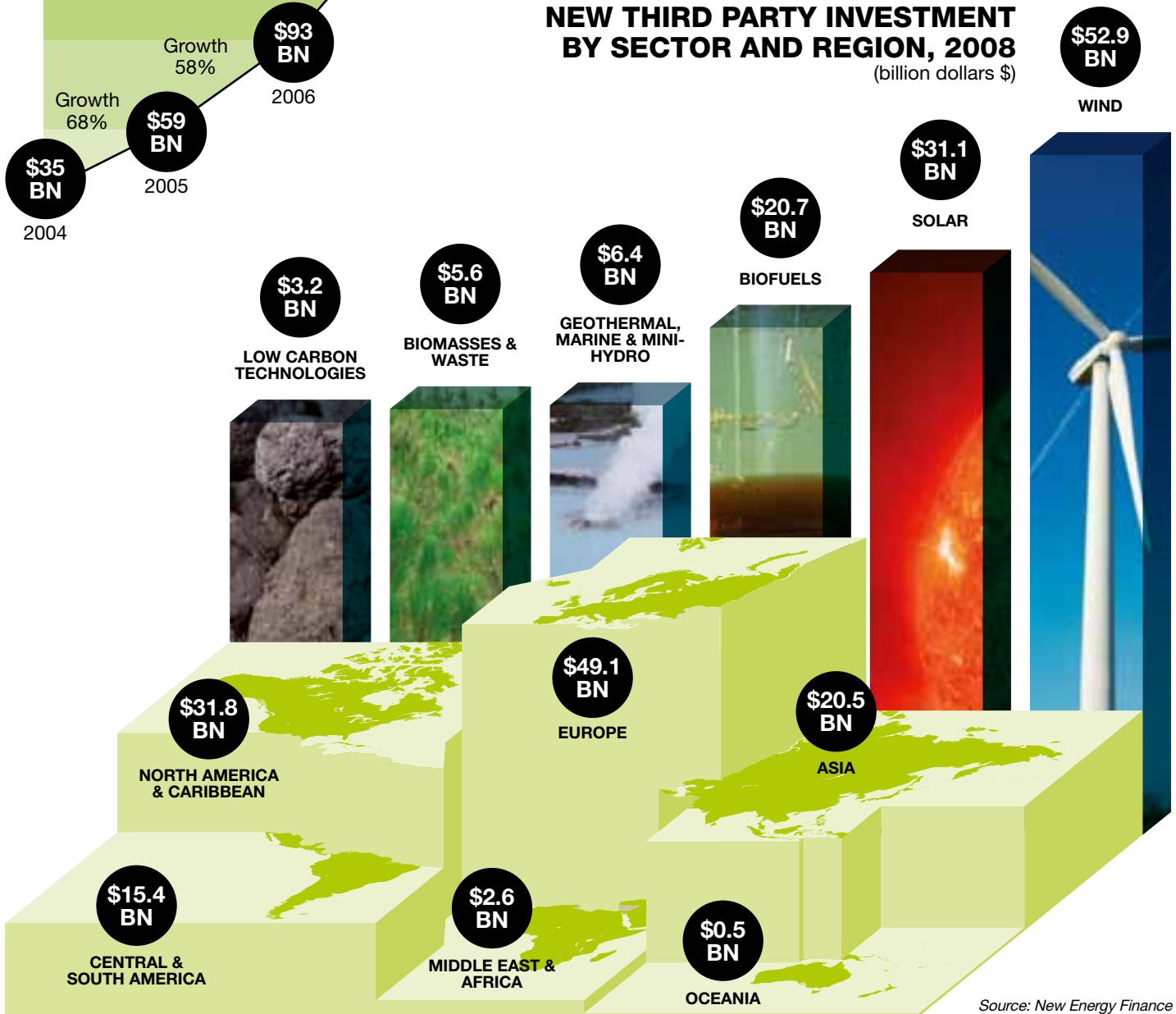
Clean energy got hit hard because when prices go down it gets harder to justify the investments. Also, it’s got a lot of newish technology and investors re-priced risk – so technology risk that was understood when it was first looked at suddenly became unacceptable.’



**GLOBAL NEW INVESTMENT IN CLEAN ENERGY** (billion dollars \$)



**NEW THIRD PARTY INVESTMENT BY SECTOR AND REGION, 2008** (billion dollars \$)



Source: New Energy Finance

And the sector has been hit by the credit crunch, because both the companies taking on projects and the companies providing the technology are having trouble accessing the debt markets. 'Interestingly,' adds Liebreich, 'although it got hit pretty hard in September and October, it did bounce back pretty convincingly from November – more so than oil. There's been a bit of an Obama bounce and some of the losses have been re-gained. The sector is hoping that it will be a big part of fiscal stimuli. So, while stock valuations of clean energy companies went down harder than the NASDAQ or the Footsie or the S & P, the hope is that the sector will recover better from this crisis because it will be seen as part of the solution. What we have in this quite extraordinary period is a huge monetary stimulus that hasn't yet reached the front line. So while interest rates have dropped dramatically, the money's not flowing yet. When it does, the sector should benefit.'

Liebreich also believes that the economic crisis will have a big impact on what he calls 'dirty energy' – because when the time comes to find the money to pay for all the fiscal stimuli, attention is likely to focus on producers of oil, gas and coal. 'If you're looking for a trillion or two in the US where can you go? A federal sales tax would be politically inconceivable, whereas either a carbon tax, or cap-and-trade with full auctioning, has the potential to go through. That combination of a monetary stimulus, a fiscal stimulus, and then sending the bill to the dirty energy guys, is a perfect storm in the brewing for this sector.'

### Foolish mistakes |

How significant are moves in the US likely to be for the clean energy industry as Obama moves towards implementing the Obama-Biden New Energy for America plan? 'Very, very significant,' Liebreich replies, 'partly because of scale, because it's the world's largest economy, but also because – while you can say what you like about capital markets and Wall Street and its foolish mistakes – the US is phenomenally quick at applying money to problems once there is a framework in place that allows good returns to be earned. We've seen it already in US venture capital, embracing clean-tech and deploying five, six, seven times as much capital towards clean technologies as Europe does. California got it and started to pump-prime the new technologies. America will respond. The technology base there is incredibly well positioned.'

But when the dancing in the street has subsided and reality starts to dawn, Obama will face a lot of competing pressures. How resilient is the energy imperative likely to be in the face of those? 'He has an extraordinary mandate, he has room to manoeuvre, and he has a clean slate,' replies Liebreich. 'So it is an exciting moment. Clearly he's going to become subject to all of the political mud-wrestling and pork-barrel rolling and horse-trading that happens – particularly in America with its system. But he does have the possibility of doing something quite dramatic.'

Of the two key drivers for investment in clean energy – climate change and energy security – Liebreich believes that while the

former may top the priority list in Europe, in the US it will be the latter that drives policy. 'Even though prices are now low, the trauma of the shock to people's budgets caused over the last two years by that huge spike in energy prices will not quickly be forgotten. It remains to be seen the extent to which Obama can explain the climate situation in such a way that people say "yes, I do care enough about the polar bears, or Bangladesh. But energy security is an incredibly powerful argument there.'

But Liebreich concedes that the events of recent years have forced

*'Even if the oil price had remained at \$28 the transition to clean energy transition would still be taking place'*

him to think much more about oil price as a driver. So what advice does he provide to his clients on this key issue? 'We don't do detailed price modelling on oil, but what we do say is that there's a band in which oil is going to trade and it looks like being somewhere around \$45-80/barrel. I can't do it more tightly than that – I would need legions of modellers. If it goes below \$45-50 a barrel then all the Indian and Chinese middle classes will buy cars and the Americans will buy Hummers. And if it goes above \$80 a barrel, then you've got the shale oils, the tar sands, biofuels and battery vehicles. And demand destruction.'

As for how prices affect investment in clean energy, Liebreich defines three 'buckets' of demand that existed in late 2007/early 2008, when growth in clean energy investment was at its peak:

- 'mandated demand', which arises from renewable portfolio standards, building regulations that require energy efficiency, and energy policy in general;
- 'demand that makes economic sense', which arises from sectors in which it is possible to make money given the support structures in place, such as the feed-in tariff in Germany or Brazilian sugar-cane ethanol; and
- demand that arises from 'green-washing, marketing, strategic positioning, feel-good and so on'.

'The mandated demand is growing,' he says, 'as you get more mandated renewable portfolio standards. The middle bucket has shrunk because oil price changes the economics, but it hasn't gone away. And then bucket three has just gone because people have lost the will to do foolish things. That was a feature of 2006/7.'

A major talking point at the World Future Energy Summit was the issue of setting a long-term price for carbon emissions so that people can make appropriate investment decisions. 'A price for carbon is absolutely essential,' Liebreich notes. 'Although there are some technologies like sugar ethanol in Brazil which are economic without any subsidy or backing, for the generality



of cases the clean alternative is more expensive than the fossil alternative. That might change at some point in the future. As fossil fuels deplete and clean energies go down experience curves then at some point there may be a cross-over – and we'll all live in happiness and cleanliness thereafter. Great. But not for a long time. So because there is a cost penalty for clean energy, there has to be some way of closing that gap. This is the famous externality cost – because the problem is that the benefit of the clean energy doesn't accrue to the buyer of that energy; it accrues to the other people who are now no longer suffering from climate change and so on. It is up to governments to close that gap. Essentially it's very simple. You can close it two ways. You can either pay people to do clean rather than dirty. Or you can charge people if they do dirty rather than clean. And putting a price on the emissions is the more efficient way of doing it. The world is in transition to thinking about CO<sub>2</sub> as a pollutant – not

the sector sufficiently resilient to ride out the economic and financial storms? Or are we going to see a substantial number of companies going out of business?

'Both,' he replies succinctly. 'It is resilient enough but we will see lots of companies going out of business. What's interesting is that while the public markets are essentially closed at the moment for fund-raising, what we are seeing is the venture capital and private equity industry largely, though not entirely, stepping into the breach and making those financings – not out of any social obligations. There will be a shake-out. I still meet people in the industry who think that if only banks would start lending again then suddenly the music will start and we'll be back in 2006/7. I'm telling them that that is simply not the case. What we had in 2006/7 was a bottlenecked supply chain. So any wind turbine manufacturer could sell any turbine that could be produced. There was not enough solar silicon, so there was a constraint on silicon production. But what's happened is that over that period that enormous surge of investment has actually started to loosen those supply constraints, at exactly the time that financing has become difficult on the demand side. So there will be a shakeout because the supply chain is no longer constrained and at the same time on the demand side we're seeing people having trouble financing their projects. That's going to change the entire industry dynamic. It's going from a sellers' market, where you could get as much as you want for your silicon or your turbines, to a buyers' market, if you've got the finance or a strong balance sheet. So pricing in the market will move away from being value-based. Suddenly, what you can charge is going to be driven by your costs, because there'll be some other guy trying to sell similar stuff by undercutting you. So prices are going to come down. We're going to see dramatic reductions in the cost of clean energy over the next year or two. Those companies that can't match the lowest cost position will now be out of business. They will be bought or they will be shut down. We'll see now who has been focusing on cost reductions and really established a low-cost position.' ■

### *'The US deploys five, six, seven times as much capital towards clean technologies as Europe does'*

just that it's one of God's laws that energy costs carbon dioxide and that we have to live with it. It's a pollutant – a by-product of the energy industry which causes harm to others if not handled properly. The same as sewage, the same as industrial waste, the same as municipal waste. It has to be handled properly – and the cost has to go to the people who cause it. How you price emissions then becomes a technocratic question: what's the most efficient way, with the lowest bureaucracy, with the most efficiency in the way it allocates costs, and so on.'

Looking ahead to 2009, how does Liebreich feel that clean energy companies will fare in the still-worsening economic climate? Is