

Green-powered smart money

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Scores of speakers and delegates at this week's World Future Energy Summit in the capital found thousands of different ways to say the same thing: The smart money is on renewable energy.

The idea that we can rely on a fossil-fuelled future has never been batted away quite so dramatically. Speeches included striking phrases such as "pivotal point", "crucial moment" and "tipping point". The general theme was that the solar-powered train was about to pull out of the station – and it had never been more important for people to hop aboard.

Abu Dhabi's green initiative Masdar took centre stage as business leaders formed alliances, signed contracts and pledged support for the carbon-neutral city.

Amid all the action **Emirates Business** selected a panel of experts who have been heavily involved in spearheading green solutions to the planet's problems.

They stressed the enormous potential for job creation in the renewable energy sector in the coming years – an important point as swathes of lay-offs affect major industries around the world.

As Abu Dhabi plotted to stay ahead of the curve and become the largest exporter of green technology, our panel considered who would be the biggest buyers of the capital's products and where the different forms of renewables would have the greatest impact.

And as large investors circled the summit in search of good deals, our experts tried to identify the best bets for a world entering a new era of clean energy. This is what they told this paper:

Which renewable energies will emerge as the most lucrative investments?

Kevin Parker: There is so much innovation taking place that today's answer may be different from tomorrow's. There are really three areas – solar, wind and waste energy. We have a lot of solar power in certain parts of the world, a lot of wind in other parts, and we certainly have a lot of waste everywhere – those feedstocks for producing power are relatively inexpensive.

Connie Hedegaard: In Denmark we see huge potential in wind – both on land and offshore. And biomass and biogas are also expanding.

Vivienne Cox: We are very much into solar, which is something that we've been investing in for 30 years. This is a sector that is small but growing rapidly and we're reducing the amount of technology we import. Onshore wind is also promising, and in particular we've chosen to invest in the US, we see it as being attractive. And with Barack Obama coming in the US a market will open up considerably. There's also biofuels, but we're very selective. We are interested in biofuels that do not compete with food crops. This has led us to Brazilian sugar cane but we're also investing significantly in next-generation biofuels and new molecules. This isn't a complete list of lucrative investments, they are the ones we've chosen to invest in.

Susan Hockfield: I can't guess.

Lord Stern: If the oil price rises to \$70 a barrel then onshore wind is pretty competitive. At the moment the use of solar depends very much on the country. Peak demand in southern Italy or California is when it's incredibly hot, so solar is already very competitive. In these cases solar copes with peak demand, whereas wind wouldn't. If you've got a system that's quite heavily dependent on renewables you're going to have some kind of carbon capacity to cope with peak, so you actually have a bit more capacity one way or the other. That goes down if you have very good energy transmission because then you can pull it in from different parts. So in future if you have very low loss energy transmission, if you build those grids, the problem of demand peaks is less worrying. In many ways and many times these are very competitive at let's say \$70 a barrel, but it's more subtle than that because of the nature

of the product.

Rajendra Pachauri: That varies from place to place but you have a whole range and variety of applications that renewable energy opens up. The most lucrative form of green energy in the future could be wind, solar or biomass as you are dealing with a variety of conditions which define each one's viability.

Hermann Requardt: It depends on the location. In the Sahara you would probably count on solar and in the British islands you would count on wind. If you just look at weather reports you have predictions about wind and sunshine so you have a history of how those kinds of things complement each other and what makes which source lucrative. You can also look at it from a time point of view, when there is more wind than sun and vice-versa. So they complement each other. If you have a smart grid that puts those two things together you already compensate for some of the fluctuations that you'll see. And then if you add water from Norway and some geothermal from the southern US then you have a complementary package.

What's the job creation potential for the renewable energy sector?

KP: It's huge. The job creation is in the production, manufacturing and operation of the plants. There are a lot of estimates out there but I don't really think we can predict where it's going to go in terms of job creation.

CH: Renewable energy is one of the fastest growing export areas in Denmark. Last year it accounted for nine per cent of our total exports. In particular it has created a lot of jobs in remote areas, not in the big cities, because it's out there where the wind potential is. We have about 60,000 people working in this field. So it has contributed to making us a country where you have more balanced development as it also comes from rural areas.

VC: Building solar plants and erecting wind farms are job-creating activities. In terms of the quality of the jobs, there are both development jobs and long-term sustainable jobs. These are high-quality jobs in the sense that a well-educated workforce is required to operate the plants and manage the farms. So the clean tech industry will be a source of quality sustainable jobs in the long term. At BP we have less than 10 per cent of our workforce dedicated to this, so it's still small. But that's comparing a very small, newly established and rapidly growing part of the business with a huge well-established oil and gas company.

SH: This is the next cycle of innovation in the economy – we saw it in IT, we saw it in biotech and I think this will be even more powerful because other sectors are becoming involved in alternative energy.

LS: Renewable energy is labour-intensive – there are studies showing that renewable creates more jobs.

RP: I think it has enormous potential, based on the little experience that we have in Germany and other countries where proactive policies for renewable energy have been followed. Abu Dhabi would probably be a very different situation because I don't think you're going to set up decentralised forms of energy production, you'll probably have larger centralised facilities. So it'll vary from one place to another, but you have a whole range of applications that renewable energy opens up and that's also the case with job creation.

HR: Generally in the sector there is job creation potential. At Siemens, we see renewable energy as a growth area with a strong footprint in places like Germany where environmental industries are very strong and are supported by the government. I would predict that overall job creation is on the positive side. During these turbulent times it's always difficult to make these predictions but in the long run they're sustainable. There will be remarkable growth in the business area, at double-digits.

Abu Dhabi has set out to manufacture and sell renewable technology. Who will be the big global buyers?

KP: Everybody, from governments, private equities, individuals to corporations. When awareness levels reach the proper level we're going to realise this is something that has to be done, it's not an option and failure is not an option. Mitigation of climate change has to continue. Put a price on carbon

and charge carbon emitters for putting harmful gases into the atmosphere and it will ignite investors' interest in these solutions. It's an enormous problem that needs fixing. There are going to be winners and losers and that generally excites people in the investment world. When there's a clear trend and a clear problem that needs to be solved that's a good situation for investors.

CH: Buyers will come from everywhere. In places where you have to have economic development for many years to come you need more sustainable development, and that is why a lot of economists say we need this kind of technology.

VC: In the US there is a massive uptake of wind energy because they have phenomenal wind resources in the middle of the country. And they're investing very heavily in clean coal technology. In Europe it's much more broadly based because of the way the EU is focused. There is solar and tax rebates on wind. There's been a lot of encouragement from governments to develop and as a consequence you see a broad range of technologies being developed in Europe. In Africa the opportunities are in growing crops for biofuels. China's big issue has to be coal and finding a way to clean it up.

SH: There will be interest in purchasing technology all over the world in the coming years. Everyone's racing to get wind and to figure out how to make solar cells more efficient and economic and everyone's racing to figure out how to make carbon capture work.

LS: There clearly will be very big demand for energy in places like India and China given their populations and growth rates. You're going to see the biggest expansion in capacity there. But you'll also soon have a billion people in Sub-Saharan Africa. So the general answer is, look for the large, fast growing parts of the world.

RP: Every country in the world could be interested. One example is the western parts of the US – places like California and Nevada – where solar energy has enormous potential.

HR: Climate change is an international problem and we will see international activity because we can't leave it to the ones that have a problem with sourcing and financing. It will be an international approach and it can only work with an international approach. So who will actually finance a solar power plant in Arabia or Spain or so on still has to be determined. And we see already that all the local energy suppliers are all going international, so it's a dramatic internationalising market with specific investment vehicles.

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