

Renewable energy country attractiveness indices



In this issue:

Overview of indices: issue 23	2
It's not all down to Copenhagen	3
Issue highlights.....	6
All renewables index at November 2009	8
Wind indices at November 2009	9
Near-term wind index at November 2009	10
Country focus – US, China, Germany, India, Portugal, Ireland, Poland, Brazil	11
Country introduction – South Africa, Czech Republic	19
Feature – wave energy: breaking on the shores of opportunity	21
Australia – Minister Ferguson's interview with Ernst & Young	22
Commentary: guidance notes	24
Company index.....	26
Glossary.....	27

Global highlights

With the Copenhagen Climate Change Summit due to commence in just days, our guest columnist, Jonathan Johns, summarizes his expectations for the summit inside this issue. Whilst the outcomes of the summit are currently difficult to predict, it is likely the discussions will, in the medium term at least, have a significant bearing on these indices. In the meantime, however, there have been some noticeable additions and changes:

This issue sees the inclusion of two new countries in response to requests from the readership survey. These are the Czech Republic and South Africa. Introductory country focus pages have been included on pages 19 and 20 respectively. This issue is also host to an interview with the Hon Martin Ferguson AM, MP - Australia's Minister for Resources and Energy and Minister for Tourism. The technology focus in issue 23 is wave and tidal and considers the issues surrounding financing of technology development.

In relation to the All renewables index, the weighting between technologies (namely wind and solar) has been reassessed, to reflect the growing relative importance of the solar sector. As such, there are a number of changes to the index scores across the board, with a general rise in countries favouring solar technology.

China has risen above Germany in the All renewables index for the first time, on the back of announcements that restrictions on the amount of non-domestic components used to manufacture generation technologies are being relaxed. A raft of announcements, of new plans for solar PV parks, as well as the Golden Sun incentive program, have also contributed to the rise.

Lower down the table, this issue sees rises for both Brazil and Japan. Brazil's energy plan to 2017 includes calls for 7.3GW of wind, biomass and small hydro combined generation capacity to drive towards a 2020 target of 10% of consumption to be met by renewable energy. Meanwhile the Japanese government's new targets to reduce greenhouse gas emissions by 25% (based on 1990 levels) by 2020 represent a significant increase on previous targets of 8%.

Ernst & Young was ranked the leading project finance advisor in the Americas, Europe, Middle East and Africa between 2001 and 2008 by Project Finance International.



Overview of indices: issue 23

The Ernst & Young country attractiveness indices provide scores for national renewable energy markets, renewable energy infrastructures and their suitability for individual technologies. The indices provide scores out of 100 and are updated on a regular basis.

The main indices (all renewables and long-term wind) are referred to as “long-term indices.” The near-term wind index takes a two-year view with slightly different parameters and weightings (see right).

The country attractiveness indices take a generic view, and different sponsor/financier requirements will clearly affect how countries are rated. Ernst & Young’s Renewable Energy Group can provide detailed studies to meet specific corporate objectives. It is important that readers refer to the guidance notes set out on pages 24-25 when referring to the indices.

Long-term indices

The long-term indices are forward looking and take a long-term view, hence the UK’s high ranking in the wind index, explained by the large amount of unexploited wind resource, strong offshore regime and attractive tariffs available under the Renewables Obligation mechanism. Conversely, although Denmark has the highest proportion of installed wind capacity to population level, it scores relatively low because of its restricted grid capacity and reduced tariff incentives.

All renewables index

This index provides an overall score for all renewable energy technologies. It combines individual technology indices as follows:

- ▶ Wind index – 68%
(comprising onshore wind index and offshore wind index)
- ▶ Solar index – 15%
(comprising solar PV index and solar CSP index)
- ▶ Biomass and other resource index – 17%

Individual technology indices

These indices are derived from scoring:

- ▶ General country-specific parameters (renewables infrastructure index), accounting for 35%
- ▶ Technology-specific parameters (technology factors), accounting for 65%

Renewables infrastructure index

This provides an assessment of the general regulatory infrastructure for renewable energy by country (see page 8).

Technology factors

These provide resource-specific assessments for each country (see page 8).

Long-term wind index

This index is derived from scoring:

- ▶ The onshore wind index – 70%
- ▶ The offshore wind index – 30%

Long-term solar index

This index is derived from scoring:

- ▶ The solar PV index – 73%
- ▶ The solar CSP index – 27%

Near-term wind index

The near-term wind index takes a forward-looking, two-year view based on the parameters of most concern to a typical investor seeking to make a near-term investment. The index is based on separate scores for onshore and offshore wind. For parameters and weightings, see page 24.

Comments and suggestions

We would welcome your comments or suggestions on any aspect of the indices. Detailed attractiveness surveys and market reports can be provided, taking account of specific corporate objectives.

Please visit our website www.ey.com/renewables or contact:

Ben Warren
Partner, Ernst & Young LLP: bwarren@uk.ey.com

Andrew Perkins
Partner, Ernst & Young LLP: aperkins@uk.ey.com

Dane Wilkins, Director: dwilkins1@uk.ey.com

Arnaud Bouille, Director: abouille@uk.ey.com

It's not all down to Copenhagen

Jonathan Johns, Guest Columnist

Even though it's now accepted that the Copenhagen climate change summit will focus on policy and principles rather than a legally binding agreement, expectations remain high:

1. Will there finally be a deal involving strong commitment from the US, given that the Kerry-Boxer Climate Bill is largely dependent on the fortunes of President Obama's healthcare programs and is likely at the time of writing to slip to next year, with the prospect of free allocations watering down its effectiveness in early years?
2. Will China put further strong commitments on the table and surprise the West, building on its announcements of very strong programs for wind and solar, its intentions to create its own carbon market and its new target to reduce its carbon intensity by 40%-45%?
3. Will European leaders be resolute and united, given taxpayer and consumer pressures over the cost of support programmes, or will they seek longer term tariff reductions as the price of continued feed in support?
4. Or will the outcome be mixed, with apparently strong statements backed up with little substance?

Personally I am optimistic, given a 12- to 15- month horizon, but also realistic in that it is unlikely that Copenhagen and its successor conference will answer all the questions: there is sure to be some devil in the details if not in the rhetoric.

The atmosphere of the climate change debate has shifted radically since Kyoto: the debate centers more on how great the cuts in carbon need to be and who pays, rather than whether substantial cuts are necessary at all.

All significant economic powers are now addressing the issue one way or another, in some cases citing security of energy supply and the need to hedge against long-term rises in fossil fuel costs as significant reinforcing arguments.

Whatever the specific outcome of Copenhagen, it is likely that carbon and climate change will have come center stage as a key arbiter of future energy and infrastructure investment. Not only is the debate about replacing the aging electricity-generation fleets of the West, but also the vast deployment of new capacity in the East; the extent to which the latter is carbon friendly is the key determinant of success.

The debate about who will pay raises the issue of the fuel poor and those countries least able to meet the new challenges. The concern is that JI/CDM mechanisms have not yet lived fully up to expectations. A significant number of projects are subject to controversy over certification, and there are concerns that an insufficient proportion of the end carbon sale flows through to the originating project, particularly where projects have sold long-term positions at relatively low fixed prices to Western brokers and funds.

JI/CDM in the developing world has not to date rivalled feed in tariffs in the West as a means of funding renewables projects, certainly not to an extent sufficient to warrant their elevation in the CAI: China and India, of course, have powerful independent support mechanisms.

It is interesting to note that the UK ROC scheme consultation potentially allocates 10% of the scheme towards overseas projects. It would be good if all nations agreed that a similar proportion – or even 5% – of their domestic schemes could be made available to overseas projects in poorer countries, on terms identical to those that would be received if they were domestic to the country providing such aid. It is, of course, not certain that this was what the UK proposal had in mind when raising the issue.

The energy industry as a whole is now grappling with the issue of marshalling unparalleled investment to replace and build new capacity and grid infrastructure with an entirely different mix of generating technologies. All this is in a business environment where demand control via smart grids intermingles with consumers becoming producers: intermittent power in some regions becoming the new baseload and in many economies energy saving having greater value than production.

For businesses with a sensible eye on the future, Copenhagen is likely to mean the death knell of carbon-intensive business models and processes, with a degree of change likely that isn't yet fully understood. Energy efficiency (the silent renewable) is likely to become a significant focus for investment as well as onsite or offsite renewables for energy intensive industries if regulatory mechanisms allow. Businesses will also need to make sure that fossil fuel-dependent assets are not in fact liabilities or at best subject to accelerated depreciation. Many national and global players are reviewing their entire property estate and manufacturing facilities on this basis.

But what are the implications for the renewables industry, which arguably ought to be best placed to deal with the post-Copenhagen world? It seems that the first signs of moving on from the depths of recession are appearing and that green stimulus packages are having some effect; albeit hesitant and slower than had hoped – as opposed to planned – in many market economies.

Given the scale of the challenge, it is likely that in most jurisdictions current support programmes are insufficiently ambitious and will at best require continuation for some years to come. "Critical issues in years to come are: how the burden will fall on the taxpayer/consumer; the effect it will have on the fuel poor; and heavy employment of high-energy-using industries."

The sheer scale of investment is daunting particularly given the relative dearth of project financing for a sector acknowledged by bankers as highly attractive. The US has acknowledged this difficulty not only by allowing production tax credits to be swapped for capital-grants, but also by introducing loan guarantees for qualifying projects. China's planned economy effectively provides a similar stimulus. Unless credit eases dramatically, particularly in relation to the long tenors required by renewable projects, then it is likely that other jurisdictions will need to provide capital-grant or loan-guarantee support mechanisms if they wish deployment rates to be maintained and indeed accelerated. This is especially the case for less-mature technologies where project financing has all but dried up and where in any case it is likely to be desirable to accelerate the choice of solutions available to meet the scale of cuts in carbon required- for example newer-generation energy from waste technologies, tidal and marine power.

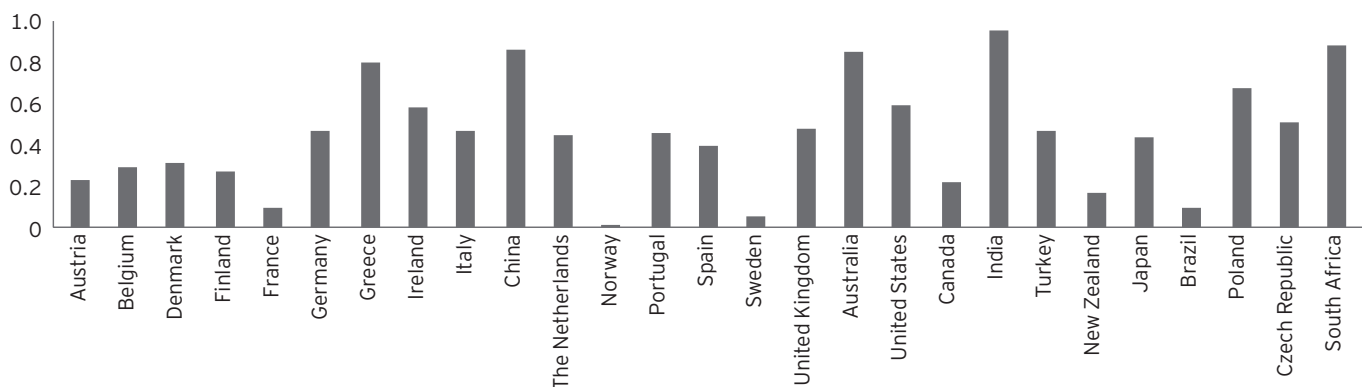
In the long term, it is likely that the design of support mechanisms, which have by and large evolved in a different era, will need to be overhauled and more explicitly focussed on carbon tons saved versus a previous focus on megawatt capacity and terawatt-hour output. It would be good (but unlikely) if at Copenhagen governments recognized the need for a greater harmonization of renewables support mechanisms, thus making it easier to establish large markets, justifying the positioning of local manufacturing facilities, and allowing economies of scale.

There is an added complication: a focus on value in terms of carbon tons saved dynamically changes the value of renewables significantly by territory. In those economies with a dependency on fossil fuels, the value of renewables as a means of reducing carbon is higher and not necessarily directly linked to the cost of production (most support mechanisms being based on a cost plus standard rate of return) . Consequently those economies

with high fossil fuel dependency and high levels of unexploited resource, may choose to be more aggressive in their deployment strategies and decide to employ more competitive support mechanisms than less fortunate neighbors. The cost of nuclear or clean coal could become the relevant comparator for renewable technologies rather than as previously the lowest cost fossil fuel technology (usually CCGT). Of course policies may not follow this mantra; to date, countries with the best resource (e.g., the UK with onshore wind) have not always chosen to exploit it to the full. The danger is, however, that in decades to come, competitive edge will be lost if goods and services have an unnecessarily high carbon footprint and global consumers arbitrate on this basis.

The difficulty for the industry is that there is no embedded price for carbon to make this choice real: the EU ETS price has been volatile and is currently hovering around €14 (EUA), not the €20 to €35 required to radically affect investment decisions. Carbon pricing as currently posited is effective as a means of encouraging change by carbon-intensive industries but less so as an incentive to install new renewables capacity, which requires long-term mechanisms with minimal risk of market fluctuations, hence the relative cost effectiveness of feed in tariffs as capacity incentives rather than market-based mechanisms such as ROCs. Interestingly some economies (e.g., France) and some commentators (e.g., Exxon) are reaching for carbon taxes as a more reliable way of achieving behavioral change. In this regard, it is interesting to note how effective programmed incremental rises in landfill tax in the UK have been at promoting behavioral change towards recycling and other treatment technologies producing less greenhouse gases and replenishing treasury coffers. As time goes by, carbon taxes could become increasingly tempting to legislators.

Tons of CO₂ per MWh

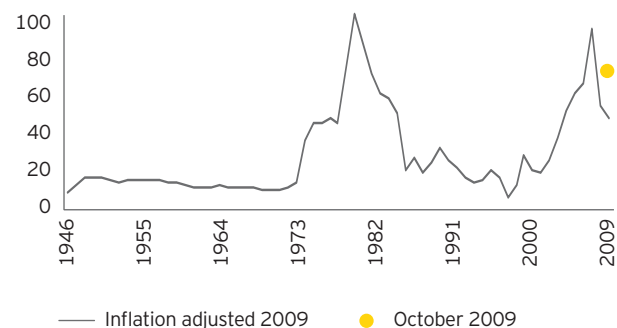


Source: International Energy Agency
Renewable energy country attractiveness indices Issue 23

For the renewable energy industry and governments, the challenge is to ensure renewable resources are quickly captured. In most territories, this will require speedy investment in the grid network and zoning policies to overcome planning-consent logjams. To date, capacity has not always moved forward fastest where there are the best resource and given the imperatives of climate change, it is unlikely we can collectively afford the waste that this implies. Perhaps we will one day realize that rights relating to the exploitation of renewable resources are at least as valuable as oil reserves are today. In this respect, it is salutary to note that we are entering the next phase of economic growth with oil prices already at a high level in real terms relative to our current “recession” position in the economic cycle (see graph and commentary below).

It is interesting to note that both recent scenarios by the IEA and the UK’s Ofgem show that an energy strategy with a strong low-carbon component produces lower energy prices in the long-term rather than higher. It’s not all down to Copenhagen.

Annual oil price (US\$)



Source: InflationData.com

In oil price terms, the most similar previous oil price hike and subsequent recession was the oil price peak in December 1979 and then the recession in the early 80’s. Oil prices dropped off very quickly during the early eighties and thus demand recovered more quickly at the end of the recession around the end of 1982. However this time, although oil prices fell back quickly initially, they have already been rising again since March 2009, so oil prices are now already at a high level for this point of a recession. This could well slow the rate of recovery coming out of recession but could also benefit the renewables market with less of a differential between fossil fuel and renewable energy generation.

Going big: the rising influence of corporations on cleantech growth

The continuous growth in world population, the increase in consumption power of the middle class in emerging markets, the growing scarcity of natural resources around the globe, the need to ensure energy security, the business response to climate change, and the rising energy and commodity prices, are driving a worldwide transformation in the way that natural resources, including energy and water, are produced, distributed, stored, managed and consumed. Experts anticipate that this transformation to a more resource efficient and lower carbon consumed economy will have the magnitude of a new industrial and technology revolution. Cleantech represents the technological

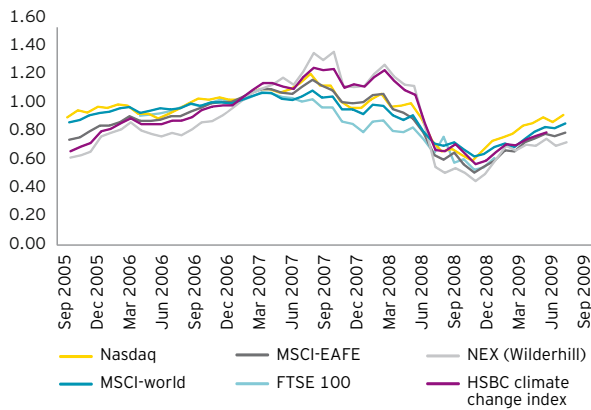
and business model innovation that will enable this massive transformation. Cleantech spending is robust and primed to accelerate, according to *“Going big: the rising influence of corporations on cleantech growth”*, the third annual global cleantech report from Ernst & Young. This is the conclusion of a survey of more than 300 executives in global corporations with annual revenues of more than US \$1b, that forms the centerpiece of the report. Alongside the survey there are also interviews with the world’s top cleantech industry leaders as well as perspectives and analysis of current trends.

Issue highlights

Equity markets

During the third quarter of 2009, stock markets around the world continued the general rise that had begun in March, when various fiscal stimulus packages were announced. However, in recent weeks, since the end of the quarter, markets appear to have levelled off, with investors unsure about the future direction. Some commentators talk about economies recovering soon from recession, while others talk of a risk of a double-dip. Nevertheless, the fact that share prices have generally recovered about 60% (from their minima and are now back to September 2008 levels) has brought relief to many investors.

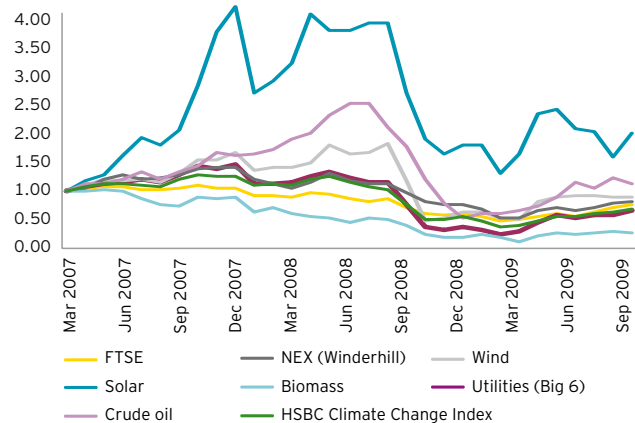
Stock market indices from September 2005 to September 2009



Source: Ernst & Young

Renewable energy industry companies have reflected a similar trend to the wider market, recovering from a low point at the end of February 2009, but leveling off in recent months. According to Ernst & Young research portfolios, with about a dozen companies in each sector, the wind and biomass sectors have been remarkably steady over the last quarter, while the solar sector exhibits larger month-to-month fluctuations (values are weighted per company according to market capitalization).

Renewable energy and indices performance from March 2007 to September 2009

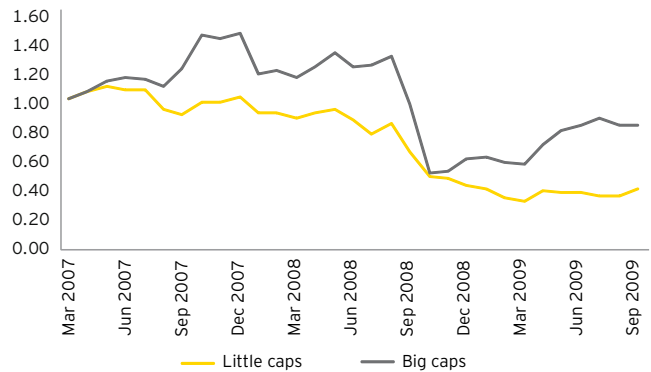


Source: Ernst & Young

Share price performance by RE sector

In the wind sector, the differential in relative value (compared to the March 2007 benchmark) between large and small companies (by market capitalization) remains: big caps have recovered much of their value since March 2009, while little caps have continued to struggle.

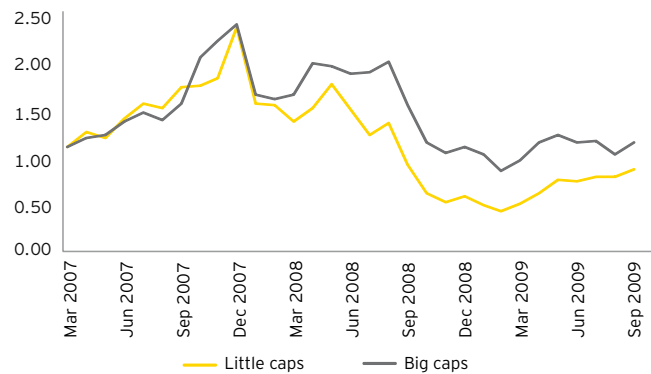
Wind share prices



Source: Ernst & Young

In the solar sector, levels at the end of the third quarter were down slightly from a peak at the end of May, but still up over 40% from March's low point. Little caps have also recovered well and narrowed the value gap with bigger firms.

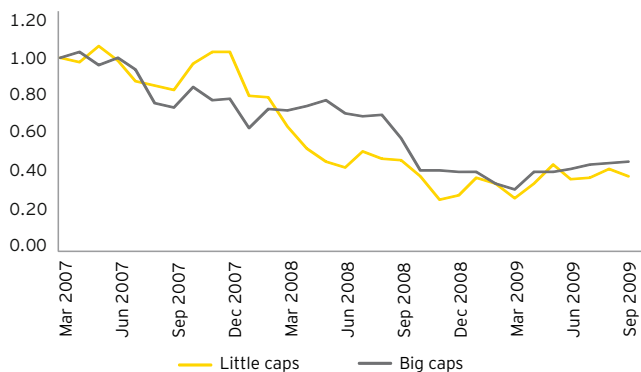
Solar share prices



Source: Ernst & Young

Meanwhile in the biomass sector, companies are very slowly recovering value, with little difference between large and small companies. Although prices have improved by more than 30% of their value in March 2009, levels are still about 25% less than prices were at the end of August 2008.

Biomass share prices



Source: Ernst & Young

M&A activity in the renewables sector

Green Infra Ltd, an India-based joint venture between EVI and IDFC Private Equity, has agreed to acquire BP Energy India Pvt Ltd's wind power assets in India.

Terra Firma Capital Partners Ltd, the UK-based private equity house, chaired by Guy Hands, has agreed to acquire EverPower Wind Holding Inc for an initial sum of US\$200m (€136m) and has committed another US\$150m (€102m) to the business over the next few years.

GE Energy has acquired Norway's ScanWind AS, a developer and supplier of wind-turbines and services, for consideration of US\$18m (€12.2m) from Morpich Technologies AB and Nord-Trondelag Elektrisitetsverk. With this acquisition, GE Energy is able to provide a direct-drive, offshore wind turbine offering as an option to its customers.

Babcock & Brown Limited has agreed to sell Kallista Energies Renouvelables and Kallista France for an aggregate deal value of US\$317m (€215.5m) to Holding Energies Renouvelables SAS, an infrastructure fund of AXA Private Equity. The acquisition includes 15 wind farms with a total capacity of 163MW.

Sumitomo Corporation of America has acquired a 42.5% stake in Stanton Wind Energy LLC, a US-based, 120MW wind energy project which is developed, managed and operated by Invenergy Wind LLC.

Stadtwerke Muenchen GmbH, the German municipal utilities company, has acquired five wind farms, with total capacity of 50MW, from WPD AG, a German wind farm developer and operator.

Century Profit Investments Ltd, a subsidiary of 21 Holdings Ltd, and Champion Wind Energy Investment and Management have agreed to form a joint venture, holding 80% and 20% ownership respectively. Under the terms of the agreement Century will acquire certain assets for consideration of US\$100m (€68m).

In a move to increase the company's presence in the European renewable energy sector, Oneworld Energy Inc, a Canada based wind and solar energy generator, has agreed to purchase CWC Wind Power for an undisclosed value.

Solar

Atlantis Capital Fund, an Italian fund of private equity house Atlantis Capital Special Situations SpA, has agreed to acquire Ecostream Italy Srl, the Italy-based solar power systems producer for €10.5m.

Siemens Project Ventures GmbH, a subsidiary of Siemens Financial Services, has agreed to acquire a 40% stake in Israeli photovoltaic plant developer, builder and operator The Arava Power Company. The total consideration consists of US\$15m (€10.2m), valuing the total outstanding share capital at US\$37.5m (€25.5m).

Meridian Energy Limited has acquired Cleantech America Inc, the US-based developer of solar farms and other renewable energy projects, from Clydesdale Ventures LLC, the US-based venture capital firm, for consideration of US\$5.4m (€3.7m).

An agreement has been made between Solar Millennium AG and MAN Ferrostaal Inc to form a joint venture, Solar Trust of America LLC, to which both companies will provide assets and technical expertise. Solar Millennium will have ownership of 70% of the company with MAN Ferrostaal owning the remaining 30%. Solar Trust of America will be able to offer an entire range of services in the development, financing, technology, construction and operation of solar thermal power plants.

Energy Conversion Devices Inc, US manufacturer of solar laminate products, has agreed to acquire Solar Integrated Technologies Inc, designer and manufacturer of Building Integrated Photovoltaic (BIPV) roofing systems, in a deal worth US\$16m (€10.9m).

Hydro

A2A SpA has agreed to acquire a 29% stake in Elektroprivreda Crne Gore AD Niksic, a Montenegrin hydro-electric power provider, from the Government of Montenegro and other minority shareholders. Total consideration offered is €311m with an implied equity valuation for the transaction of €1.073b.

Guangxi Guiguan Electric Power Co Ltd, the Chinese hydroelectricity generator and distributor, has agreed to acquire Sichuan Chuanghui Shuidian Touzi Youxian Gongs, a hydroelectric power generation company, from seven private investors in a deal worth CNY219.62m (€21.96m).

Biomass

Rockfield Energy Investments LLC, the UK-based private equity firm specializing in renewable energy investments, has completed a €30m acquisition of an undisclosed stake in Imperative Energy Limited, the Ireland-based biomass boiler supplier. The move is in line with Imperative's strategy to expand its operations in the UK and Ireland.

All renewables index at November 2009

Rank ¹		Country	All renewables	Wind index	Onshore wind	Offshore wind	Solar PV	Solar CSP	Biomass/ other	Geothermal	Infra-structure ²
1	(1)	US ³	70	71	75	59	72	76	64	67	68
2	(3)	China	67	72	76	61	64	38	56	49	71
3	(2)	Germany	66	67	66	72	74	28	64	55	64
4	(4)	India	61	63	70	42	62	59	56	43	60
5	(5)	Spain	59	60	65	45	64	69	52	35	60
5	(6)	Italy	59	59	64	46	66	60	55	65	64
7	(7)	UK	57	62	60	67	48	0	56	35	62
7	(8)	France	57	59	61	54	61	23	57	29	59
9	(9)	Canada	54	60	65	47	42	0	49	34	62
10	(10)	Portugal	53	56	61	43	58	22	45	33	58
11	(12)	Greece	52	53	57	43	60	43	43	34	56
12	(11)	Ireland	51	58	58	57	36	0	47	28	60
13	(13)	Australia	50	51	54	42	56	45	46	59	53
14	(13)	Sweden	49	52	52	51	43	0	55	34	52
15	(15)	Netherlands	45	49	50	49	47	0	40	21	42
15	(15)	Poland	45	49	53	39	42	0	41	22	46
17	(17)	Denmark	44	48	45	54	40	0	45	32	50
17	(17)	Belgium	44	50	48	55	34	0	35	26	47
17	(20)	Brazil	44	45	49	34	44	29	46	21	42
20	(17)	Norway	43	48	49	45	30	0	44	30	49
20	(21)	Japan	43	45	47	39	49	24	34	39	48
22	(21)	New Zealand	41	46	50	36	31	0	33	49	41
22	(21)	Turkey	41	43	46	36	43	28	36	42	44
22	-	South Africa	41	43	47	35	34	44	34	31	41
25	-	Czech Republic	36	34	46	0	56	0	39	32	45
26	(24)	Austria	34	30	41	0	53	0	47	33	48
27	(25)	Finland	33	33	32	35	25	0	47	22	33

Source: Ernst & Young

1. Ranking in issue 22 is shown in parenthesis.

2. Combines with each set of technology factors to produce the individual technology indices.

3. This indicates US states with Renewable Portfolio Standards (RPS) and favorable renewable energy regimes.

This issue sees slight score changes taking place across the board as the weighting between technologies (namely wind and solar) has been reassessed. This has led to a general rise in countries favouring solar technology, reflecting the growing importance of solar as a generation technology going forwards.

In response to requests from our readership, this issue also contains the addition of two new countries to the published list, South Africa and the Czech Republic. Introductory country focus pages have been included on pages 19 and 20 respectively.

Spain has fallen a point in the All renewables to tie with Italy, reflecting the continuing impact of legislation changes and delays in processing of applications.

China has risen above Germany in the All renewables index for the first time, on the back of announcements that restrictions on the amount of non-domestic components used to manufacture generation technologies are being relaxed. A raft of announcements of new plans for solar PV parks as well as the Golden Sun incentive program have also contributed to the rise.

Lower down the table, this issue sees rise in Japan's score. The Japanese government's new targets to reduce greenhouse gas emissions by 25% (based on 1990 levels) by 2020 represents a significant increase on previous targets of 8%.

Brazil's energy plan to 2017 includes calls for 7.3GW of wind, biomass and small hydro combined generation capacity to drive towards a 2020 target of 10% of consumption to be met by renewable energy.

Wind indices at November 2009

Rank ¹		Country	Wind index	Onshore wind	Offshore wind	Near-term wind
1	(2)	China	72	76	61	81
2	(1)	US ²	71	75	59	85
3	(2)	Germany	67	66	72	52
4	(4)	India	63	70	42	56
5	(5)	UK	62	60	67	49
6	(6)	Spain	60	65	45	51
6	(7)	Canada	60	65	47	46
8	(7)	Italy	59	64	46	47
8	(7)	France	59	61	54	47
10	(10)	Ireland	58	58	57	40
11	(11)	Portugal	56	61	43	42
12	(12)	Greece	53	57	43	40
13	(13)	Sweden	52	52	51	35
14	(14)	Australia	51	54	42	40
15	(15)	Belgium	50	48	55	37
16	(16)	Netherlands	49	50	49	34
16	(16)	Poland	49	53	39	37
18	(18)	Denmark	48	45	54	34
18	(18)	Norway	48	49	45	34
20	(20)	New Zealand	46	50	36	32
21	(21)	Japan	45	47	39	27
21	(21)	Brazil	45	49	34	36
23	(23)	Turkey	43	46	36	33
23	-	South Africa	43	47	35	32
25	-	Czech Republic	34	46	NA	28
26	(24)	Finland	33	32	35	23
27	(25)	Austria	30	41	NA	24

Source: Ernst & Young

1. Ranking in issue 22 long-term wind index is shown in parenthesis.

2. This indicates US states with RPS and favorable renewable energy regimes.

At the top of the table, China has moved ahead of the US due to news of easing restrictions surrounding the usage of foreign components in developments. This represents a lessening in the difficulty to penetrate the Chinese market, which improves the attractiveness of the market to external developers.

Falling in the wind index this issue, Spain has dropped a point following continued complications in the political environment in Spain. News of skyline taxes in Galicia represent a new and uncertain development: will they help combat "NIMBYism" or drive investment elsewhere?

The UK has risen one point following further announcements relating to improvements with the grid-connection process. The announcement of a further £1.15bn of investment in the grid provides hope the situation may improve in the medium term. Some results are starting to be seen from the acceleration of grid queues.

Brazil and Japan have also risen one point in the wind index, following positive announcements from their governments, as detailed under the all renewables index.

Germany has risen one point in the offshore index following approval by the government of special planning permissions for 15 more offshore wind farms, bringing the total approved capacity to 12 GW.

In the onshore wind index, Canada has risen one point following announcements in Ontario that the province will be spending CAN\$2.3b (€1.45b) on grid improvements as well as announcing an offshore wind tariff.

France has also risen one point in the onshore wind index following news that projects have started to acquire bank finance again.

Near-term wind index at November 2009

Rank ¹	Country	Wind index
1 (1)	US ²	85
2 (2)	China	81
3 (3)	India	56
4 (5)	Germany	52
5 (4)	Spain	51
6 (6)	UK	49
7 (7)	France	47
7 (7)	Italy	47
9 (9)	Canada	46
10 (10)	Portugal	42
11 (11)	Australia	40
11 (11)	Ireland	40
11 (11)	Greece	40
14 (14)	Poland	37
14 (15)	Belgium	37
16 (15)	Brazil	36
17 (17)	Sweden	35
18 (18)	Netherlands	34
18 (19)	Norway	34
18 (19)	Denmark	34
21 (19)	Turkey	33
22 (22)	New Zealand	32
22 -	South Africa	32
24 -	Czech Republic	28
25 (23)	Japan	27
26 (24)	Austria	24
27 (24)	Finland	23

Source: Ernst & Young

1. Ranking in issue 22 is shown parenthesis.

2. This indicates US states with RPS and favorable renewable energy regimes.

Near-term wind index

The US score has risen two points in the near term index as the short-term drop in installations (relating to stalls caused early in the credit crunch) appears to be easing, bringing stronger forecasts into the near term.

The Chinese score has risen three points following announcements regarding the reduction of restrictions on the level of local components required in developments.

Germany has risen one point above Spain following announcements of the approval of 15 more offshore wind farms.

Belgium, Norway and Denmark have all risen one point in the near term due to increased capacity forecasts.

Brazil has been forced down one position due to Belgium's rise in the index.

This issue includes two new countries which have not previously been published. These have entered toward the lower end of the table. For details on these please, see the country introductions for South Africa and the Czech Republic on pages 19 and 20 respectively.



Country focus – US

Tax credit or grant

Ranking	Issue 23	Issue 22
All renewables index	1	1
Long-term wind index	2	1
Near-term wind index	1	1

Source: Ernst & Young

The passing of the US's ambitious climate change bill, which would commit the US to cutting greenhouse gas emissions by 20% by 2020, received push-back due to a major push by the Democratic leadership to pass a health reform bill during its fall reconvening. Latest indications are that the Senate is unlikely to pass the climate bill until spring next year. However those working on the bill have pledged to complete a framework before the Copenhagen climate conference in December. Also a timeline has been mapped out for next year to produce an agreement that could attract support from Republicans and moderate Democrats.

In a major boost for renewable energy, Washington has announced up to US\$30b (€20.4b) in loan guarantees for renewable energy projects. The government-guaranteed loans just announced are to aid companies in solar, wind, biofuels and other renewable energy projects secure private financing. The loan guarantees are in part funded by the Recovery Act, passed a few weeks after Obama took office in January 2009, and by the Department of Energy's (DoE) ordinary annual budget.

In September 2009, The US Treasury and Energy Department issued US\$502m (€341.4m) to renewable energy producers under the first round of a new program that provides direct payments to developers in place of tax credits over time to spur production and attract more private investment in the sector. The program, also part of the US\$787b (€535b) economic stimulus bill, will provide a total of US\$3bn (€2b) in payments to project developers that began or will begin construction between 1 January 2009 and 30 September 2011.

Spain's Iberdrola announced on 8 September that it had issued US\$2bn (€1.36b) in debt among 150 US institutional investors, underlining the company's declared goal of focusing future wind energy growth in the US. The debt placement came one week after another boost to IR's US expansion plans, when it was awarded US\$294m (€200m) of the initial US\$502m (€341.4m) in stimulus grants awarded by the US Treasury.

Ethos Green Energy Asset Finance, a collateral-based lender serving a niche market of renewable energy developers, said that it has struck an agreement to extend a US\$300,000 (€204,000) loan to Solar America LLC, which Ethos called the first renewable energy loan secured primarily by newly available federal grant payments made in lieu of tax credits.

Companies that import solar panels to the US could face as much as US\$70m (€47.6m) in new tariffs annually because of a recent decision by US Customs. The newly-applied 2.5% duty would result in increased solar PV prices and decreased attractiveness of investment. The US imports around US\$1.037b (€705m) in solar panels every year.

FPL Group Inc of Florida has filed an application to build a US\$1b (€680m), 250MW CSP plant in Riverside County, southern California. The construction of the first of two 125MW units is expected by the summer of 2013.

DoE finalized a US\$535m (€363.8m) loan guarantee for Solyndra, a Californian solar-energy company. It was the first loan guarantee completed by the department since 2005.

The American Wind Energy Association (AWEA) reported in its Q3 market report that the US wind energy industry installed 1,649MW of new power generating capacity in the third quarter – an amount higher than either Q2 2009 or Q3 2008 – bringing the total capacity added this year to date to over 5,800MW. AWEA also reported that wind turbine manufacturing still lags below 2008 levels, in both production and new announcements.

Since the early July announcement of rules to implement the stimulus bill, the wind industry has seen over 1,600MW (enough to supply 480,000 average households) of completed projects, and over 1,700MW of construction starts. These projects equate to about US\$6.5b (€4.4b) in new investment.

Contact:

Michael Bernier
Tel: +1 617 585 0322
Email: michael.bernier@ey.com

Country focus – China

Tender

Ranking	Issue 23	Issue 22
All renewables index	2	2 ¹
Long-term wind index	1	2
Near-term wind index	2	2

Source: Ernst & Young
1. Joint

The Chinese government has decided to drop a requirement that most of the components for wind power equipment be made locally. China currently requires that all wind projects use turbines with more than 70% of their components made in China, according to a regulation set by the National Development and Reform Commission in 2007.

China plans to amend the country's renewable energy law to set a minimum quota of electricity produced by RES that state-owned grid companies must buy, in a effort to encourage them to buy more electricity from wind, solar and biomass projects.

On 21 July 2009, the Chinese Ministry of Finance announced the 'Golden Sun' subsidy scheme which will support at least 500MW of PV installation in the next two to three years. Several Chinese provinces have also announced PV targets and supportive policies in the past few months.

The Ministry of Finance announced that a maximum of 20MW per province would be eligible for the 'Golden Sun' incentive. It will cover half the building costs, including grid-connection, transmission and distribution systems, for the projects. The subsidy will rise to 70% for solar power systems in remote areas that are not currently connected to the grid. Under the scheme, grid operators will also be required to buy excess electricity at prices on a par with power from coal-fired power plants.

The Golden Sun subsidy was widely anticipated, with China-based solar panel makers recently announcing a spate of major projects that will be technically eligible for the subsidy.

RenaSola announced that it had reached a preliminary agreement with the city of Yancheng – located north of Shanghai – for a 500MW on-grid solar power project. It will mostly consist of ground-mounted systems to be built over a six-year period.

Suntech Power Holdings, one of the world's largest PV module makers, announced in July 2009 that it planned to build three 500MW solar projects in Panzhihua city in Sichuan province, Shizuishan city in Ningxia Autonomous Region and Qinghai province. Another 300MW facility is also planned for the Shaanxi province. This brings the total of the four projects to 1.8GW of installed capacity.

US company First Solar said that it had signed a Memorandum of Understanding (MoU) with the Chinese government to build a 2-GW solar plant in Ordos City, Inner Mongolia, China. The project will benefit from a feed-in-tariff that will guarantee the price of electricity the power plant generates over the long term.

China Datang subsidiary Datang New Energy said last week it had signed agreements with the government of Baotou in Inner Mongolia to build a 1,000MW wind farm, as well as a 500MW solar power plant. China Datang recently said it intended to expand its RE portfolio by expanding its current 2,350MW of wind capacity up to 10,000MW by 2015.

Contact:

Ben Warren
Tel: +44 20 7951 6024
Email: bwarren@uk.ey.com



Country focus – Germany

Feed-in tariff

Ranking	Issue 23	Issue 22
All renewables index	3	2 ¹
Long-term wind index	3	3
Near-term wind index	4	4 ¹

Source: Ernst & Young
1. Joint

Solar

Since 1 January 2009, feed-in tariffs have declined 10% for solar PV and 8% for integrated solar and roof-top solar. This significant decline has created a massive rush for German developers to develop residential solutions. This is further exacerbated by the Spanish solar market's collapse due to the 500^{MWp} cap introduced for new installations in FY09.

Prices for solar PV panels have decreased 30% to 40% worldwide since summer 2008. The worst-affected are the high quality, upscale German photovoltaic supply chain companies, now suffering from overcapacity in a market where installation capacities are shrinking. The acquisition of PV module maker ERSOL last year and currently Aleo Solar by Robert Bosch might be seen as the first steps of a possible market consolidation. Other listed giants like ABB or GE might follow suit.

Companies are calling on politicians to seek protection. One idea is to tighten the quality standards for PV modules used. Subsidies and feed-in tariffs should only be granted in cases where certain standards are fulfilled. This could reduce competition from China (e.g., Yingli, Suntech) as well as US firms (e.g., First Solar) who use cadmium for thin-layer solar products. According to the German Coalition agreement of the new government to solar feed in tariffs are subject to review and the new government envisages to amend the German Renewable Energy Law by 2012.

German solar PV market also faces legislative challenges in comparison with other RE sources. For instance, German trade tax legislations provide that 70% of the income generated by wind farms is taxable (7% to 17% tax rate) by the municipality where the wind turbines are located. The remaining 30% is taxed by the municipality where the operating company has its business headquarters. For solar energy plants, no such provision exists. Instead, income of PV plants is 100% taxable by the municipality where the company has its business seat. If the solar plants are placed in a particular location, the local municipality will not gain taxable trade income. This leads to a situation where municipalities are rejecting solar energy projects, despite available capacities in the area. This is another challenge for German politicians.

Offshore wind

The Federal Network Agency for Electricity, Gas, Telecommunications, Post and Railway (BNetzA) published a position paper on 2 October 2009, clarifying the issue regarding

the obligation to connect German offshore wind parks to the transmission grid.

According to the Energy Industry Act, Transmission System Operators are obligated to connect RE facilities to the grid. Given that some €1.1b of investment is required, grid operators (E.ON for the North Sea and Vattenfall for the Baltic Sea) are hesitant to provide the grid connections. Evidence is sought regarding the viability of the offshore projects. On the other hand, developers faced difficulties obtaining funding from financing parties who required proof of grid connection to assess the project's progress. As it is unclear under which criteria an offshore wind park can assume to be connected, project developers were in the limbo, which caused delays to some developments.

The position paper now provided by BNetzA clarifies this situation and provides the following four criteria:

1. A permit for the construction or the confirmation from respective authorities that the required permits will be issued
2. A reasonable construction time line
3. A sea bed subsurface investigation to be considered for the assessment of the grid connection
4. Contracts evidencing that wind turbines have been ordered; and a binding credit commitment for wind turbine financing or a letter of intent regarding the ordering of key components

Based on this new position paper from BNetzA, it can be hoped that this "chicken and egg" situation can be resolved and that fundraising for offshore wind parks will be eased on this basis.

Alpha Ventus

On 12 August 2009, for the first time offshore wind power flowed from the North Sea to the German power grid. A consortium of EWE (47%), E.ON (26.5%) and Vattenfall (26.5%), has now successfully started up, adjusted and regulated electricity generation for six "M5000 Areva Multibrid" and another six repower M5 wind turbines at the Alpha Ventus wind farm.

The experience gained in the adjustment phase has been viewed by the other 14 offshore wind projects in the North Sea and 4 in the Baltic Sea with great interest and will have further implications on their project planning. It is not an adjustment phase but a "pilot phase".

Contact:

Dr. Frank Matzen
Tel: +44 20 7951 0331
Email: fmatzen@uk.ey.com

Dr. Florian Ropohl
Tel: +49 40 36132 16554
Email: florian.ropohl@de.ey.com

Country focus – India

Feed-in tariff

Ranking	Issue 23	Issue 23
All renewables index	4	4
Long-term wind index	4	4 ¹
Near-term wind index	3	3

Source: Ernst & Young
1. Joint

Ahead of the Copenhagen conference on climate change, the Indian government is likely to announce a 15% target for new energy capacity addition from renewable resources by 2020. The National Solar Mission aims to make India a global leader in solar energy. It envisages installed solar generation capacity of 20GW, 100GW and 200GW in 2020, 2030 and 2050 respectively. The government is expected to allocate INR850b to INR1,050b (€11.9b to €14.7b) to support the mission which aims to add one million green jobs by 2020.

The "Indian wind energy outlook, 2009" prepared jointly by the Global Wind Energy Council (GWEC) and the Indian Wind Turbine Manufacturers Association (IWTMA) considers that wind energy can provide up to 24% of the country's power needs by 2030. It can also attract INR475b (€6.65b) of investment annually, create over 200,000 million green-collar jobs and reduce 5.5 billion tonnes of carbon.

DLF Ltd, India's largest listed real estate developer, is in talks with Europe-based GDF Suez and Akuo Energy to sell its wind energy business. DLF hopes to raise at least INR9b (€126m) from the sale.

BP Plc has sold its wind power interests in India as it intends to focus on its wind energy portfolio in the US. Green Infra Limited has purchased BP's subsidiary, BP Energy India Private Ltd, which operates three wind farms in India with a capacity of 100MW.

Central Electricity Regulatory Commission (CERC), the central power sector regulator in India, has announced tariff guidelines for RE sources, which are expected to accelerate the sector's development. Base pretax Return on Equity (RoE) for all renewable projects has been set at 19% for the first 10 years and 24% thereafter.

North Indian state of Haryana has the highest fixed tariffs in the country. The state government has signed a MoU with private investors for generation of 215 MW RE electricity with a INR10bn (€140m) investment.

Suzlon Energy intends to double the capacity of its recently launched 750 MW wind farm in the Kutch district of Gujarat. Suzlon has already inked a INR50b (€700m) MoU with the state government to boost the facility's capacity to 1.5GW over two years.

CLP Group will build a 99MW wind farm at Theni in Tamil Nadu. With this investment, CLP India expands its wind energy portfolio to 450MW and raises the group's total renewable investments to more than 1,300MW.

Indian Veer Energy and Infrastructure Ltd intends to develop a wind power pipeline with a combined capacity of 200MW in Gujarat with an investment of INR12b (€168m). It will involve the purchase of land, foundation work and installation of wind turbines as well as commissioning.

Gujarat is planning to acquire 12,000 to 15,000 acres of waste land to set up a 3GW solar power complex. The state government of Gujarat hopes to complete the land procurement for its giant solar project by the end of this year. The Clinton Foundation is set to help the state's government source funding for the US\$10b (€140m) project and to bring in manufacturers and power generators.

North Delhi Power Ltd (NDPL) intends to develop a solar project with 50 to 100MW capacity in Rajasthan. NDPL is in talks with the Rajasthan government and electricity board about the project, including the power tariff and transmission costs.

French nuclear power major Areva and US RE group Astonfield will invest €100m to build 10 biomass power plants of 10MW each in India. Astonfield will fund 60% of the project costs, while Areva the remaining 40%. The construction works are due to begin in the fourth quarter of 2009 in West Bengal.

GE Energy, a unit of General Electric Company, will build a 450MW wind turbine manufacturing plant in South India. The facility, scheduled for operation in the second half of 2010, will make 1.5 XLE-type turbines, which GE deems most suitable for India's low wind level. GE Energy considers the move will allow access to a larger sourcing base from India for critical items including blades, towers, gear boxes, castings and forgings.

Contact:

Sudipta Das
Tel: +91 33 6615 3400
Email: sudipta.das@in.ey.com

Country focus – Portugal

Green certificate

Ranking	Issue 23	Issue 22
All renewables index	10	10
Long-term wind index	11	11
Near-term wind index	10	10

Source: Ernst & Young

Portugal has set RE policy objectives for 2007-20 as follows:

- ▶ Increase installed capacity by 100% – from 14.4MW (2007) to 28.4MW (2020)
- ▶ Achieve competitive energy costs – through promotion of wind-water projects, reduction of RES technology costs, and investments in energy efficiency
- ▶ 60% of electricity consumption to be supplied by renewable sources – currently 43% of electricity is generated from renewable sources
- ▶ To limit CO² emissions to 7.6 tons per capita – the most ambitious CO² target in the EU

EDF Energies Nouvelles jointly operates the Alto Minho I wind park (Europe's largest wind farm) with 120 turbines (240MW total capacity). It has an annual forecast production of 530GWh – capable of supplying 160,000 homes.

The Amareleja Solar Power Station operated by Acciona Energy in Moura is the world's largest photovoltaic station. With 2,520 azimuthal solar trackers (each with 104 panels) this station has the capacity to produce 93,000MWh per year.

Portugal also hosts the world's first commercial wave energy project. September 2008 saw the wave park open in Aguçadoura, Póvoa do Varzim, Northern Portugal. The three Pelamis energy converters (with 2.25MW installed capacity) located 5km offshore aim to supply energy to 1,500 homes.

Martifer Renewables has agreed to acquire Parque Eólico Penha da Gardunha (PEPG), a Portugal-based operator of wind farms, from Enersis for a total consideration of €7.5m. PEPG currently holds a 25% interest in Ventiveste SA, a Portuguese wind energy consortium, and with this acquisition Martifer will hold a 56.6% share.

Babcock & Brown sold its majority stake (78%) in the pioneering wave power project in Portugal developed by Companhia de Energia Oceanica. The stakes were bought by Portuguese power company, EDP, and a Portuguese electronics and industrial products firm, EFACEC, in a deal worth €2.5m. With the new shareholder structure: EDP (52%), EFACEC (25%) and the Scottish company Pelamis Wave Power (23%), the consortium is hoping to repair the Pelamis devices, that have been out of the water for 10 months now due to technical problems. By 2011, the consortium intends to implement the second phase of the project with Pelamis II, with firstly a pilot version of only one machine. Depending on the level of success achieved, the full two dozen power rigs with 21MW of potential capacity may be implemented.

Following the insolvency of Qimonda AG announced in January 2009, a consortium of Portuguese industrial companies, banks and investment funds had planned to take over Qimonda's interest in Itarion, a solar PV cell manufacturing joint venture launched with Centrosolar Group. Itarion was classified as a project of national interest. However, in August 2009 Centrosolar concluded that the direction taken by negotiations ruled out the success of the project, and Itarion was filed for insolvency. The remaining parties to the consortium (now with an Angolan Bank) lead by DST Renewables have presented a new project to manufacture solar PV cells panels, taking advantage of the previous Qimonda facilities and their technical expertise.

Contact:

Isaac Vaz
Tel: +351 217 912 231
Email: isaac.vaz@pt.ey.com

Jose Gonzaga Rosa
Tel: +351 217 912 232
Email: jose.gonzaga-rosa@pt.ey.com

Florbela Lima
Tel: +351 217 949 341
Email: florbela.lima@pt.ey.com

Country focus – Ireland

Feed-in tariff

Ranking	Issue 23	Issue 22
All renewables index	12	11
Long-term wind index	10	10
Near-term wind index	11 ¹	11 ¹

Source: Ernst & Young
1. Joint

In recent weeks the European Investment Bank announced up to €300m in soft loans for an interconnector between Ireland and the UK, while a further allocation of up to €200m was approved for development of renewable energy businesses – principally wind farms – by the Electricity Supply Board (ESB), Ireland's state-owned electricity provider.

The investment is to promote the development of offshore and onshore wind energy production in Ireland, which at present is only realizing a fraction of its potential in this area. The longer-term view is that Ireland will have vast excess capacity of wind energy, which it can sell on to the European markets through the interconnector.

The Republic of Ireland's government has awarded planning permission for a 500MW power link to Wales that will run via a 260km cable beneath the Irish Sea. The announcement comes just two weeks after EirGrid secured consent for an electricity converter station near the Welsh coast. The east-west interconnector developed by EirGrid will enable two-way power transmission between the two nations by 2012. The £539m (€603.7m) link will carry electricity to supply up to 300,000 homes.

Ireland's Minister for Communications, Energy and Natural Resources, Eamon Ryan said, "The scheme will allow us to import electricity when required from the UK market. More importantly it will mean that we can export our electricity to the UK."

BGE has announced a €1.8m deal with UK-based Ceres Power to provide small-scale Combined Heat and Power (Micro-CHP) products to the residential market. These Micro-CHP products are based on state-of-the-art fuel cell technology and operate on natural gas. Development and trialling of the products in Ireland and Northern Ireland is expected to begin in 2010 with a full market rollout in 2012.

BioPower Group Plc (BioPower) is a bioenergy and organic waste management company, which has developed a system to convert organic waste to energy (BioPower System 6) combining a number of existing technologies in a unique integrated cycle. BioPower plans to build 30 BioParks® strategically located across Britain and Ireland.

BioPower also recently commissioned a report entitled *The BioPower Report: Renewable Energy Generation and Renewable Resources in Ireland*. The main findings of this are that Ireland has an abundance of RE and that a combination of these renewable energies can give Ireland a totally secure, dependable and predictable energy supply.

Ten Irish firms are to be granted a total of €4.3m in funding to boost ocean-based hydropower projects. The cash will be distributed by government-funded Sustainable Energy Ireland (SEI). "The Atlantic ocean provides an untapped source of RE and gives Ireland a unique advantage in the development of ocean energy technology," SEI CEO Owen Lewis said. Individual company grants range from €20,000 to €2m.

Irish tidal RE company OpenHydro has been awarded a grant of up to €2m under SEI's Ocean Energy Prototype Research & Development Programme. The grant will go toward OpenHydro's design and development costs of its next generation €16m Open-Centre Turbine, Subsea Base and Installation Barge used in the deployment of OpenHydro's technology.

Swedish electricity company Vattenfall has announced a joint venture with Irish wave-energy company Wavebob aimed at commercializing the wave energy produced by the oceans around Ireland. Together, the two companies have formed Tonn Energy, which is among one of the first commercial wave power-development companies to be established in Ireland.

Kedco, an Irish-based green energy group has raised €2.6m from a share placing with a number of investors. Kedco said the new funds would be used to develop opportunities for joint ventures which it had already identified. The investors include the directors of the company.

Kedco also said Enterprise Ireland (the Government agency responsible for the development of the Irish indigenous business sector) had agreed to subscribe €500,000 for shares in Kedco Power Ltd, a wholly-owned subsidiary of Kedco. The company, which is listed on London's AIM market, is focused on energy production in Ireland and the UK.

A Cork-based company has secured funding of €230,000 from Sustainable Energy Ireland (SEI). The funding boost follows successful completion of trials to test the company's wave power technology at an offshore site in Galway Bay. The company plans to generate a further €20m in funding over the next five years to commercialize the product for use in the Irish and overseas markets.

Contact:

Maurice Minogue
Tel: +353 21 4805 762
Email: maurice.minogue@ie.ey.com

Country focus – Poland

Green certificate and feed-in tariff

Ranking	Issue 23	Issue 22
All renewables index	15 ¹	15 ¹
Long-term wind index	16 ¹	16 ¹
Near-term wind index	14 ¹	14 ¹

Source: Ernst & Young
1. Joint

Wind farms with a 12GW total capacity are currently under development in Poland, of which (according to the TSO) only 8GW will be able to be connected to the power grid.

Poland's wind power cumulative installed capacity exceeded 600 MW (624 MW in August 2009), which is approximately 2% of the total capacity installed in Poland. Poland has 253 wind installations.

A report on wind energy prepared in July 2009 (by Milward-Brown SMG/KRC) provides the following information:

- ▶ The majority of companies (45%) finance their wind farm investments internally. Only 16 % declared they would take advantage of EU or Polish investment support funds.
- ▶ The declared average cost of 1MW of installed capacity in a wind farm is €1.3m.
- ▶ The investment process took on average four to five years.

The National Fund for Environmental Protection and Water Management accumulated PLN 2.3b (€0.5b) in penalties from entities not meeting the required share of green energy sales. However, due to overcomplicated administrative procedures, most of the money has not yet been reallocated to support initiatives such as RES investments.

The Ministry of Economy prepared an amendment to the ordinance concerning the electricity and heat generation from RES. Biomass materials will now include grain from agricultural crops. The grain has to be below the EU intervention purchase quality standards. The proposal prompts controversies but similar solutions have already been adopted in certain countries (USA, Finland and Sweden).

In another proposed amendment to the Polish Energy Law Act, the Ministry of Economy wants to grant the production of agricultural biogas the same green certificates as for the electricity production by other RE sources.

During Q3 2009, project activity in Poland has mainly involved wind farm development. However, biogas installations have started to compete with wind farms for investment funding.

ENERGA and Lignite Mine Adamów signed a letter of intent to jointly construct and operate wind farms on the decommissioned lignite mine sites. The projected installed capacity is 80 MW and is due to start operation in 2012.

Elektrownia Połaniec (GDF Suez member) bought a 30% share of Beta from Polish Energy Partners. Beta is constructing a wind farm in Jarogniew/Mołtowo, Zachodniopomorskie. The total net transaction amounted to PLN4.7m (€1.1m).

A Danish company, Nordex, wants to invest €60m in the construction of 15 wind turbines (2.5MW each) in Orla county (Podlaskie). The construction is to begin in 2010.

The largest energy company in Portugal, EDP Group, secured a refinancing loan of PLN360m (€86m) from the European Investment Bank for its first project in Poland. The loan will finance half of the wind farm project in Margonin, which will be the largest wind farm in Poland. Neolica Polska (of the EDP Group) has already built 20 wind turbines (2MW each). The project is to have 60 wind turbines totaling 120MW.

A private investor (who owns Polish company J.W. Construction) declared he would use the land he owns in the Nowogard county (Zachodniopomorskie) to construct 100 wind turbines (2.3MW each). The investment is to cost approximately PLN 1b (€230m). If constructed, this would be the largest wind farm project realized so far in Poland.

It is estimated that 3,000 biogas production installations could be constructed in Poland (with 0.1MW-3MW capacity). At present, only five biogas installations are operating and more than a dozen such projects are under construction. Projects often face delays due to problems with administrative procedures.

Kopex prepares to launch its first biogas installations in Rzeszyce and Zalesie (1MW each) with planned electricity generation in Q4 2009. In 2010, Kopex plans to construct an additional four such installations with a goal of 30 installations over five years, with each costing PLN20m (€4.7m).

In August 2009, Agrogaz Sp constructed the largest biogas installation (Schmack Biogaz AG) in Poland (with a capacity of 2.1MW) in Liszków. The installation is to be further developed to reach a 3MW capacity. In September 2009, the company started building another 1.8MW installation in Świecie. It also plans to start the construction of a larger 3.2MW installation in Kruszewica for Q2 2010. The company estimates that it will be able to realize four to eight similar projects annually.

Contact:

Kamil Baj
Tel: +48 23 557 8855
Email: kamil.baj@pl.ey.com

Jacek Rodzeń
Tel: +48 23 557 6234
Email: jacek.rodzen@pl.ey.com

Country focus – Brazil

Tender

Ranking	Issue 23	Issue 22
All renewables index	17 ¹	20
Long-term wind index	21 ¹	21
Near-term wind index	16	15

Source: Ernst & Young
1. Joint.

PROINFA, the Brazilian federal government-backed program, aims to encourage new investments in renewable energy, especially wind farms. Through this program, the government has offered funding options and PPAs with public players. Once projects have obtained guarantees, 80% of Capex funding can be arranged with BNDES, the main public bank in Brazil. Eletrobras, a public energy company, often guarantees the long-term PPA with these new projects.

Brazil's energy plan to 2017 includes calls for 7.3GW of combined generation capacity – wind, biomass and small hydro – driving towards a 2020 target of 10% of consumption to be met by renewable energy.

Fifty-four new wind projects have been contracted with a total installed capacity of 1.4GW if successfully completed. However, investors have found difficulties procuring the related technology. There are few equipment suppliers in Brazil and Capex costs have become unreflective of the projected cash flow for these new investments. Purchasing the equipment from foreign suppliers would not normally be the best option, as public banks usually require locally sourced equipment to approve better funding options. Over six years, only 27% of contracted wind power capacity through PROINFA is operating.

By the end of 2009, the Brazil national energy authority, ANEEL, is preparing a new auction of 13GW of wind power through a long term PPA. There are 441 new projects in this auction, and the success of this process will depend on the parameters to be established by ANEEL.

Contact:

Luiz Claudio S. Campos
Tel: +55 21 2109 1710
Email: luiz-claudio.campos@br.ey.com



Country introduction – South Africa

Feed-in tariff

Ranking	Issue 23	Issue 22
All renewables index	22 ¹	N/A
Long-term wind index	23 ¹	N/A
Near-term wind index	22 ¹	N/A
Long-term solar index	16	N/A

Source: Ernst & Young
1. Joint

The target set in the Department of Minerals and Energy (DME)'s 2003 white paper on renewable energy created significant interest in the South African market and has prompted several potential Independent Power Producers (IPPs) to propose renewable power generation projects.

Subsequent to the 2003 white paper, the DME issued the Renewable Energy Framework (REF).

The aim of the REF is to enable the establishment of new RE generating projects in order to meet South Africa's 2013 renewable energy target of:

- ▶ Biomass above 1MW
- ▶ Small scale hydro greater than 1MW and less than or equal to 10MW
- ▶ Large-scale wind preferably larger than 20MW
- ▶ Concentrated solar power larger than or equal to 20MW

The REF defines that:

- ▶ The renewable energy target of 10,000GWh is to be met by 60% electric and 40% non-electric sources.
- ▶ IPPs are expected to supply 60% of the 6,000GWh electric target.

To encourage investment in renewable energy infrastructure, in March 2009 the National Energy Regulator of South Africa (NERSA) announced the Renewable Energy Feed-in Tariff (REFIT) will guarantee a stable rate-of-return to IPPs.

Under the REFIT scheme, private RE generators will be able to sell electricity at fixed subsidized levels to Eskom, South Africa's electricity utility. The feed-in tariffs would cover four renewable energy technologies, namely wind, concentrated solar, landfill gas and small hydropower.

This incentive yielded positive responses as South Africa's Department of Minerals and Energy said it had received more than 100 renewable energy proposals that could add up to 5,000MW (equivalent to six coal power plants) to the country's energy mix. Of the projects, the greatest interest related to wind energy (45% of proposals), biomass (34%) and hydroelectric power (8%).

In October 2009, NERSA approved phase II of the feed-in tariffs, which provided further optimism particularly for solar investment. The 20-year guarantee at rates comparable to Europe's top solar markets could be enough to generate attractive returns at relatively high discount rates. While the approved tariffs are valid for 2009, it is not clear how will they decline over the years.

Excluded from phase II are wave, tidal and geothermal technologies, regarded as not commercially viable at present. CPV, was also excluded due to "high economic cost," according to NERSA.

The REFIT scheme, structured in combination with other incentive mechanisms: Clean Development Mechanism (CDM), Tradable Renewable Energy Certificates (TREC)s, grant financing and premium power purchase prices have successfully encouraged the development of several projects such as the Bethlehem hydropower project, Darling wind farm and Nelson Mandela Bay Renewable Energy Project.

In terms of resource quality, South Africa's wind resource can be described as moderate with the East and West Coast regions having an average resource of approximately 4 to 6m/s per annum at a 10m hub height or 6 to 8 m/s at 50m. The wind is highly seasonal and varied, resulting in relatively low average capacity factors between 15% and 25%, though some higher capacity factor sites exist.

South Africa experiences some high levels of solar radiation. The average daily solar radiation in South Africa varies between 4.5 and 6.5 kWh/m²/day, with several excellent areas such as Upington, with 8.2 kWh/m²/day.

For small hydro, South Africa has an installed capacity of 34MW. In the short term, the potential for developing more of this resource is firmly established at 69MW with an additional long-term 94MW of identified resources.

South Africa's biomass potential can be divided into three groups, that of wood, agricultural and grass feedstocks. Estimates indicate that there is potentially 1.26 billion GJ of energy available annually from biomass feedstocks. Biomass energy could thus theoretically provide 50 % of the national demand. Recent developments have also seen implementation and development of landfill gas projects.

Contact:

Norman Ndaba
Tel: +27 11 772 225 3294
Email: norman.ndaba@za.ey.com

Country introduction – Czech Republic

Feed-in tariff and green bonus

Ranking	Issue 23	Issue 22
All renewables index	25	N/A
Long-term wind index	25	N/A
Near-term wind index	24	N/A
Long-term solar index	12	N/A

Source: Ernst & Young

Current legislative framework in the Czech Republic aims to reach an indicative target of 8% of electricity produced to be from renewable sources in 2010, up from 4.7% in 2008.

RE-generated electricity is promoted via a price regulation mechanism where plant operators may choose between a guaranteed feed-in tariff and a green bonus (paid on top of the market price).

The Energy Regulation Office (ERO) determines the feed-in tariff and green bonus for individual technologies used in the generation of renewable electricity for the coming calendar year. Both mechanisms are applicable throughout the operating life of the technologies – currently set at 20 years for main technologies, and 30 years for small hydro.

The Feed-in tariff set by the ERO for the technology at the time of its commissioning is the minimum price throughout its operating life. This price increases by inflation at 2% to 4% p.a. Feed-in tariffs for newly commissioned technology for the following year shall not be less than 95% of the tariff in force for the given technology in the year before ERO recalculation.

The green bonus applicable to the individual technology is guaranteed only for one year because the bonus changes each year, as it is mainly dependent on the market price of electricity.

Profit from sale of RES electricity is exempt from income tax. The fiscal benefit is claimed in the year which the system was commissioned and in the five subsequent years.

Operators of plants that generate renewable electricity are entitled to priority connection to the grid as obligated under Act Nr. 180/2005. RE-sourced electricity are also be transmitted at a priority.

The largest potential lies with wind power and biomass, while investments in solar energy are generally driven by attractive subsidies. Hydro power potential is almost fully utilized.

Feed-in tariffs and green bonuses for RE are set by the ERO for a target 15-year payback period of invested capital. According to current legislation, maximum year-on-year recalculated decrease for newly commissioned technologies is 5%. Yet solar technology prices have declined by more than 40% in recent years due to technological progress and economies of scale. This leads to a situation where the actual average payback period for solar investment is now said to be only seven years discounted.

In response to these developments in solar technology, in November 2009 the Czech government passed an amendment to

the Law 180/2005. The amendment enables the ERO to decrease the tariff for newly commissioned RE technology by more than 5% if the given RE technology has a payback period lower than 11 years in the year when the new tariff is being set by the ERO. This amendment will be put into force from 2011, which means the feed-in tariffs for RE technologies put into operation in 2010 shall still not be more than 5% lower than current tariffs in force in 2009. Moreover, according to the amendment, the ERO can decrease the tariffs for newly commissioned technologies from 2011 onwards only to such an extent as to ensure the 15 years payback period. Other aspects of feed-in tariffs will remain unchanged.

Belgian RE company, Enfinity, signed a contract in May 2009 with developer VGP to place PV panels on the roofs of industrial parks in the Czech Republic. Enfinity plans to install panels with an output of up to 10MW.

The largest Czech PV plant will be completed by the end of 2009 in Vranovská Ves. Total costs will reach CZK 2bn (\$115m) and will contain three power units with 18-20MW of total capacity.

CEZ, Czech Republic's largest RE producer – mainly operating large hydro plants – plans to increase its biomass electricity production to 1 million MWh, tripling its 2008 production.

Teplárny České Budějovice (TČB) received approval in 2009 from the Ministry of Environment for a new biomass combustion power block at Vrátó. The new block should produce an output of 9.6MWe and heating output of 28.2MWt. Annual consumption is anticipated at 84,000 tons of wood chips and pellets.

Wind energy, which has the lowest feed-in tariff is largely opposed by the public and regional authorities who consider it noisy and detrimental to the landscape. As such, it is very difficult to get construction permits for wind plants.

The Stribro municipality rejected the construction of wind plants on their territory in May 2009. This ends CEZ's plans to build the biggest wind park in the Plzensko region. Local residents also opposed the plans.

In August 2009, the first big success for these wind energy disputes occurred when the regional court in Hradec Králové ruled in favour of an investor after initial rejection by Pardubice regional authority, thus setting a precedent.

Contact:

Vladislav Severa
Tel: +420 225 335 411
Email: Vladislav.Severa@cz.ey.com

Štěpán Flieger
Tel: +420 225 335 863
Email: Stepan.Flieger@cz.ey.com

Petra Lukešová
Tel: +420 225 335 765
Email: Petra.Lukesova@cz.ey.com

Feature – wave energy: breaking on the shores of opportunity

Rank ¹	Country	Wave index
1 (1)	Portugal	68
2 (2)	Ireland	65
3 (3)	UK	64
4 (4)	US ²	60
5 (5)	Australia	53
6 (6)	France	53
7 (7)	Canada	48
8 NA	South Africa	47
9 (8)	China	46
10 (9)	New Zealand	44
11 (10)	Norway	43
12 (12)	Denmark	41
13 (11)	Spain	41
14 (13)	Italy	40
15 (15)	Greece	36
16 (14)	Germany	35
17 (16)	Netherlands	30
18 (17)	Sweden	28
19 (18)	Belgium	27
20 (19)	India	22
21 (20)	Finland	20
22 (22)	Japan	18
23 (21)	Poland	17
24 (23)	Turkey	16
25 (24)	Brazil	16
26 NA	Czech Republic	0
26 (25)	Austria	0

Source: Ernst & Young

1. Ranking in issue 22 is in parenthesis.

2. This indicates US states with RPS and favorable renewable energy regimes.

Global resource

Wave energy is a resource found all across the globe with the highest resource being concentrated in the 40° to 60° latitude range north and south and on the western coasts of the major continents.



Wave energy moves along the maturity curve

The global wave energy industry has moved from test tank trials to a race for commercialization. Multiple technology developers seek the first bankable technology – no clear winners have as yet emerged.

Financing device development

Many device developers are now finding that financing to pull their designs through to commercialization is proving challenging. Examples exist of the different routes developers have taken. However the financial crisis has altered the finance landscape and closed some, previously open, doors.

As with technical diversification, device developers have sought out a number of different routes to secure development capital:

- ▶ Venture capital/private equity: Oceanlinx has been through multiple private funding rounds.
- ▶ IPO: OPT floated on AIM and Nasdaq in May 2007.
- ▶ Strategic partnerships: Vattenfall and Wavebob, Orecon and Eneólica, or Lockheed Martin and OPT have formed strategic partnerships.
- ▶ Project finance: Carnegie have agreed a AU\$250m draw down facility with Investec to support a commercial scale project.

How can the wave sector better prepare for investment?

Investors, especially in the current economic climate, are highly sensitive to risk. The industry therefore needs to address this. This needs to be managed from a business perspective, for example:

- ▶ Technical: Comprehensive due diligence from a recognized technical expert
- ▶ Management: Internal management expertise, in terms of technical know-how, business development and business management
- ▶ Financial: Robust cash flow forecasting, evidence of reliable cash flow control

Another route to reducing project risk would be to harness established infrastructure, such as EMEC or Wave Hub in the UK. Infrastructure risk is a key technical challenge, and therefore those developers who can reduce this will see increased investor interest.

Government support is key

The lure of large generation subsidies might not be enough to bring finance at the crucial commercialization phase. As such, the wave energy sector needs a range of financial support measures, which are relevant to different device developers at their different stages of R&D and testing to allow smooth progression to commercial devices being installed in seas around the globe.

Australia – Minister Ferguson’s interview with Ernst & Young

In September 2009, Dr. Marc Newson, Cleantech leader for Ernst & Young Oceania, spoke with the Honourable Martin Ferguson AM, MP, Australia’s Minister for Resource and Energy and Minister for Tourism.

Contact:

Dr. Marc Newson
Tel: +61 2 9248 5555
Email: marc.newson@au.ey.com

Marc Newson: The May 2009 budget outlining development of 1GW of new Concentrating Solar Power (CSP) is a welcomed step to rapidly grow renewable energy infrastructure in Australia, but has the interaction of these flagship projects been considered with the recently passed expanded MRET scheme?

Minister Ferguson: The AUD\$1.5b (€930m) Solar Flagships Program announced in the Australian government’s May 2009 budget will provide funding to support construction and demonstration of large-scale solar power stations – both solar thermal and solar PV – in Australia.

The flagships projects complement the expanded Renewable Energy Target (RET) by providing additional support to accelerate the deployment of technologies that are ready for large-scale commercial demonstration. Once commissioned, solar flagships projects will be eligible to create renewable energy certificates under the RET scheme.

Marc Newson: Ernst & Young research indicates that the additional capacity required to meet an extended target is likely to be met by the national pipeline of 14GW to 18GW of wind projects. Is there still scope to modify the new MRET target for more emerging technologies such as large-scale solar or wave energy?

Minister Ferguson: The Renewable Energy Target is a market-based mechanism, and as such, it is likely to bring on the most mature, market-ready technologies, particularly in the early years of the scheme.

As you have indicated, this means that we are likely to see significant amounts of wind generation come on-line, as well as other mature renewable technologies such as biomass. However, because of the sheer size of the target, we expect the RET will bring on a range of other technologies such as solar and geothermal.

Other Government initiatives within the AUD\$4.5bn(€2.8b) Clean Energy Initiative support the research, development and demonstration of large-scale solar, geothermal and wave energy. This funding support will help drive down the cost of emerging technologies so they can compete with more mature technologies under the expanded RET.

Marc Newson: Back to the 1GW Solar flagship projects, have you considered the tendering process for these projects? For example, will projects integrating CSP and CCGT infrastructure as hybrids be viewed with different criteria to stand-alone CSP projects?

Minister Ferguson: The Clean Energy Initiative, including the AUD\$1.5b (€930m) Solar Flagships Program is a major undertaking and one that has attracted international interest.

All matters relating to the design of the Solar Flagships Program are currently under consideration by the government.

Marc Newson: Equally, there is a very large skill and materials pull by areas such as India and the Middle East; how do you plan to position the Australian projects ahead of these to secure these essential resources?

Minister Ferguson: Australia is well-positioned in key parts of the industry-development chain, particularly technology development, financing, project management, engineering, construction, and operations. There is currently a global glut in some component manufacturing, with the establishment of new facilities in low cost locations such as China. This is hurting established manufacturing operations in places such as Germany, but is good for Australia in keeping downward pressure on project costs.

Marc Newson: One of the very interesting technical capabilities of CSP is the ability to employ heat-storage materials and generate an almost baseload level of power, which comes with an additional cost. What might this value of base load power be above more intermittent supplies?

Minister Ferguson: Australia operates a competitive wholesale generation market which values generation in line with its ability to meet demand. Given that solar is well-correlated to demand peaks, it should be able to take advantage of higher price periods. As the Carbon Pollution Reduction Scheme (CPRS) makes coal and gas more expensive, that will also make solar baseload power increasingly competitive in all price bands.

Marc Newson: On the subject of renewable energy and intermittency, one of the perception risks with renewable energy is the intermittency and associated energy fluctuations associated with significant amounts of renewable energy. What is the government doing to mitigate this risk?

Minister Ferguson: The government is aware that significantly increasing the level of renewable energy generation, particularly from intermittent sources such as wind, may pose challenges for our electricity network stability.

This is why the Ministerial Council on Energy (MCE), comprising commonwealth as well as state and territory energy ministers, has already implemented a range of initiatives to manage increasing levels of wind generation. These include new information disclosure requirements, technical standards for wind generation, and new market rules to support the Australian Energy Market Operator (AEMO) better manage the network at times of high wind generation.

The Australian government has also funded the development of the Australian Wind Energy Forecasting System (AWEFS), which was implemented in October 2008. The AWEFS will enable AEMO to better forecast wind generation in Australian power systems and help maximize wind's contribution to abating greenhouse gas emissions.

The MCE has commissioned a review by the Australian Energy Market Commission (AEMC) to assess the current energy market framework and determine whether any amendments need to be made in light of the expanded RET and CPRS.

Arrangements within the National Electricity Market (NEM) already make provisions for sufficient reserves to be available in order to meet the required standard of supply reliability across the NEM. The NEM reliability standard requires adequate generation capacity to be in place and sufficient transmission capacity, to match supply and demand at all times, including under a range of credible contingencies. This is sensible energy market management and predates the growth of intermittent generation in Australia.

The government is also supporting the development of promising baseload renewable technologies such as geothermal and solar thermal.

Marc Newson: There appears to be a financing gap between AUD\$200m to AUD\$350m (€124m to €217m) for the CSP projects that Australia is planning to build. Apart from a local utility company, what sort of investor is being encouraged to participate in solar flagships, and what is the planned timing around this?

Minister Ferguson: All matters relating to the design of the Solar Flagships Program are currently under consideration by the government. One thing is certain – the program will have very high levels of accountability. The adequacy of financing will only be determined by testing the market.



Commentary: guidance notes

Long-term index

As stated on page 2, the individual technology indices, which combine to generate the all renewables index are made up as follows:

- ▶ Renewables infrastructure index – 35%
- ▶ Technology factors – 65%

These guidance notes provide further details on the renewables infrastructure index and the technology factors.

Renewables infrastructure index

The renewables infrastructure index is an assessment by country of the general regulatory infrastructure for renewable energy. On a weighted basis, the index considers:

- ▶ Electricity market regulatory risk – 29%: markets that are fully deregulated score higher, as they have experienced the “market shock” on underlying wholesale prices that this transition may exert. While this may not affect current projects, these effects are particularly important when considering long-term investment prospects.
- ▶ Planning and grid connection issues – 42%: favorable planning environments (low failure rates and strong adherence to national targets) score highly. Grid connection scoring is based on the ease of obtaining a grid connection in a cost-effective manner. The score also takes into account the degree of grid saturation for intermittent technologies.
- ▶ Access to finance – 29%: a market with a mature renewable energy financing environment, characterized by cheap access to equity and good lending terms, will score higher.

This generic renewables infrastructure index is combined with each set of technology factors to provide the individual technology indices.

Technology factors

These are six indices providing resource-specific assessments for each country:

1. Onshore wind index
2. Offshore wind index
3. Solar PV index
4. Solar CSP index
5. Geothermal index
6. Biomass and other resources index

Other renewable energy resources include small hydro, landfill gas, and wave and tidal technologies. Energy from waste is not considered. Each of the indices considers, on a weighted basis, the following:

1. Power offtake attractiveness – 19%: this includes the price received, the potential price variation and length of PPAs granted. Higher scores are also achievable if a government guarantees the power offtake rather than merchant offtakers.
2. Tax climate – 11%: favorable, high-scoring tax climates that stimulate renewable energy generation can exist in a variety of forms and/or structures. The most successful incentives and structures have been direct RE tax breaks or brown-energy penalties, accelerated tax depreciation on RE assets and tax-efficient equity investment vehicles for individuals.
3. Grant/soft loan availability – 9%: grants can be available at local, regional, national and international levels and may depend on the maturity of a technology as well as the geographical location of the generating capacity. Soft loans have historically been used in pioneering countries of RE technologies to kick-start the industry. High scores are achieved through an array of grants and soft loans.
4. Market growth potential – 18.5%: this considers current capacity compared to published targets. Higher scores are given if ambitious targets have been set and a policy framework is in place to accelerate development. The realism of targets is taken into account as well as the seriousness with which they are being pursued (i.e., penalties in place for noncompliance).
5. Current installed base – 8%: high installed bases demonstrate that the country has an established infrastructure and supply chain in place, which will facilitate continued growth and, in particular, encourage the repowering of older projects.
6. Resource quality – 19%: examples of this are wind speeds and solar intensity.
7. Project size – 15.5%: large projects provide economies of scale and a generally favorable planning environment, which facilitates project development financing.

Near-term wind index

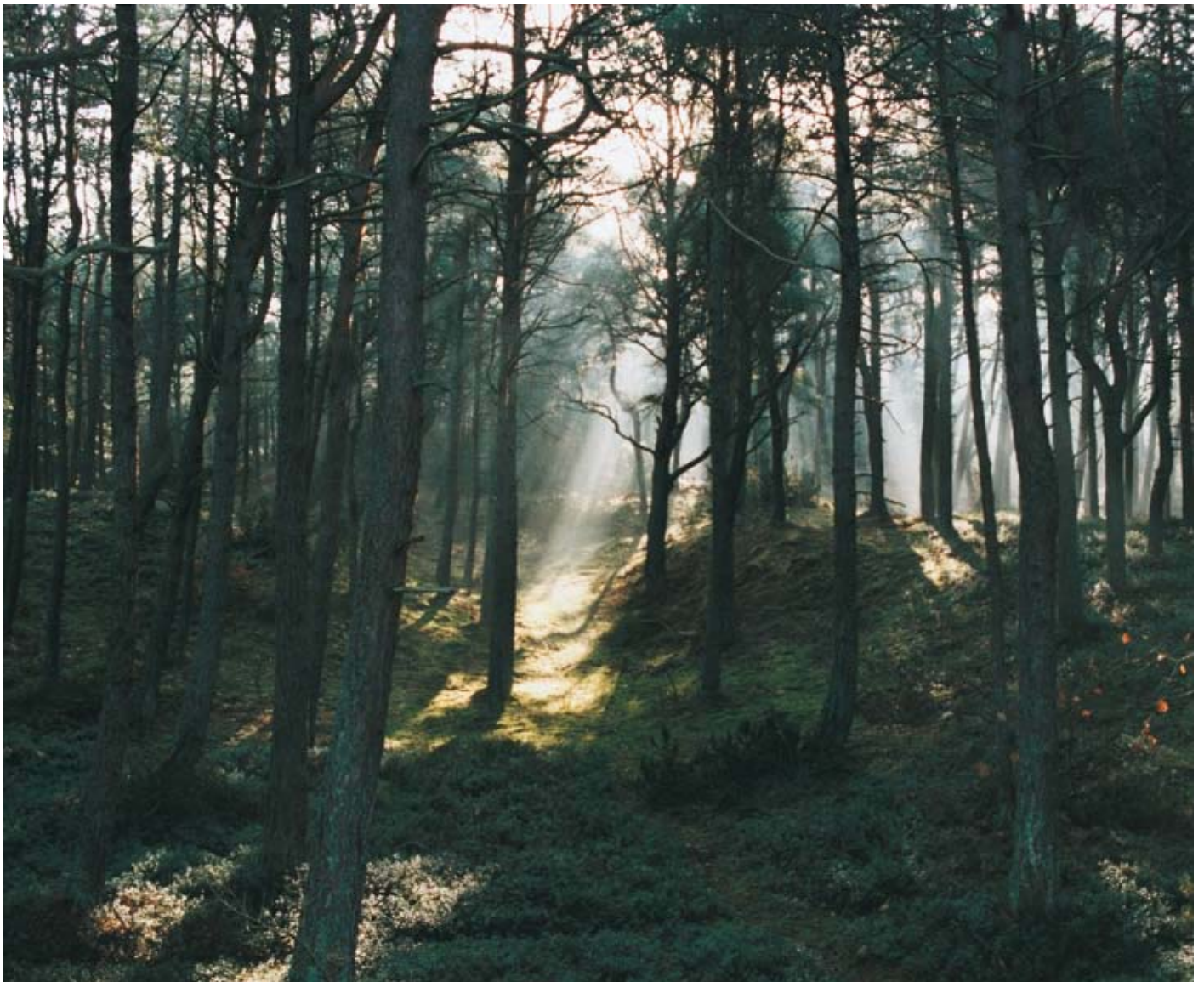
As stated on page 2, the near-term wind index focuses on factors of most immediate concern to near-term investment in wind energy. The scoring follows the same methodology as the long-term wind index, but with a more focused set of parameters and a tailored weighting. Therefore, the indices consider the following, on a weighted basis, for both onshore and offshore wind separately:

- ▶ Power offtake attractiveness – 27%
- ▶ Tax climate – 8%
- ▶ Resource quality – 14%
- ▶ Market growth potential (mid-2009 to mid-2011) – 40%
- ▶ Project size – 11%

In the offshore near-term wind index, countries with no projects estimated to reach construction in the next two years (early 2009 to end 2010) are excluded.

It should be noted that the market growth potential score is based on a view taken of a range of business analysts' forecasts and Ernst & Young's own market knowledge. There is significant variation between analysts' views on each market, and within some markets the variation is greater than in others. The forecasts used are a market view only, and the scores in no way guarantee that the forecasted capacity will be built.

While comparisons have been made between scores in the long-term and near-term wind indices, it should be emphasized that, due to the different weightings and parameters used, these cross-comparisons are of a narrative nature only and by no means indicate any quantitative valuation.



Company index

Company	Page	Company	Page	Company	Page
41 Holdings Ltd	7	Elektrownia Połaniec	17	Nordex	17
A4A SpA	7	Eneólica	21	North Delhi Power Ltd	14
ABB	13	ENERGA	17	Oceanlinx	21
Acciona Energy	15	Energy Conversion Devices Inc	7	Oneworld Energy Inc	7
Adamów	17	Enersis	15	OpenHydro	16
Agrogaz Sp	17	Enfinity	20	OPT	21
Akuo Energy	14	E.ON	13	Orecon	21
Aleo Solar	12	Ersol	13	Parque Eolico Penha da Gardunha	15
Areva	14	Eskom	19	Pelamis Wave Power	15
Astonfield	14	Ethos Green Energy Asset Finance	11	Polish Energy Partners	17
Atlantis Capital fund	7	EverPower Wind Holding Inc	7	Qimonda AG	15
Atlantis Capital Special Situations SpA	7	EVI	7	RenaSola	12
AXA Private Equity	7	EWE	13	Robert Bosch	13
Babcock & Brown Limited	7, 15	Exxon	4	Rockfield Energy Investments LLC	7
Beta	17	First Solar	12, 13	ScanWind AS	7
BGE	16	FPL Group Inc	11	Schmack Biogaz AG	17
BioPower Group Plc	16	GDF Suez	14	Sichuan Chuanghui Shuidian Touzi Youxian Gongsi	7
BP Energy India Pvt Ltd	7, 14	GE Energy	7, 13, 14	Siemens Financial Services	7, 13
BP Plc	14	Green Infra Ltd	7, 14	Siemens Project Ventures GmbH	7
Carnegie	21	Guangxi Guiguan Electric Power Co Ltd	7	Solar America LLC	11
Champion Wind Energy Investment and Management	7	Holding Energies Renouvelables SAS	7	Solar Integrated Technologies Inc	7
China Datang	12	Iberdrola Renovables	11	Solar Millennium AG	7
Centrosolar Group	15	IDFC Private Equity	7	Solar Trust of America LLC	7
Century Profit Investments Ltd	7	Imperative Energy Limited	7	Sumitomo Corporation	7
Ceres Power	16	Indian Veer Energy and Infrastructure Ltd	14	Suntech Power Holdings	11
CEZ	20	Invenergy Wind LLC	7	Stanton Wind Energy LLC	7
Cleantech America Inc	7	Investeq	21	Stadtwerke Muenchen GmbH	7
CLP Group	14	Itarion	15	Suntech	13
Clydesdale Ventures LLC	7	J.W,Construction	17	Suzlon Energy	14
Companhia de Energia Oceanica	15	Kallista Energies Renouvelables	7	Teplárny České Budějovice	20
CWC Wind Power	7	Kallista France	7	Terra Firma Capital Partners Ltd	7
Datang New Energy	12	Kedco	16	The Arava Power Company	7
DLF Ltd	14	Kopex	17	Tonn Energy	16
DST Renewables	15	Lockheed Martin	21	Vattenfall	13, 16, 21
Ecostream Italy Srl	7	MAN Ferrostaal Inc	7	Ventiveste SA	15
EDF Energies Nouvelles	15	Martifer Renewables	15	VGP	20
EDP	15, 17	Meridian Energy Limited	7	Wavebob	16, 21
EFACEC	15	Morphic Technologies AB	7	WPD AG	7
EirGrid	16	Neolica Polska	17	Yingly	13
Eletrobras	18	Nord-Trondelag Elektrisitetsverk	7		
Elektroprivreda Crne Gore AD Niksic	7				

Glossary

Abbreviation	Definition
AEMC	Australian Energy Market commission
AEMO	Australian Energy Market operator
AWEA	American Wind Energy association
AWEFS	Australian Wind Energy Forecasting System
ANEEL	Brazilian electricity regulatory agency
BNDES	Brazilian development bank
BWEA	British Wind Energy Association
CAI	Country attractiveness index
CCGT	Combined cycle gas turbines
CHP	Combined heat and power
CSP	Concentrated solar power
CPRS	Carbon Pollution Reduction Scheme
DOE	Department of Energy
DME	Department of Minerals and Energy
EIB	European Investment Bank
ERO	Energy Regulation Office
ETS	Emissions trading scheme
EMEC	European Marine Energy Centre
EUA	EU emission allowance
FDP	Free Democratic Party
GBI	Generation based incentives
GC	Green Certificate
GW	Gigawatt
IEA	International Energy Agency
IPP	Independent Power Producers
JI/CDM	Joint implementation/clean development mechanism
KW	Kilowatt
M&A	Mergers and acquisitions
MCE	Ministerial Council on Energy
MIT	Ministry of Industry and Trade
MRET	Mandatory Renewable Energy Target
MoU	Memorandum of understanding
MW	Megawatt
MWh	Megawatt hour
NaREC	New and renewable energy centre
NEM	National electricity market
NERSA	National Energy Regulator of South Africa
NIMBY	"Not in my backyard"
OEM	Original equipment manufacturer
PPA	Power purchase agreement
PSE	Polskie Sieci Elektroenergetyczne
PROINFA	Programme of incentives for alternative electricity sources

Abbreviation	Definition
PV	Photovoltaic
RE	Renewable energy
REF	Renewable energy framework
REFIT	Renewable energy feed-in tariff
RES	Renewable energy source
RET	Renewable Energy Target
ROC	Renewables obligation certificate
RPS	Renewable portfolio standard
SEI	Sustainable Energy Ireland
TSO	Transmission system operator

Ernst & Young Renewable Energy Group

With a dedicated 50-strong team of international advisors operating from our UK member firm – supported by a network of over 65 experienced professionals from our member firms worldwide – Ernst & Young's Renewable Energy Group helps clients to increase value from renewable energy activity. Members of the group provide advice and services in the following areas:

- ▶ Financial advisory and valuation
- ▶ Financial modeling and structuring
- ▶ Taxation
- ▶ Finance raising
- ▶ Asset value optimization
- ▶ Market entry strategy
- ▶ Procurement strategy
- ▶ PPA tendering
- ▶ Feedstock strategy
- ▶ Transaction support
- ▶ PE advice
- ▶ IPO advice
- ▶ JI/CDM financing
- ▶ Strategic partnering
- ▶ Strategy review
- ▶ Technologies
- ▶ Onshore and offshore wind
- ▶ Biomass
- ▶ Biofuels
- ▶ Energy from waste
- ▶ Wave and tidal
- ▶ Solar
- ▶ Fuel cells
- ▶ CHP
- ▶ Landfill gas
- ▶ Hydro
- ▶ Carbon capture and storage

Contact

For further information on our services and for future copies of the indices, please visit our website www.ey.com/renewables or contact:

Ben Warren
Partner, Ernst & Young LLP
bwarren@uk.ey.com

Dane Wilkins
Director
dwilkins1@uk.ey.com

Andrew Perkins
Partner, Ernst & Young LLP
aperkins@uk.ey.com

Arnand Bouille
Director
abouille@uk.ey.com

Enquiries to the guest columnist, Jonathan Johns, should be addressed to mtoy@uk.ey.com.

Country attractiveness indices production supported by:

Phil Dominy
Senior Executive, Project Finance
pdominy@uk.ey.com

Sam Reed
Executive, Project Finance
sreed2@uk.ey.com

Tad Fon Kho
Analyst, Project Finance
tkho@uk.ey.com

Ernst & Young

Assurance | Tax | Transactions | Advisory

About Ernst & Young

Ernst & Young is a global leader in assurance, tax, transaction and advisory services. Worldwide, our 144,000 people are united by our shared values and an unwavering commitment to quality. We make a difference by helping our people, our clients and our wider communities achieve their potential.

For more information, please visit www.ey.com.

Ernst & Young refers to the global organization of member firms of Ernst & Young Global Limited, each of which is a separate legal entity. Ernst & Young Global Limited, a UK company limited by guarantee, does not provide services to clients.

The Ernst & Young organization is divided into five geographic areas and firms may be members of the following entities: Ernst & Young Americas LLC, Ernst & Young EMEA Limited, Ernst & Young Far East Area Limited and Ernst & Young Oceania Limited. These entities do not provide services to clients.

© 2009 EYGM Limited.
All Rights Reserved.

EYG no. DE0113



In line with Ernst & Young's commitment to minimize its impact on the environment, this document has been printed on paper with a high recycled content.

This publication contains information in summary form and is therefore intended for general guidance only. It is not intended to be a substitute for detailed research or the exercise of professional judgment. Neither EYGM Limited nor any other member of the global Ernst & Young organization can accept any responsibility for loss occasioned to any person acting or refraining from action as a result of any material in this publication. On any specific matter, reference should be made to the appropriate advisor.

15465.indd (UK) 08/09. Artwork by UKDP.