7th European Conference on Green Power Marketing 2011
The Age of Renewable Energy: Key Strategies of Market Players
The European forum for market players and decisionmakers in the renewable energy industry
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Conference Summary – The State of Green Power

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Green Power Marketing 2001–2011: reading the signs of the times

When on 28 June 2001, the very first *European Conference on Green Power Marketing* in St. Moritz, Switzerland, set out to explore the market potential of green power, it did indeed break virgin ground. Not only was it the first forum to ever broach the topic over such a wide thematic and geographical range, covering the entire value chain from technology, generation and transmission down to distribution and retailing; it also placed itself at an important point in time for the industry. Following the example of British deregulation, many European countries had liberalised their energy markets over the course of the 1990s and thus opened the field for new innovative players and products. In fact, the spearheads of the movement were already pushing the boundaries further by developing elaborate national schemes for the promotion of renewable energies, such as the now famous German Renewables Act of 2000. They were backed, if not prodded, in this by the European Commission. In a 1997 White Paper, the Commission had made 12 % of gross inland energy consumption from renewable energy by 2010 the overall goal for Europe – an objective which would be translated into indicative targets for each member state through the Directive on Electricity Production from Renewable Energy Sources only four months after the conference, in October 2001. The time, obviously, was ripe with opportunity, and Green Power Marketing, together with an impressive line-up of more than 20 international experts from the electricity industry, marketing, the academic world and NGOs, was set to provide the knowledge and contacts necessary to gain competitive advantage in a segment all but certain to develop “From Niche to Mass Market”.

EU targets and national action plans: a definite framework to build on

Ten years later, the prophecy has become a reality. From only a few percent at the beginning of the century, the renewables share in the European energy mix was at 11.6 % in 2009 (EC provisional figures). The somewhat diffuse, but promising, environment in which generation growth was projected at the first conference has meanwhile taken concrete shape. Renewables, to quote **Stefan Nowak**, managing director of NET Nowak Energy & Technology Ltd and moderator of the first session at the *7th European Conference on Green Power Marketing 2011*, have evolved into a “big game” – a game with well defined goalposts, one might add. In 2009, the Renewables Directive 2009/28/EC substituted the indicative targets of its predecessor with legally binding ones, aligning these with the “20-20-20” goals adopted by the European Council in 2007. Since then, the eyes of market players and decisionmakers in Europe have been firmly set on 2020, by which time the triple aim of reducing greenhouse gas (GHG) emissions by 20 % compared to 1990 levels, increasing the share of RES in final energy consumption to 20 %, including 10 % of biofuels in transports, as well as boosting energy efficiency by 20 % needs to be achieved. As required by the directive, the path into the green future was subsequently laid down by each Member State in a National Renewable Energy Action Plan, stating in detail the sectoral targets in electricity, heating and transport; the technology used to reach these targets; the trajectory followed; as well as the measures and reforms undertaken to overcome the barriers currently hampering renewable growth. According to the 27 plans received by the Commission in 2010, the European electricity sector alone will produce 34 % of green power by 2020 – and most of this domestically rather than through cooperation mechanisms with other member states or non-EU countries.

Moving from 2020 to 2050: roadmaps, reports and scenarios

The horizon, however, has opened up far beyond 2020: with the Low-Carbon Economy Roadmap 2050, published in March 2011, the EU's long-term objective has become 80 to 95 % of emission cuts by mid-century. While the Commission, under Danish Presidency, will be working on a corresponding roadmap for energy in 2012, the Intergovernmental Panel on Climate Change (IPCC) has already stated what role it believes renewables could play in keeping GHG concentrations in the atmosphere at the critical 450 ppm level over the next 100 years and so halt global temperature rise at 2° C. Its Special Report on Renewable Energy Sources and Climate Change Mitigation of April 2011 concludes that, given the right enabling public policies, close to 80 % of the world's energy supply could be met by renewables in 2050. This is essentially echoed in the latest scenarios and energy economics models developed under IEA auspices: the World Energy Outlook, Energy Technology Perspectives, as well as Renewable Energy Technology Deployment – all agree that a 450 ppm, or even 400 ppm, world by 2050 is possible and should not generate more than very low to zero transition costs if RE become the dominant energy source by 2030 at the latest. Denmark, according to **Hans Jørgen Koch**, deputy state secretary at the Danish Ministry of Climate and Energy, will even go a step further and abjure oil, gas and coal completely by 2050. The path to fossil fuel independence through 100 % renewables has already been paved by a set of concrete policy measures that in 2020 are expected to have geared the country towards 33 % renewable energy consumption, with 60 % of electricity supplied from green sources. "The Age of Renewable Energy" has evidently arrived.

A close eye on politics to keep track of the market

As the title of the latest event in the series suggests, and an introductory review by Green Power Marketing managing director **Devrim Yetergil** made abundantly clear, it is a great strength and merit of the conference format to have always closely mirrored the latest trends and developments in the segment it represents. Starting with the programmatic "From Niche to Mass Market" in 2001, which, thanks to its great success, was reprised in 2002, the series moved on to evaluate "The Potential of Green Power Trading" in 2004. It was then that, for a first time, international policy trends came to occupy a prominent position in conference design and chronology, migrating from the last session on day two to the very start of the conference. One year later, they even made it into the headline when the *4th European Conference on Green Power Marketing* surveyed "Green Power between Voluntary and Mandatory Markets". Indeed, demand-driven growth and energy trading, as in buying green certificates to meet national quota or to sell with a profit as green power to consumers, have not created the same sort of momentum over the past ten years as did politically mandated support schemes and target-setting at highest, that is, government levels. "The Stepping Stones to Significant Market Shares for Renewables" of the fifth conference in 2007 as well as those tips on how to achieve an "Energy Revolution" in the face of the 2009 financial crisis may thus be seen as much as recipes to harness political (and regulatory) frameworks as they were market information distilled from market experience and tailored to market actors. The supremacy of political will over economic incentive, after all, is at the heart of the "Age of Renewable Energy" and will guarantee a certain level of planning and investment security in its own right. The EU's energy policies are a prime example in this respect. **Tom Howes**, deputy head of the Renewable Energy Policy Unit at the EC's Directorate General for Energy, made a point of stressing in his presentation that all policies on EU-level were "working in tandem to provide a stable long-term framework". Under the Europe 2020 Strategy for smart, sustainable and inclusive growth and its correlates, continued legislative action towards more energy efficiency, a pan-European integrated energy market and transmission network, as well as innovative R&D in energy technology are a safe bet.

Beyond Brussels: national initiatives in nuclear phase-out

One need not climb the political ladder up to EU level, however, to see policy pace-making in action. Case in point: the Fukushima Daiichi nuclear disaster in March 2011. While subscriptions to green power products at Zurich's municipal supplier ewz, for example, peaked only very briefly in the wake of the disaster, weighty and lasting political decisions were taken almost immediately afterwards in

both Switzerland and Germany. Within two and a half months of the accident, the Swiss Federal Council had stopped the licensing procedures for all new nuclear power stations in the country, decided to decommission the existing ones at the end of their technical lifetimes, and initiated an update of the Federation's Energy Strategy 2050 to this effect. The loss in capacity, according to **Christian Schaffer**, who as head of the Swiss Federal Office of Energy's supply section had a lead role in developing the scenarios that informed the Council's decision, will be absorbed by energy efficiency measures as well as a massive build-up in distributed RE and large hydro generation, amounting to almost 27 TWh per year by 2050. Similar events downstream the Rhine River: in a direct response to the Fukushima catastrophe, Germany's conservative government not only unplugged eight of the country's oldest nuclear plants but also backtracked on its earlier ruling to extend the operational life of the entire fleet. With the bill that decreed a phase-out by 2022, a legislative package was passed on 30 June 2011 in the German Bundestag to accelerate the transition "to the energy of the future: reliable, affordable and environmentally sound." At a later point of the conference, **Maike Schmidt**, scientific officer for energy policy at ZSW, Centre of Solar Energy and Hydrogen Research Baden-Württemberg, would pick up on the pithy government phrase to elaborate on the consequences of the political shift in gears for Germany's flagship Renewables Act (EEG), whose amendment, incidentally, was part and parcel of the package.

German EEG amendment: a mirror of what moves the sector

For as much as the EEG has been hailed a success story by its instigators – Germany's green power production has almost tripled since its adoption in April 2000 – and, accordingly, has spawned a long list of imitators worldwide, the recent "Act on the amendment of the legal framework for the promotion of electricity generation from renewable energies", taking effect on 1 January 2012, may very well serve as a starting point for an inventory of the current challenges and priorities in policy-driven RES market deployment across Europe. In the public communications surrounding the reform, the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety lists four principles as guiding the amendment: (i) stepping up RES growth; (ii) improving RES cost efficiency; (iii) accelerating RES market, grid and system integration; as well as (iv) maintaining the basic structures of the act that have already proven successful in delivering these goals. Against the backdrop of ambitious EU target setting, the need for continued growth in RES-E production is self-evident and does not need much further comment. It is interesting to note though that, for a first time, the new EEG text will contain explicit minimum targets, adopted from the government's 2010 energy concept. The renewables share in Germany's gross electricity consumption will then be fixed by law to reach 80 % in 2050, rising in steps per decade from 35 % in 2020 – this last figure is slightly lower than that stated in Germany's National Renewable Energy Action Plan (38.6 %), but nonetheless illustrates how EU executive decisions and actions are increasingly transposed into national frameworks, legal and otherwise.

Support schemes after EGG fashion in Europe: Italy to embrace FITs

There is so far no consistency or coherence among member states, however, as to how to bring about the intended growth. Options range from quota systems, where the government stipulates a certain RES share in generation from suppliers, verified by tradable green certificates, but the market ultimately decides over price, both for certificates and physical power; to feed-in tariffs and premiums, which are government-fixed but leave the market to determine the ultimate quantity of green power produced. If in the EEG amendment, the German legislator wishes to maintain the basic successful structures of the act, meaning by this RE feed-in tariffs and feed-in priority, this, again, can be considered an indicator of a general European trend. Italy, for one, is the latest in a string of countries which have made the switch to FITs, leaving just Sweden among the top five of European RES-E producers (incl. Germany, Spain and France) to rely upon a quota system for support of production. In March 2011, the Berlusconi government introduced a new regulatory framework with decree 28/2011 and IV Conto Energia, which will have all types of RE technology, until now subsidised through either certificates or feed-in premiums, reunited under a common FIT umbrella by 2016. The move,

according to **Felice Egidi**, head of regulatory affairs at Rome-based Enel Green Power, one of the world's leaders in RES-E generation, will for the first time provide "medium to long-term visibility to investors", while ensuring all along that the "burden to Italian consumers is minimised by introducing competitive and cost-reflective incentives". In the case of PV, these latter consist of gradual automatic tariff degression and an overall annual subsidy cap, which, again, likens the Italian reform to the German role model.

Feed-in tariffs – cost-efficiency despite market distortion?

The EEG has been governed from the outset by a concern to adapt tariffs to the so-called "learning curves" of technologies, reflecting a reduction in unit cost by a corresponding tariff decrease. In line with the guiding principle of "cost-efficiency" in the latest amendment, the annual degression for burgeoning onshore wind was hence raised from 1 to 1.5 %, whereas for offshore wind – a technology which is expected to become a main pillar in RES-E supply in the future, but has not yet made its breakthrough – degression was postponed by three years, and the deferral accompanied by a rise in the initial tariff. State-backed revenue security of this kind is meant to counter inexperience and high construction and operation risks, which for offshore wind financings remain "critical success factors" indeed, as **Dominik Thumfart**, head of renewable energy at Asset Finance & Leasing of Deutsche Bank, London, illustrated with his presentation. Notwithstanding their positive role in creating an investor-friendly environment, however, fixed feed-in tariffs are by their very nature distortions of the market – and are considered such by an EU that has been pushing for liberalisation across the continent for about a decade. In the end, markets must be capable of triggering investments on their own, including the capital-intensive, long-lived investments which the transition to a low-carbon energy future will invariably entail. The emphasis on continuity in EU policy-making to assuage investors that Mr Howes took care to highlight in his presentation stems from this rationale, as does a certain reserve on the part of the European Commission towards FITs in general. Mr Howes: "Empirical evidence currently suggests FITs tend to be more cost effective than other instruments."

Achieving 2020: grid integration meets regulatory hurdles

The stakes are certainly high. If the EU 2020 targets are to be reached, investments in the sector have to double from their current level of EUR 35 billion per year. All in all, over EUR 1 trillion will be needed to increase renewable energy production as projected, replace ageing conventional assets, and modernise and adapt existent infrastructure. "Green power needs efficient electricity grids" – and this has its price. The construction of new transmission lines to cope with distributed stochastic generation in the low and medium-voltage range of transmission will by itself require about EUR 100 billion. Interconnecting electricity highways for RES integration along an axis from windy Scandinavia to the sunny Mediterranean will considerably add to this. No wonder then that **Dimitrios Chaniotis**, System Development Manager at the newly founded ENTSO-E, the European Network of Transmission System Operators for Electricity, called for immediate political support in his presentation. ENTSO-E and the 41 TSOs it represents may very well be able to develop elaborate scenarios, plans and methodologies to underpin the forthcoming EU Energy Infrastructure Package, but cumbersome permitting procedures, lacking public support for line construction and inadequate financial frameworks stand in the way of tackling the gargantuan task. To draw the necessary investments in a globalised capital market, a shift towards "real" returns in line with comparable risk profile businesses, and incentives for those tasks actually required of post-unbundling TSOs is needed. **Geert Moelker**, manager for wholesale electricity markets and regulation at the Dutch Office of Energy Regulation, spelled it out more clearly: "Evolvement of (CPI-X) Regulation. Regulation and investments can match."

Flexibility as a key factor in RES system integration

A strong and intelligent grid, built with foresight to accommodate large fluctuating loads, is indeed one of the prerequisites for dealing with renewable sources such as wind, solar and tidal energy, which are

inherently variable and may negatively affect the continuous matching of electricity supply and demand on the grid. However, the “balancing challenge”, as **Hugo Chandler**, senior analyst at IEA’s renewable energy division, went to show, is best addressed in the context of the electricity system as a whole, that is, the interplay of the grid with power markets and system operations. It is here, and only here, that the challenge may be broken down into a simple, solvable equation: variability versus flexibility. The latter is no new concept in power systems management, since swings in demand as well as unforeseen outages on the supply side have always had to be provided for over minutes to days in order to guarantee stable electricity supply. Seen from this vantage point, variable renewables merely put additional stress on the system, necessitating a re-assessment, and possibly optimization, of existing resources, but no megawatt-to-megawatt backup, or worse, consideration of a technical ceiling to deployment. The message is clear: traditional flexibility resources such as dispatchable power plants, storage facilities, interconnections for trade and demand side response, supported in addition by a large, liquid spot market using forecasting and dynamic schedules, are sufficient to balance even high shares of variable renewables. And ever new technologies may be recruited to join in the task. With his presentation of Vattenfall’s new VHP Ready standard for integration of heat pumps and block-type CHP units into a virtual power plant, **Benjamin Maaß**, project manager for decentralised heat generation at Vattenfall Europe Wärme AG, pointed into one such direction. The increasing electrification of the heat sector, combined with smart grid technology, offers new room for balancing operations. Vattenfall expects to have pooled up to 100,000 domestic cogeneration plants by the end of 2011, representing an electric capacity of 50 MW that may flexibly feed into the grid.

Renewables hindering investments? Merit order and flexible backup

While resources to buffer variability are abundant, the question remains as to whether a power system dominated by renewables offers enough incentive for these resources to stay online. Large-scale RES-E feed-in changes load structure significantly. In summer, solar power tends to shave off diurnal peaks; in winter, wind may encroach deep into residual load, thus not only ousting peaker and load-following plants but also reducing full load hours for base-load heavyweights. “Fossil fuels are working hard, but they are managing,” said Mr Chandler – yet, “can they afford to?” Under conditions of RE priority feed-in, such as in Germany, it seems they can’t. Load volatility here directly affects merit order and translates into high price volatility, as **Nicolai Herrmann**, consultant for electricity markets with Berlin-based enervis energy advisors GmbH, demonstrated using sample data from the German EPEX spot market. The German case is particularly revelatory in this regard, as a 2009 ordinance relative to the EEG decreed that TSOs trade all electricity for which tariffs have been paid on the day-ahead or intra-day spot market of an electricity exchange. Experience so far indicates that wholesale prices will plummet whenever nuclear or lignite base load is severely indented by RE feed-in, or they skyrocket instead if peak load does not coincide with increased production. The problem, though, would subsist even in a completely liberalised world with unfettered green power markets because merit order is dictated by marginal cost, and it is renewables, and the variable kind in particular, that deliver energy for almost nil. Highly dispatchable reserves with comparatively high investment and/or operation costs, such as gas or coal cycling plants, cannot compete under these conditions, and in the long run will become uneconomical due to “missing money”. That is why new incentive schemes, such as capacity markets or flexibility premiums, are currently being discussed to ensure sufficient money flows into flexible backup. Simultaneously, all other variability checks in the balancing equation need to be strengthened: large-scale deployment of efficient storage technology, expansion and interconnection of the European transmission net, as well as smart distribution grids and demand-side management. Renewables system and market integration, for all intents and purposes, means transformation!

Market integration: EU politics, cities and utilities in unison

Again, the EEG amendment is a telltale example of how these challenges are dealt with in the policy-making arena. The new optional market premium, for instance, a technology-specific fixed subsidy calculated on the basis of the monthly average spot market price subtracted from the feed-in tariff for

the respective technology, is meant to incentivise operators to adapt their generation to demand, and, in order to do this, invest in adequate storage facilities. A so-called flexibility premium for biogas plants equipped with gas tanks and generators for deferred feed-in, exemption of storage tanks from grid charges, as well as a multi-ministry support programme for storage on the grid serve the same purpose. The gradual move from feed-in tariffs towards premiums, that is, from a fixed tariff instead of the market-based pool price to a fixed-tariff in addition to the pool price, is by no way a peculiarity of Germany; it has been recommended by the EU as one step on the path towards a single, integrated European market for RES-E. Free cross-country trading of green physical power with corresponding proofs, of course, is an eminent and long-standing interest of the industry, too. Drawing from the draft findings of the EURELECTRIC Internal RES Action Plan, **Sam Cross**, advisor at the industry union's Energy Policy & Generation Unit, projected that harmonisation of EU RES support based on tradable certificates would save the EUR 17 billion a year in 2020 and considerably reduce the target achievement costs through RES imports for at least nine individual member states. What is new about this call for Europe-wide trading, however, is the milieu that it comes from. The big market players have always clamoured for a scheme that would allow them to market their amortised assets at best value (and have often been severely criticised for this very reason); yet, the baton, it seems, has been passed on to another, unsuspected stakeholder group: cities and utilities – the "market makers of the moment", as **Bernd Kiefer**, managing director and partner at Fichtner Management Beratung AG Schweiz, put it when introducing the session that was to give them a floor. Theirs is a different situation.

Mandated RES growth sparks municipal interest in Europe-wide market

Working under direct public control and within a geographically limited area of operations, municipal utilities often have to resort to imports and investments in business ventures beyond their jurisdiction to achieve the targets that local political will has dictated. In Zurich, for instance, a referendum of 30.11.2008 charted the course towards a sustainable 2000-watt society not only for the City of Zurich, represented at the conference through **Rahel Gessler**, head of the energy and sustainability division at the department of health and the environment, but also for its utility, ewz. Likewise, Munich's much noted Renewable Energies Expansion Campaign was triggered by a 2006 city council decision that stipulated 20 % of RES-E by 2020. The Stadtwerke München GmbH (SWM), however, made a virtue of necessity in the event and raised the bar even higher, declaring the provision of 100 % of the city's energy needs from renewable sources, or 7.5 TWh per year, their aim for 2025. This will make Munich the first city of over one million inhabitants to ever achieve such goal. From a base of 350 GWh per year in 2007, the utility has already extended its capacities to about 1.2 TWh; another 1.2 TWh worth of projects are in the pipeline. While the focus of construction activity is clearly local (and/or national), plants in Spain and the UK have also been commissioned; others will be partially held through corporate partnerships. Yet, in the fragmented regulatory landscape of today, these assets and their green electricity exist in a way on paper only, as their surplus value cannot always be transferred and marketed on the home turf. Utilities, in consequence, are increasingly joining the crusade for harmonisation. **Florian Bieberbach**, nobody less than the CFO of Stadtwerke München, proved himself to be fighting in the front line. After outlining SWM's ambitious expansion programme, he proceeded to sketch a model of a unified European RES market that SWM saw fit and proper. Combining "the best of the existing systems", RES support in this model would be based on a Europe-wide quota scheme, running on standardised certificates, but supplemented by an optional feed-in tariff. Windfall profits from long-term marginal cost pricing would be curbed through technology banding.

Adding to green value: new contents for green power marketing

As the SWM example shows, compliance with politically set targets, lobbyism and genuine marketing activity, such as image building and branding, converge at utility level. Accountability to both public authority and private economy spawns an innovative marketing mix that could well radiate into the industry. The sales strategy of ewz, for instance, is a decidedly three-pronged one, according to

Romeo Deplazes, head of energy sales. Next to a growing renewables portfolio, customer development with ewz rests upon energy consulting and a gamut of energy efficiency services, geared mostly towards business customers. While this is, and for a long time has been, an integral part of demand-side management for utilities, indispensable indeed for the successful handling of generation and distribution in a medium to low voltage net, there are other motives behind the approach. Incentivising a corporate client to cut their energy use, or contracting an energy-efficient power supply system such as at the conference venue Lake Side (presented in detail by ewz project manager **Mevina Feuerstein**), also answers to a political mandate for awareness-raising, and, more importantly, will lend credibility to corporate claims of responsible governance and sustainability. This holds true for municipally owned suppliers, but also for private ones. **Cordelia Müller**, managing director of ENTEGA Vertrieb GmbH & Co. KG, confirmed that developing products "within the range of energy efficiency for everybody" has become as much a fundamental strategy for Germany's second biggest green power supplier as expanding its traditional RES-E portfolio. In an ever more competitive environment, where everybody has become "a little bit green" and many suppliers start investing in their own renewable production facilities, new features are needed to deliver a unique selling proposition. For ENTEGA, this is carbon neutrality: avoiding, reducing and offsetting carbon emissions. Ten years after the first conference, that is, Green Power Marketing makes the link to climate mitigation. And right so, for the topic is of ever increasing importance to the sector and its dynamics. Not only because it drives international politics. Decarbonisation will directly affect green power market growth and design – through the electrification of heating and transport, as well as through industry carbon caps and emissions trading. The European Conference on Green Power Marketing, as ever, is set to keep track of these developments.

The conferences so far

7th European Conference on Green Power Marketing 2011
The Age of Renewable Energy: Key Strategies of Market Players
6 and 7 October 2011 | Zurich, Switzerland

6th European Conference on Green Power Marketing 2009
The Future of Green Power: Achieving an Energy Revolution in Challenging Times
1 and 2 October 2009 | Geneva, Switzerland

5th European Conference on Green Power Marketing 2007
Stepping Stones to Significant Market Shares for Renewables
13 and 14 September 2007 | Lausanne, Switzerland

4th European Conference on Green Power Marketing 2005
Green Power between Voluntary and Mandatory Markets
6 and 7 Ocotber 2005 | Berlin, Germany

3rd European Conference on Green Power Marketing 2004
The Potential of Green Power Trading
18 and 19 March 2004 | Lausanne, Switzerland

2nd European Conference on Green Power Marketing 2002
With Green Power Marketing from Niche to Mass Market
5 and 6 September 2002 | St. Moritz, Switzerland

1st European Conference on Green Power Marketing 2001
With Green Power Marketing from Niche to Mass Market
28 and 29 June 2001 | St. Moritz, Switzerland