

## Working Towards a Carbon-Neutral Power Sector

An interview with Lars G. Josefsson,  
President of EURELECTRIC<sup>2</sup>

Bucharest (Rumania) was the venue for this year's EURELECTRIC Convention and Conference. Taking as its theme *Electricity Markets 2050 - Smart, Integrated, Carbon-Neutral*, the 15-16 June convention brought together EURELECTRIC's pan-European power industry membership, as well as affiliates and associates from other continents. As in previous years, the IEA was a Co-operating Partner in the event. Since June 2008, Lars G. Josefsson, CEO of Vattenfall AB, has been EURELECTRIC's President. The IEA *OPEN Bulletin* asked Mr. Josefsson about the European electricity industry's views on tackling current challenges and about technology choices for the future.



Lars G. Josefsson,  
President of EURELECTRIC

IEA *OPEN Bulletin* - EURELECTRIC members have made some important collective commitments recently. Could you outline what these entail?

**Lars G. Josefsson**

In Brussels on 18 March, Chief Executives from over sixty European electricity companies accounting for more than 70% of total European power generation handed European Union Energy Commissioner Andris Piebalgs a declaration of their joint commitment to action. They pledged to achieve a carbon-neutral power supply by 2050, to work for an integrated European electricity market that will deliver power cost-efficiently and reliably, and to promote energy-efficient electricity applications as a key part of the solution to the energy-climate challenge. The Declaration underlines a key EURELECTRIC message, namely that the triple challenge of ensuring secure energy supply while reducing emissions of greenhouse gases (GHGs) and promoting economic competitiveness can be met through a broad energy mix deploying all zero- or low-carbon technology options. That means an

---

<sup>1</sup> The IEA [OPEN Energy Technology Bulletin](#) is a free, web-based periodical newsletter published by the International Energy Agency (IEA). Views expressed in *OPEN Bulletin* interviews do not necessarily reflect the views of the IEA.

<sup>2</sup> Visit the [EURELECTRIC website](#).

ongoing role for nuclear power alongside clean-coal technologies such as carbon capture & storage (CCS) and the newer renewable energies (RES), in concert with energy-efficient electro-technologies in key demand sectors.

One of those sectors is road transport. EURELECTRIC is now liaising between power companies, carmakers and equipment manufacturers towards standardising the infrastructure for re-charging plug-in electric vehicles. Broad synergy between electric transport and a carbon-neutral power supply will really help our society to reduce both carbon emissions and fuel import dependency.

EURELECTRIC has now launched a '2050' project, using scenario analysis to quantify aggregate investment requirements towards a carbon-neutral power sector by mid-century and get a handle on costs. Initial results are expected in the autumn.

These are some of the things we are working on with policymakers and stakeholders. But policymakers must ensure that the two major packages of European Union (EU) legislation finalised late last year add up in practice to a coherent EU-wide regulatory framework conducive to these advances. A number of secondary decisions are needed to implement the packages. In particular, work needs to be done to drive forward European electricity market integration, integrate renewable energy into the system and the market, and make sure the new arrangements for the re-vamped Emissions Trading Scheme (ETS) drive in this same direction.

**IEA OPEN Bulletin - At the recent EURELECTRIC Conference in Bucharest, delegates were asked to express their views through an electronic voting system on a number of challenging issues facing the power industry. Could you tell OPEN Bulletin readers their key messages regarding energy technology options?**

**Lars G. Josefsson**

The audience in general wanted to maintain a wide energy mix, and a majority saw nuclear power as the key supply-side technology in the drive for carbon-neutrality and supply security, followed by CCS and RES. However, in the current economic climate, no-one doubts that financing new nuclear power plant will be a real challenge. To roll out CCS, we urgently need a broad pre-competitive demonstration programme to guide deployment of these promising CCS technologies. The key challenge with renewables is going to be integrating into the system vast new quantities of RES-power and managing the grids to address its intermittent characteristics, which implies retaining or building back-up plants. Various speakers pointed out that much more could be done with better demand-side management (DSM). There was general recognition of the need for a 'smarter' system overall, enabling power generators, grid operators, suppliers and consumers to communicate more efficiently, and the need for progress in developing storage facilities.

**IEA OPEN Bulletin - The economic downturn is seriously affecting global investment across the power sector. The IEA projects a drop of 38 percent in global investment in renewables this year. Deployment has proved a successful stimulus for technology development, which brings down costs. Are support policies for renewables-sourced energy the only way to deploy more renewable energy?**

## **Lars G. Josefsson**

EU policymakers have agreed on a set of ambitious, binding targets for renewable energy. One might say that the politicians have decided to reach those targets whatever the cost. Personally, I do not think investment in RES in Europe will drop as dramatically as in the IEA's global average prediction. All EU Member States have support policies, for which it is the customer who will ultimately foot the bill, and many large power companies in Europe, including mine, are investing billions of euros annually in renewable energy projects.

It is true that technology costs have come down significantly over recent years, wind energy being the prime example: turbine sizes have increased and economies of scale have been exploited. But the cost of RES still needs to fall further if they are to compete with the more 'traditional' power technologies. It is clearly not desirable to go on subsidising technologies forever.

However, the issue has much wider implications than this. The EU target of a 20% RES-share in total energy consumption by 2020 translates into 35% of electricity demand. If we want to drive forward towards a European single electricity market, keeping 30 separate support schemes running in the 27 EU Member States is not the best way forward. EURELECTRIC wants to see RES integrated into the European electricity market as rapidly as possible. Our figures show that as much as €17 billion per year could be saved by 2020 by allowing free trade in RES-power through joint support systems or joint certificate schemes, which would then help to drive the regional integration which we believe will ultimately lead to the pan-European market. We therefore strongly urge the European Commission and governments to make full use of the co-operation mechanisms provided by the Renewables Directive.

By 2020, auctioning will be the main allocation mechanism for CO<sub>2</sub> emissions allowances, the intention being to fully internalise the external cost of greenhouse gas emissions in the power price. So perhaps we should take 2020 as a deadline for RES-support as well: after that year it should essentially be the market price of CO<sub>2</sub> that drives investment in low-carbon technology. We should move away from direct subsidies at production level. Pre-competitive EU and national support for innovative technology R&D should of course continue.

## **IEA *OPEN Bulletin* - What needs to be done about modernising the power grids and finding solutions for energy storage?**

### **Lars G. Josefsson**

Both the transmission and distribution segments will see tremendous investments in the next decades. Transmission grids must be reinforced and extended, inter alia to transport increasing shares of off-shore windpower. The distribution network will need to integrate decentralised generation and electric vehicles into the system. Both distribution and transmission grids will have to facilitate balancing of intermittent renewable power sources. This provides a unique opportunity to make our power grids more intelligent, bringing them into the digital age. In fact, the new investment cycle coincides with the

appearance on the market of new electricity applications like electric vehicles and efficient electric heat pumps for spatial heating and cooling, which will all offer new opportunities for balancing intermittent power sources.

EURELECTRIC sees 'smart grids' as the solution, using a combination of software and hardware to enable more efficient power routing and allow consumers to better manage their demand. Such grids will benefit customers, suppliers, grid operators and society as a whole. So it makes sense that the costs should be spread across a range of stakeholders and not borne by grid operators alone. Regulators must work to create 'smart regulation', allowing a fair rate of return in recognition of Distribution System Operators' contribution to meeting energy efficiency and RES targets, rolling out smart meters and so on. Appropriate incentives must also be given to Transmission System Operators to invest in new power transmission lines and in pre-competitive research and development of promising technologies.

With increasing shares of RES-power, balancing options - including storage - are certainly becoming more important. Besides supply-side technologies such as hydro and compressed air, there will be an important role for the demand side. In particular, electric vehicles will in future be used as storage facilities, once the volume of cars and the battery technology permits.

I would add that, if plug-in vehicles - hybrid or all-electric - are to become a success, both hardware (connector and cables) and communication software standards are a prerequisite in order to provide a secure investment climate for the required infrastructure. Such standards will also promote customer convenience and drive forward development of a global market in electric vehicles. EURELECTRIC is working with the automobile industry and policymakers with a view to publishing a public statement later this year to support the ongoing standardisation project.

**IEA OPEN Bulletin - The European power industry has taken pioneering steps to demonstrate carbon capture and storage (CCS). What role do you see this technology playing, and in what timeframe? Also, what developments or progress might accelerate the timeframe?**

**Lars G. Josefsson**

CCS offers a promising set of technologies that can help our economies transition to a low-carbon base. At our recent Bucharest Conference, an exhibition showcased the efforts many European electricity companies are putting into CCS projects. Several large-scale demonstration plants are planned.

While CCS will have little role to play in meeting the EU target of reducing emissions by 20% against 1990 levels by 2020, it is expected to have a significant impact during the period 2020 to 2050, as the European power industry strives to become carbon-neutral by mid-century. As with RES, the price of CO<sub>2</sub> should set the commercial framework for CCS, which will have to survive in a context of energy-climate policy without long-term subsidies.

What needs to happen first is demonstration of CCS technologies - in various combinations and on a full industrial scale - to significantly bring down the cost of capturing CO<sub>2</sub> from power generation. The total cost of capturing, transporting and storing CO<sub>2</sub> must be brought below €30 per tonne in order to make the process economically viable. So we need a European demonstration programme, with industry and the public authorities co-financing a small number of demonstration projects encompassing a good technological and geographical spread. This will offset part of the first-mover risks. Our figures show that a 12-plant programme should cost around €9 billion. We will also need to ensure that geological storage sites are developed and that people living close by are assured of the safety of these operations. EU legislators have done a good job in setting a legal framework for CCS storage and in making funds available for CCS demonstration under the ETS. Funds should now be swiftly allocated to projects. We must get the whole process up and running soon.

**IEA OPEN Bulletin - You have recently accepted an invitation from United Nations Secretary-General Ban Ki-moon to join his new Advisory Group on Energy and Climate. Which key message will you carry from the European power sector to the United Nations family of states?**

**Lars G. Josefsson**

I will of course be highlighting the European electricity industry's commitment to action towards a carbon-neutral power supply by mid-century. In addition, some thirty electricity CEOs from several continents have formed an International Electricity Partnership to work with policymakers worldwide on a roadmap for deployment of low-carbon technologies. If the family of nations is serious about tackling climate change, it is really time to create a workable post-2012 framework. The developed economies should be pledging to reduce their GHG emissions by 30%. A strong framework should be created for mitigation actions by the rapidly industrialising economies as well, focusing on high-emitting energy-intensive industries.

Of course, all our industrial mitigation will be negated if rapid deforestation continues, so this must also be brought within the overall framework. This all means that we will need a predictable financing mechanism with incentives for developing economies to both mitigate emissions and adapt to climate change. We believe a robust carbon price, delivered through an internationally-linked carbon trading system, will send the right signals for deployment of low-carbon technology. And if this is to work - which means all climate change action must be fully credible - it is absolutely vital to create a very strong monitoring, reporting and verification system for all major sectors.

As we look ahead, the talks at the United Nations Climate Change Conference in Copenhagen in December will be a crucial landmark if the world economy is to shift onto a low-carbon path in time to brake the most serious effects of climate change. There is much to be done and time is short.