

'This is the greatest opportunity since World War Two'

## *Building the cathedral of the low CO<sub>2</sub> economy*

| By Karel Beckman

At the World Energy Congress in Rome, one subject dominated the debates above all: the CO<sub>2</sub>-question. 'Climate change' seemed to be on the lips and minds of all the delegates. The energy industry, however, refused to take a pessimistic view. Virtually everyone at the Congress agreed that there is a solution - but only one solution: technology can and must save the day.



Lars Josefsson. Photo: Manuela Susi

Probably no energy company executive has taken the climate issue more to heart than Vattenfall's ceo Lars Josefsson. Josefsson is the founder of Combat Climate Change, an initiative in which 43 large companies, including Siemens, Alstom, General Electric, Endesa, Enel and Eon, have joined to call on 'world leaders to work together to develop a global policy framework to combat climate change.'

Just prior to the WEC-conference in Rome, Josefsson presented a Climate Change Roadmap in Washington in the presence of the Swedish king Carl Gustav XVI. The 'roadmap' was based on a study done by Vattenfall together with McKinsey that resulted in a so-called Global Climate Abatement Map. The map, which can be viewed on the Vattenfall website, shows how and where the necessary emission reductions can be made for temperature change to stay within the 2 degrees Celsius limit. It also shows how much the various measures cost.

Despite all the talk about climate change in Rome, Josefsson is convinced that even in the energy sector, the 'task before us', as he puts it, 'is still not sufficiently understood'. 'We still underestimate the magnitude of the problem', Josefsson told European Energy Review in Rome. 'What is required is a total re-engineering of the world economy. This has not penetrated everyone's mind yet.'

Solutions are not going to come easily or quickly, Josefsson stresses. 'It is going to take a long time before we are fully on renewables. At least half a century.' The electricity sector will not be emission-

free before 2070, Josefsson predicts. Vattenfall's own goals are to cut its emissions by half in 2030.

Nuclear energy and coal will remain part of the energy mix, Josefsson says. 'It is impossible to think of a future without coal. Without clean coal, there will be no solution to the climate problem. Nuclear is inescapable too.'

The crucial part will be the next 20 years, says the Vattenfall-executive. 'Once we are on a downward slope with the emissions, it will get easier.' How to get there? 'Without a price on carbon, we will never get there. This is where it is stuck at the moment.' Josefsson is convinced that all countries will eventually have to accept a cap on emissions. 'If that is done, abatement will have a value. Then you can let market forces loose. Companies can then make long-term investments.'

He sees no reason why China and India could not accept a cap. 'They can at least do something. I think the Chinese are aware of that.' Kyoto, Josefsson says, has not worked. 'It was a show of good will, a learning exercise, but no more than that. It is not solving the problem. The problem is much bigger.' The best post-Kyoto system, says Josefsson, is 'the system everybody agrees to'. 'The attitude Europeans have towards the US is a problem. The Americans don't like us to tell them what to do. The Asians don't either. Europeans should try to be more modest.'

In spite of the magnitude of the problem, the Vattenfall-executive refuses to become pessimistic. 'I want to get away from the horror scenarios. I don't want to dwell on

the inconvenient truth, but rather on the convenient solution.' Indeed, he views climate change as a unique business opportunity. 'For business this is the greatest opportunity since the rebuilding after World War Two. The project we must undertake is huge. It is comparable to building a cathedral in the Middle Ages. Our children and grandchildren will finish it.' The 'greatest opportunity since World War Two' is certainly the way engineering companies like Alstom, Siemens and General Electric prefer to look at the climate issue. 'Yes, we will provide a solution', agrees Philippe Joubert, President of the Power Systems division of Alstom. 'But it will not be a single, magical solution. It will not just be renewables. All technologies will have to be used.' Joubert agrees that the environment is 'all-important' at this edition of the World Energy Congress. 'It is the most important trend of the moment.' Alstom has taken good note of this trend. The French company, which earlier this year bought the Spanish wind power producer Ecotècnia for €350 million, aims to be the 'world leader in clean energy'. Joubert: 'Our advantage is that we are present in all sectors of the power market: hydro, coal, gas, conventional nuclear and renewables.' Joubert notes that a solution to the CO<sub>2</sub>-conundrum cannot only come for newly built generating capacity. It must include improving existing capacity, including coal-fired plants. 'We cannot just rely on gasification. That's the only technology some companies have. But the problem is here today, with the existing coal-fired power plants, and the ones that are being built now in China and many other places that need energy. So we have to attack the installed base.'

Specifically, Joubert says, emissions from coal-fired generation will have to be reduced through post-combustion clean coal technology.' He predicts that Alstom will have a 'commercial' application for post-combustion capture ready by 2015. It

will be based on ammonia, he says. 'Amin-based technology needs up to 30% of the energy generated. That is too costly. With our technology we can limit this energy penalty to 10-15%.'

For, Joubert admits, reduction of CO<sub>2</sub> emissions is not going to come cheap. 'We are faced with heavy decisions. The measures we will take will have a great impact on costs. Energy will become more expensive.' ■

Speaking about emissions reduction, Siemens Executive Vice President Uriel Sharef, like his colleague and rival Philippe Joubert at Alstom, sounded a positive note at the World Energy Congress in Rome. 'Technically we already have everything we need to ensure sustainable power supplies and at the same time dramatically reduce burdens on the environment', Sharef said. He said there is great potential for power plant efficiency improvement. He expects efficiency of lignite-fired plants to grow from 43 percent today to 50 percent by 2020, and of coal-fired plants even higher. Combined cycle power plants can improve as well from the present efficiency rate of 58 percent to well over 60 percent. In addition, Sharef believes carbon capture and storage (CCS), particularly for coal-fired plants, will be a strategic pillar of the global energy mix for a very long time.

'The most promising CCS processes are well known and understood: pre-combustion, post combustion and oxyfuel. It is at present not possible to forecast which of these three technologies will ultimately prevail.' A 'correct balance' in the energy mix will be fundamental, in particular for meeting Asia's thirst for energy, Sharef said. This means 'a low-emission base-load power supply - provided by coal-fired, nuclear and hydro power plants - combined with renewable sources and highly efficient gas-fired plants able to compensate for fluctuations in power from renewable. Such a technology mix would substantially reduce CO<sub>2</sub> emissions from today's level. And it would provide a realistic, balanced and reliable power supply.'

*'We must recognize the reality of climate change'*

**Samuel Bodman**

US Energy Secretary

*'Technology is the answer, it is the only answer. Without more technology, we will continue to produce more CO<sub>2</sub>'*

**Johannes Teysen**

Director of Eon

*'The US and Japan invest the most in energy technology. That is not enough. Other countries should do more'*

**Samuel Bodman**

US Energy Secretary