



Report

UBC Energy Commission activities from 27th September 2009 – 3rd June 2010.

General situation analysis

Presented in Trelleborg at the UBC Executive meeting, 4 June 2010.

The Energy Commission is focused on the local municipal responsibilities and opportunities to furnish citizens and cities with sustainable and climate neutral energy. Access to energy is essential for our civilization and our jobs in all sectors. Energy demand is soaring like never before as populations grow and economies start to take off again. Millions of citizens in the new democracies around the Baltic Sea Region are expecting to enjoy a lifestyle that definitely requires more energy.

Questions on availability and security must be considered as well as economic factors in the transformation of the energy system we are experiencing. The traditional energy system has been dominantly centralized and regarded as a “Big Tech” area. The new green energy market is dominated by a number of technologies that can be implemented in decentralized or “Small tech” settings. Individual houses or industries can have their own production of energy, both heat and power, for their own consumption. What we see today is a mix of Big tech and Small tech solutions mixed in a ever growing new energy complex.

Big Tech nuclear, biomass, hydro and fossil fueled mega complex are mixed with small scale solar, wind and biomass installations in communities and on individual houses. The new energy mix demands a new grid with smart logic to be optimized. Huge amount of power has to be transferred instantaneously when demand arises in any corner of the Baltic Sea Region. Electric power has to be consumed in the same moment as it is produced. Hydro power is the only energy source that can store vast amounts of energy in reservoirs, everything else has to be consumed instantly. Therefore transmission’s cables have to cross the BSR and be integrated with other networks. This will provide a base load. On top of that we have all individual, local and regional energy producers that have to be integrated in an optimized and balanced way. The smart Grid is a concept like the Internet that connects different power producers and consumers in a managed and integrated network for optimization. Power at the right place when it is needed in the whole BSR. The present grid can’t receive all energy that is produced at sea based wind farms and distribute it to the South of Europe. This can stop the growth in the green energy sector if not paid enough attention. This can threaten jobs in i.e Denmark that is a large producer of wind power technology and in many other cities and communities around the BSR. This is an example of how big tech and small tech are dependent on each other in order to develop a new energy system.



The countries of North Western Europe are planning to build over 50,000 Megawatts of offshore wind parks in the North Sea, Baltic Sea and Irish Sea by 2020. These would produce roughly the same amount of power as 17 sizable nuclear power stations if implemented. It depends on many factors but one is the capacity of the grid to receive that amount of power and distribute it to where it is most needed.

Today we have about 300 000 kilometer transmission's cables in the EU-region. An additional 42 000 kilometer cable is needed until 2020. Just in the next few years the grid needs an additional 19 000 kilometer cable. Only in the North Sea Region new investments are needed in the range of 10 billion Euro in the next 5 years. In Europe as a whole investments in excess of over 20 billion Euro is needed in order to adopt the transmission grids to new demands according to the Entso-e report from "The European Network of Transmission System Operators for Electricity"

There is in this concept a need for further standardization of electric grid control units new meters for Prosumers in order to optimize and synchronize. We welcome the smart grid concept like the new Innoenergi a 600 million euro project partly funded by EU to set off this process in Europe. The question of AC versus DC distribution is on the agenda. Several companies in Norway have already begun building high voltage DC lines between Scandinavia, the Netherlands and Germany while Airtricity, an Irish wind power company, has plans to build what it calls a "Supergrid" — which would connect offshore wind farms in the Atlantic Ocean and Irish, North and Baltic seas with consumers in northern Europe. A DC grid is estimated to save about 30% of the energy by reducing losses in the transmission cables. This is question connected to the interaction in the grid with small tech developments in everything from efficient heat-pumps, building specific solar and wind installations. Even mini CHP on farms villages can be combines with other systems are tested and put on the market by entrepreneurs and developers. Local or regional energy production for local consumption will be an attempting alternative for many.

Ea Energy analyses concludes in its master report that the small tech scenario has the biggest effect on our environment provided that we have CCS technology. This definitely puts the local administrative units in the front seat regarding the future energy system.

As UBC Energy Commission we have to focus on the aspect that will be obvious; the customers are willing to invest in order to gain self-sufficiency, independence and control. This goes for individuals, families, house owners, SME operators and cities and other public entities. Clear guidance and viable offerings from the market and public incentives are strong drivers in this direction and the UBC Energy Commission is focused on providing this guidance in a BSR perspective.



Green jobs

We can create a few big tech jobs at concentrated huge power plants and create and increasingly sensitive energy system. Or we can create many green local jobs in the small tech sector and get a less vulnerable system. We have the technology for both and it is a matter of what incentives the public sector provides to its citizens. This will be different in different countries, in urban or rural areas. It will be the diverse energy mix that has to be synchronized by a common grid or web of power lines by market logic software.

Some will be winners and some will be losers but one thing is for sure – people will try to cut costs in both private, public and managerial capacity. This will create new opportunities and exciting possibilities. The local energy system and the actions taken to higher degree of self sufficiency will balance the Bigtech market ambitions.

Expanded and new smart grids will have to be synchronized all the way to the end consumer and the holes in the walls. Energy savings for industry and consumers are still needed. It is a question of competitiveness and living costs.

Excess spill heat are abundant and need to be taken care of in a better way. This can change the energy balance if use properly and give many power generating facilities a new business model. We are used to think of energy in the concept of big tech – if we want to create green jobs and our local economies we need to give the small tech or decentralized energy sector access to the grid, fair market opportunities and public incentives by deregulation measures.

The market economy is a strong driving force. If nuclear and other big tech power facilities is developed, they need to sell to the market with the highest prices at any given time. A country can spare its consumers and industry from increased costs of energy, but they will then fall back in development and give way for more efficient producers. Power will be exported or used to the markets with the highest prices. This goes for Kaliningrd and Lattvia, Finland and Sweden. So generally- it does not matter if they do or not.

Nuclear versus energy savings

Another topic that is not fully developed is the energy savings potential. According to studies at Lindköping university, the industry can in general terms save between 40-60% of its energy consumption without affecting production output. Some markets like Norway and Sweden with historically low energy prices will see the European price level with tighter market integration and grid capacity.

We also need to see the energy production and consumption points in a system perspective. I recognize the importance of big tech for base load power generation or the importance of interconnections and a well adopted grid system.



But they can play an even more important roll if we use the Bigtech power generation to its full potential. Take for instance the existing and planned nuclear power plants and how they are designed. 2/3 of the effect is dumped in form of spill heat into the sea or up in the air. Not only does it create a local micro climates contributing to the global warming but it is an unacceptable waste of energy. The three reactors at the nuclear power plants in Oskarshamn dumps over 100 million Euro worth of energy in the form of heated water in to the Baltic Sea. Enormous amounts of energy is wasted. This water is not contaminated in any way. The same goes for coals, gas plants or and process industry with CHP generation. A fraction of the spill heat is put to use.

This may contribute to the local economy and put less pressure on the bio-fuel market prices. Bio mass is sustainable but not an endless resource at any given time. Energy savings is a must for any business operator, nuclear or not. The prices in BSR region will level out with increase grid capacity. So if you don't save and use the resources in an efficient way you will eventually operate an unsuccessful business.

UBC Energy Commission activities

Most of the activities are related to being active in different forums and EU-projects related to energy and environment. The ongoing project LED in public space has generated a lot of meetings and seminars where UBC has had the opportunity to present its view and strategies. Over 15 meetings and seminars has been attended in this capacity from Munich to Gdansk.

Joint Commissions' meetings has been conducted with the UBC Environment Commission. (see their report).

UBC Energy Commission has been present at the Energy conference in Stockholm gathering over 600 professionals and experts.

JEPC, the Joint Energy and Climate Expert Group has to coordinate pending the BDF summit in Vilnius in early June 2010. UBC Energy Commission had a seat at the panel discussion regarding the future energy system and Kaliningrad's integration into the energy market.

The UBC Environment Bulletin has been used on a regular basis for articles and information about different activities.

We are working on a new strategy for the commission that will be presented later.

Eva Hjalmered the head of the secretariat has been absent during 2010 due to an accident. She will hopefully be back in August. This has delayed some of our planned activities.

Stefan Windh

Chairman UBC Energy Commission