

HOW WILL THE ENERGY TRANSITION EFFECT FUTURE BUSINESS OF THE SECTOR?

Frits Verheij – Managing Principal Future Energy Systems

KEMA Nederland B.V.

The Netherlands

INTRODUCTION

The development of a new, active electric system is more than technology. It also involves business models, energy policy, regulation, and socio-economics.

Trends like the rising world population and the growing standard of living causes an increase in energy demand and, thus, additional pressure on finite oil and gas reserves. Both power plants and the electrical infrastructure in most OECD countries are ageing. Not only has the grid to be replaced it also has to be extended as well as to be adapted to variable generation which has shown double digit growth rates for many years.

Of course this requires technology developments and large investments. To KEMA's opinion the main challenge is the warm ware, the people. First of all they don't like any changes in their physical surroundings that might effect themselves, not in my back yard (NIMBY), most people don't have any idea about the energy transition and they even don't care (DKDC – don't know, don't care). Apart from applying communication and information technology, from intelligent appliances and home automation, from RD&D Programmes, and from EU policies, we need a radically new vision of our energy system and we need to involve all relevant stakeholders including the end-user.

TRENDS IN THE ENERGY SYSTEM

The rapid growth of large quantities of dispersed and renewable energy sources (RES) and the increasing challenge to integrate this into the electric system is regarded as one of the main drivers for the development of smart energy systems. KEMA regards the electrification of our system (fuel shift) due to heat pumps and the transition to electrical transportation as another driver. At present we are also facing the development of very large power plants at remote locations causing large volumes of power to be transported over large distances to the load centers.

How can the sector utilize the capacity of such an energy system as much as possible while maintaining a high availability and reliability? And how do you have to organize the operation and maintenance of a larger volume of your assets at a wider physical area that also has different characteristics than the assets of today?

DECARBONIZATION OF THE POWER SECTOR IN 2050 IS POSSIBLE

In their recent report "Roadmap 2050 – A practical guide

to a prosperous, low-carbon Europe" the European Climate Foundation shows that high percentages of RES can be realized in Europe if the transmission grid is expanded to a pan-European grid, and if collaboration and coordination between the TSOs amongst others is organized.

At a distribution level new functionalities like real time balancing, demand response and real time rating will support the integration of distributed (renewable) generation.

FUTURE BUSINESS OF THE SECTOR

TSOs and DNOs are aware of these upcoming issues. Their response could be to "smarten" their system instead of adding traditional assets. This would allow more renewable generation and loads with a high simultaneity on their grid while maintaining availability and reliability and, at the same time, limit the costs. It is also an opportunity to address end of life asset renewal and establish improved network architectures that will be robust for the future. The successful transition to future grids however, requires attention to a range of issues that go beyond technology and include commercial and regulatory dimensions. There are identifiable barriers to a smooth transition, but with a strategic approach these can be addressed. An important responsibility rests with government, regulators, network companies and other stakeholders to dismantle barriers and, where appropriate, introduce incentives for engagement with due reward for managing risks successfully.

DIFFERENT RESPONSIBILITIES

According to KEMA politicians, governments and regulators should work on finding an effective balance between international regulations and national specifics (in energy mix, market design and industry structure). They should also ensure room for investments in the required infrastructure for reliability, additional flexibility, and security of supply.

The market sector should recognize new business models in a world of globalized resource markets but decentralized supply. It is recommended that they include reliability, sustainability and consumer interests in their investment decisions, and in their operations. Therefore they will have to position themselves in a more competitive and complex environment than ever.