



## La vision de...

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On the 15th of November 2004, I was standing in front of the European Parliament to convince them of my capability to assume the duties of the EU's Energy Commissioner. I presented my plan with six key fields of action. The main driver was security of energy supply. An active external energy policy, reduction of energy demand, promotion of renewable energy sources and ensuring a proper functioning of the internal markets for gas and electricity should strengthen the Unions to withstand the geopolitical tensions in the world associated with an increasing demand for energy. I was also strongly convinced that we need to move out of the fossil fuel era with my main priority focusing on linking energy with environmental protection and research. I received the endorsement of the members of the European Parliament and I believe that I delivered on my plan. But it was an evolutionary approach. What the world needs now is a real energy revolution.

The commitments made in the Paris agreements for limiting rise in global temperatures below 2°C means that by 2050, emissions of greenhouse gases (GHGs) from the energy sector should be almost negligible. The role of electricity in meeting energy demand will increase considerably, partly due to the strong penetration of electrical vehicles in the transport sector. The way we produce, distribute, store and market electricity is changing and the implications go far beyond the utility sector. Companies that are currently part of this industry need to clearly rethink their current strategies. A top-down, centralised system is evolving into one that is much more distributed and interactive. This flexibility is now also required on the demand side. The drivers of the energy sectors will be decarbonisation and the digitalisation. Energy systems will be more intelligent and interactive where the rapidly changing habits of customers will need to be met.

The drive towards a carbon free electricity sector should take into account that more than a billion people today don't access to electricity. The Sustainable Development Goals, adopted by the United Nations in September 2015, specifically call for universal access to reliable and affordable electricity. A particular challenge in meeting this is in Africa where currently only one third of the population has access to electricity. Utilities are cash strapped thereby causing even current assets to fall into disrepair with many households unable to afford connection charges.

For example, a study by the World Bank has shown that in Ethiopia the lowest connection charge is 130% of average monthly household income. Although improvements in the operational efficiency of utilities, changes in the tariffs structure and subsidies to the most vulnerable households could improve the current situation, important aid is still needed to ensure investment in clean energy in Africa. And we shouldn't forget that more than 60% of the population is rural. This means that universal access through grid expansion alone would be impossible. Distributed systems based on the use of solar energy should be widely deployed. Africa would also benefit from the technical advances in the energy efficiency of appliances. The subsistence level of the electricity consumption is permanently falling. Africa should benefit from technological progress in the same way as their peers have on other continents.

Throughout the last few years, innovations in the renewable energy sector have been impressive. However, technological breakthroughs are still needed and can only be achieved through intense research and harnessing the human capacity to innovate. The breakthroughs that are currently needed in the energy sector are similar to those achieved by the introduction of the personal computer and the internet. The main goal is to provide sufficient and universally affordable energy to meet current and future demand without emitting any GHGs. Efficient and distributed generation, clean energy storage, zero emissions buildings, energy efficient appliances and carbon capture and storage are a number of achievements that are available for application today. Although investments in chemistry and materials science have recently increased, the energy industry only allocates around 0.23% of their revenues on research and development. For comparison, the IT industry spends around 15%. Furthermore, the deployment of new energy technology has historically been very slow with experts expecting a 20 year cycle. National governments could help with this by increasing spending on fundamental energy research. A large number of governments have united behind the “Mission Innovation” initiative where they have committed to double their support for research and development in the energy sector. However, it is important to have an active involvement by the private sector so as to assure the economic viability of new technologies. The best way to achieve this would be by setting a high carbon price. Whereas high oil prices have supported the “shale oil revolution”, a high carbon price will substantially accelerate the decarbonisation of the energy and potentially of other sectors. The market will deliver as long as the right incentives are there, with price, in most of cases, being arguably the strongest driver of new investment.

As the future energy world will be very much based on electricity, two other issues are important: the regulation and active participation of the consumers. Generation of electricity will be in most cases based on renewable energy sources, full back-up with “clean gas” and electricity storages will be too expensive. Demand should be flexible; the ability to switch systems on and off at the household, industrial and commercial level is important in balancing out the discrepancies involved in production. Intelligent software and hardware will help, but smart incentives created by the regulation of electricity markets are crucial.

There are still doubts about the irreversibility of the climate change positions of some of the countries that signed the Paris agreement. I can understand these worries, but in my opinion the implementation of the EU’s climate and energy policies demonstrates good grounds of optimism. Yes, there has to be a profound change, but it will be a transformation that will grow and create new jobs, accelerate technological development and generate a healthy profit for the investor.