Ladies and Gentlemen:
Thank you for your kind invitation.

Today, I should like to speak about the importance of micro-generation, our need for it and its likely development in the future. Micro-generation will undoubtedly be a key, expanding sector in the future, a cornerstone in questions of energy security and in the fight against climate change. Today, I should like to describe some of the challenges ahead if we are to build a low carbon society ... both from a technological and societal point of view.

I have divided my talk into three parts. Firstly, I should like to emphasise something of the challenges of building a low carbon society but also the contributions and advantages of the micro-generation of energy. Then I shall speak about what I think of as a third industrial revolution. To finish with, I shall say a few words about the production, the storage and the transmission of energy during this third industrial revolution.

1) There is today an overall consensus on the need to reduce greenhouse gas emissions globally by 50% by 2050, something that represents a cut of at least 80% in the industrialised world. In addition,

given the finite nature of oil reserves, fundamental societal changes will need to be driven by EU policies over the next decade.

This means that our society will have to be organised in a different way (work, transport, leisure, city planning, housing, electricity production…). Taken separately, these challenges are threats that we have to face. But taken together, they could be seen as opportunities for a transformation of our society.

Climate challenge requires a paradigmatic change in our ways of producing, storing and distributing energy. Renewable sources are scattered amongst different climates, geographical regions and so on. This supposes a much greater emphasis on local resources, on people organising their own energy sources. It also means less dependency on increasingly expensive imports of energy. This could well represent an opportunity to reshape our economic and social system towards a wealthier and at the same time more equitable model. Decisions to be taken in the near future should bear these objectives for 2050 in mind.

2) It is critical that we reframe the European and global discussion on climate change and energy security to the mission of building a low carbon society through the transition from the Second Industrial Revolution to a Third Industrial Revolution.

Just as the distributed Information Technology and internet communication revolutions dramatically changed the economic and social environment, a distributed renewable energy revolution will represent, it is to be hoped, a third industrial revolution in Europe and the world.

The great pivotal economic changes in world history have occurred when new energy regimes converge with new communication regimes. This means that people can produce renewable energy and share it, in the same way that they now produce and share information, creating a new, decentralized form of energy use.

3) Let me turn now to the production, storage and transmission of energy. With regard to the *production* of energy: we need to envision a future in which millions of individuals can collect and produce locally generated renewable energy in their homes, offices, factories, and vehicles.

Buildings will collect and generate energy locally from the sun, wind, from rubbish and waste products, agricultural and forestry waste, ocean waves and tides, hydro and geothermal sources. This should amount to enough energy to provide for their own power needs as well as generating some surplus energy that can be shared.

Turning now to the storage of energy, to maximize renewable energy and to minimize cost it will be necessary to develop storage methods. These will facilitate the conversion of intermittent supplies of these energy sources into reliable assets. Batteries, differentiated water pumping, and other media, can provide limited storage capacity. There is, however, one storage medium that is widely available and which is relatively efficient. Hydrogen is the universal medium that "stores" all forms of renewable energy to assure that a stable and reliable supply is available for power generation and, equally important, for transport.

Finally, with regard to the transmission of energy, today, the same design principles and smart technologies that made possible the internet, and vast "distributed" global communication networks, are just beginning to be used to reconfigure the world's power grids.

The reconfiguration of the European power grid, along the lines of the internet, allowing businesses and homeowners to produce their own energy and share it with each other, is rapidly being developed by power companies in Europe.

Today's centralized; top-down flow of energy will become increasingly obsolete. In the new era, businesses, municipalities and homeowners will become the producers as well as the consumers of their own energy—so-called "distributed generation."

****

By way of conclusion, let me sum up the key ideas in my talk.
Micro-generation of energy is actually a chance to reshape society in a more sustainable but cooperative and equitable manner. I also believe that it will enable the European economy to prosper.

We should think of this as nothing less than a third industrial revolution. As for the production, storage and transmission of energy, the technology is already in place and we have available models - such as the internet - for its future development. As the Americans say: just do it!