International Partnership for the Hydrogen Economy

Speech on behalf of Mr.Stephen Timms,
Minister for Energy, E-Commerce, and Postal Services,
Department of Trade and Industry, UK

I'm very pleased to be here today on behalf of Stephen Timms, the UK Minister for Energy, at the launch of the International Partnership for the Hydrogen Economy. It is not often in life that you get the opportunity to be in at the start of something of major historical significance, but I believe that is what we are witnessing today and it is an enormous privilege to be here.

The journey towards the hydrogen economy has been described as a marathon, not a sprint, and one with a long up-hill first stage. It is certainly that, but more complex too, because there are different perceptions of where the finishing line lies.

To some the hydrogen economy is essentially about the substitution of hydrogen for "gasoline" and is largely about transport. The motivation here is mainly one of energy security.

Others – and the UK is among them – consider the driving force to be the environmental benefits. Currently the most economic method for producing hydrogen on a large scale is from natural gas by steam-methane reformation. It is not a particularly clean process and results in significant emissions of carbon dioxide, the most important greenhouse gas. Other methods of manufacturing hydrogen which depend on fossil fuels as the feedstock also result in CO_2 emissions. One possible solution is carbon capture and storage, and in passing I would like to say that the UK is also participating in the Carbon Sequestration Leadership Forum which is complementary to this initiative. However, there will inevitably be cost implications associated with that route.

Hydrogen manufacture from biomass or wastes has the advantage of at least being carbon neutral over the cycle. Nuclear is another option. But for many environmentalists the preferred route for the manufacture of hydrogen is electrolysis

using electricity which has been generated using only renewable sources of energy – hydro, wind, wave, tidal, geothermal or solar. This offers a zero-carbon solution which many see as the true definition of the hydrogen economy – the location of the finishing line. In the UK we have plenty of the "wet and windy" variety of renewable resources! However, that is not the case for all countries and for those with limited renewables capacity there are profound implications involved in the shift to hydrogen. In some scenarios there could even be a net carbon *dis-benefit* if renewable electricity were to be diverted into hydrogen production. This is an important issue which needs proper consideration.

I've focused on the issue of hydrogen production, because I wanted to use it as an example to illustrate that there is a diversity of views as to what is meant by the hydrogen economy. One size does not fit all. There are also significant issues attached to storage, distribution, codes and standards, consumer acceptance, fuelling, regulations and fiscal measures. I expect the UK to contribute significantly to the thinking on this.

So I'd like to turn now to the current initiative – the International Partnership for the Hydrogen Economy, and to say what I would like to see. First, I welcome the fact that it is international. No one country is going to be able to go it alone. Collaboration on an international basis will help to reduce the barriers by sharing experiences. Codes and standards should, whenever possible, be developed on an international basis if they are not to constitute a further barrier rather than being an enabler (as they should). But there is already international cooperation in this area. It will be important that the IPHE builds on these initiatives and does not seek to duplicate them.

Second, I want to see the environment at the heart of the process. **Climate change is the biggest environmental challenge we have ever faced.** Emissions of greenhouse gases from electricity production, transport and industry will have to be significantly reduced if we are to avoid the most dangerous effects. This is why we are putting the UK on a path to reduce our CO_2 emissions by 60% by 2050. This is a huge challenge and will involve a fundamental shift in the technologies we use to produce, store and use energy. We see hydrogen as a key contributor in the long-term to the goal of a

low-carbon economy. For this to happen, the hydrogen will need to be produced from non-fossil sources. We need further research on these zero-carbon methods of hydrogen production and to reduce their cost relative to the current fossil fuel based methods. While fossil fuel methods the latter are likely to be the preferred option in the short to medium-term it is important not to lose sight of the long-term imperative – production from non-fossil sources.

Third, we don't see the hydrogen economy being seen as just about transport and are delighted that IPHE will look at hydrogen in its broadest sense. While the large-scale manufacture of hydrogen for electricity production doesn't seem to make any sort of economic or environmental sense, there may be a number of specific and local circumstances where such an approach would be entirely rational. These include situations where there is a need to balance intermittent renewables and to store excess capacity at certain times, or remote or island communities where the costs of grid connection or refurbishment can be prohibitive. Such communities might turn into miniature hydrogen economies with additional uses for hydrogen.

So how can the UK contribute to the International Partnership for the Hydrogen Economy? We are in the process of developing our own policies and programmes and we have a number of initiatives underway. As part a major initiative looking at Sustainable Power Generation and Supply – the SUPERGEN programme - the **UK SUSTAINABLE HYDROGEN ENERGY CONSORTIUM (UKSHEC)** has been tasked with building a strong base of co-ordinated fundamental research activity within the UK to realise the full potential of hydrogen and to stimulate further strategic investment in the UK. This consortium comprises 10 universities and institutes working with 9 industrial and overseas collaborators.

On the industrial side we strongly believe that there are win-win opportunities here, that is solutions that are good for the environment and good for industry. We have been supporting work on fuel cells since 1992, and work on coal gasification and gas purification since 1990. More recently Foresight Vehicle, the UK's prime knowledge transfer network for automotive industry has recommended support for a number of projects to evaluate and demonstrate fuel cell systems.

We have also established the Low Carbon Vehicle Partnership to engage industry and other stakeholders in real action. This group is advising on the creation of a new low carbon and fuel cells Centre of Excellence to help assemble critical mass in this area. Advice on market transformation is also high on the Partnership's agenda.

The UK Government's Energy White Paper published in February contained a number of commitments on fuel cells and hydrogen and I'm pleased to report that we have made good progress on most of them. In particular we launched a **UK Fuel Cell Vision** at the Grove Fuel Cell Symposium in London in September. We are also working closely within Government with the aim of developing an integrated support programme for fuel cells in the UK.

I referred earlier to the UK's enthusiasm to contribute to the thinking on the implications of a hydrogen economy. An example of this is found in the commitment in the Energy White Paper to consider the energy implications of a widespread switch to hydrogen or biomass fuel for transport. Two studies on this are underway, under the Department for Transport.

Finally, I would like to say that the UK Government is proud to have been invited to join the International Partnership for the Hydrogen Economy. We wish the initiative well, and expect to play an energetic and active role in taking the work forward.