



## ***Transition to Alternative Fuels and Infrastructure in cooperation with the International Energy Agency***

### **What is the purpose of the project?**

One of the main obstacles to more extensive use of alternative fuels in the future is the uncertainty surrounding the technology, reliability and cost of the infrastructure that would need to be put in place for their production and delivery. We propose for the purpose of this project to review existing studies on the longer-term prospects for alternative fuels globally; draw on IEA alternative fuels analysis and projections (e.g. ETP 2010) and assess the likely infrastructure needs for the production and delivery of alternative fuels; identify the potential obstacles to the large-scale development of alternative-fuel infrastructures (such as market risks, technological uncertainties, public acceptance, regulatory barriers, lack of financing, etc.); and explore options for governments, international organisations, corporations and other actors to design and implement policy frameworks and strategies that would effectively support the development of alternative-fuel infrastructures.

### **What exactly are alternative fuels?**

For the purposes of this project, alternative fuels (sometimes termed non-conventional fuels) could include biodiesel, bioalcohol (ethanol, butanol,...), chemically stored electricity (batteries and fuel cells), non fossil natural gas (CNG, LPG), non fossil hydrogen. They are fuels destined mainly for use in road, rail, inland waterway, marine and air transport, as well as for stationary purposes – for example as on-site fuels at ports and airports, and combined heat and power for buildings. To the extent that new sources of power generation -- such as solar, wind, tidal -- will play a role in shaping the supply of fuels (for example in producing biofuels, hydrogen or recharging vehicle batteries) these too will need to be included.

### **How important are alternative fuels today?**

They play a marginal role compared to fossil fuel use. For example, in the transport sector new fuels make up only a tiny fraction of energy use which is heavily dominated by gasoline, diesel, jet fuel and heavy fuel oil.

### **How important will alternative fuels become in future?**

Potentially, very important indeed. With a growing world population and rising incomes particularly in the developing regions, energy needs will increase rapidly by 2030-50. However, mounting environmental pressures and the need to curb GHG emissions are very likely to force a switch to renewable and cleaner fuels. Indeed, many governments have established ambitious targets in this regard. Hence, depending on scenario, alternative fuels could make a very significant contribution to lowering GHG emissions. For example, for the transport sector, the BLUE Map/Shifts scenarios by IEA/ETP suggest that by 2050 the widespread introduction of alternative fuels and vehicle electricity could reduce transport-related emissions (GtCO<sub>2</sub>-eq) by more than half compared with baseline projections.

### **What is hampering progress in the development and spread of alternative fuels?**

High costs relative to fossil fuels, technological problems and public acceptance are among the main obstacles today; moreover, there is considerable uncertainty as to how cost structures, technological progress and public perceptions might evolve in the coming years. As a result, governments and to some extent corporations are hesitant to make clear choices in favour of one alternative fuel over another, or in favour of one fuel mix over another. An important additional uncertainty is what kind of infrastructure will need to be put in place to produce and deliver the alternative fuels, what level of infrastructure investment will be required, and how it will be financed. While reports suggest that investments in alternative-fuel infrastructure would run into trillions of USD between now and 2050, little concrete work appears to have been performed on this subject to date.

### **What could be the project's methodological approach?**

Given the range of alternative fuels in question, the potential obstacles, the many uncertainties weighing on policy choices, and the diversity of situations in OECD countries and among emerging economies, it is proposed to work with a series of country case studies. For each type of fuel, one or two countries could be selected to illustrate in-depth: the potential for the alternative fuel, the infrastructure options, the potential obstacles and bottlenecks, potential infrastructure capacity shortfalls, and possible solutions. So, for example, country A could examine the infrastructure prospects for biodiesel, country B the prospects for hydrogen, country C the outlook for electric vehicles. The set of completed case-studies could serve as the basis for drawing broader lessons with respect to actual potential, critical factors determining fuel infrastructure development, promising business models, promising policy approaches, and so on.

### **How would the country case studies be selected?**

The project will be advised and financially supported by a Steering Group of government departments and agencies, corporations and research institutes. Steering Group members are invited to express interest in being a candidate country for, and supporting the work on, an alternative-fuel case study of their choice. The practical terms of this arrangement will need to be discussed at the first meeting of the Steering Group.

### **What is the duration of the project?**

The project would start in the first half of 2011 and finish with a final meeting in the second half of 2012 (and a published report towards the end of 2012, with selected findings from the analytical work already becoming available mid 2012).

### **What will be the outputs?**

In addition to intermediate outputs in the form of working papers and workshop summaries, the findings would be published as an OECD report and disseminated in the course of 2012.

### **Who will manage the project?**

The Project will be organised and managed by the secretariat of the OECD's International Futures Programme (IFP) in cooperation with the IEA to guide the analysis of infrastructure requirements. The IFP already has considerable experience in conducting forward-looking infrastructure related studies: Infrastructure 2030 (OECD, volume 1 and volume 2, 2006 and 2007) and Transcontinental Infrastructure (forthcoming OECD, 2011) which covered telecoms, water, electricity, surface transport as well as ports and international corridors, but did not include the specific dimension of a transition to alternative fuels. There will also be opportunities to collaborate closely with the Nuclear Energy Agency (NEA), the Directorate for Science Technology and Industry (STI), the Environment Directorate (ENV), the International Transport Forum (ITF) and others. The work will be led by an OECD project team supported by in-house and external experts.

The Project Team will be advised by a Steering Group consisting of the sponsors of the Project who will be drawn from government, business, research and possibly foundations. The Steering Group will meet 3 times during the life of the Project.

### **Who can participate?**

Major public and private stakeholders within the OECD area are invited to participate. From the government side it will be representatives of ministerial departments, agencies, or PM's offices with an important stake in strategic foresight, energy, infrastructure, environment, new technologies, innovation, economics, and the treasury. From the private sector side, it will be representatives of corporate strategy units, chief scientist or technology officer, chief economists, chief risk officers, consultants. It is expected to have a broad range of ministries and sectors represented. Non-OECD



stakeholders could also be invited on an ad hoc basis. The number of seats for each participating OECD country (public and private representatives together) is limited in order to avoid undue concentration of interests.

### What is the budget for the project?

The cost of the Project is estimated to be around 500,000 Euros for the 18 month period depending on the number of case studies. To the extent that more or less funding is secured, the scope of the Project will be adjusted accordingly, after discussion with the Steering Group.

### How will it be funded?

The Project will be funded through voluntary contributions from interested government departments and agencies, and grants from the business sector and research institutions. The sponsoring organisations are represented on the Steering group. Financing has to be sufficient to cover, *inter alia*, the following costs: OECD Project Team; commissioning of internal and external papers; organisation of the meetings of the Steering Group; production and distribution of the final report; and Project-related travel.

### Next steps

Express interest in participating in the “kick off” meeting at OECD HQ in Paris on June 17, 2011

Date	Milestone
January to June 2011	The Project Proposal is discussed with potential participants.
17 June 2011	<b>Kick-off meeting:</b> The work plan is discussed and approved. A first selection of case studies is considered.
June –September 2011	A critical mass of participants is achieved
13 October 2011	<b>First meeting of the Steering Group:</b> The final scope of the Project and selection of case studies are approved. The Project Team submits to the Steering Group a draft overview of module 1 assessing the status of infrastructure for the pathways and roadmaps involved in the transition to alternative fuels. Next steps are discussed and if need be revised or updated.
2 March 2012	<b>Second meeting of the Steering Group:</b> The Project Team submits to the Steering Group a progress report on the case studies, a revised report on the findings from module 1 and draft versions on module 2: critical factors that can explain potential infrastructure gap and the role of actors and policies as well as from module 3: lessons learned about the major challenges facing the deployment of alternative fuels.
8 June 2012	<b>Third meeting of the Steering Group:</b> A draft report on findings and policy options is submitted to the Steering Group for discussion. The Project Team also presents proposals on publication and dissemination of results of the project.
Late 2012	<b>Publication of OECD report</b>

### Who are the contact people at OECD?

Barrie Stevens: + 33 (0)1 45 24 78 28, [barrie.stevens@oecd.org](mailto:barrie.stevens@oecd.org)

Pierre-Alain Schieb: +33 (0)1 45 24 82 70 [pierre-alain.schieb@oecd.org](mailto:pierre-alain.schieb@oecd.org)

Anita Gibson: +33 (0)1 45 24 96 27, [anita.gibson@oecd.org](mailto:anita.gibson@oecd.org)