TENDER SPECIFICATIONS

Development of New Energy and Transport Infrastructure to match Europe 2050 Energy Agenda.

Market and Public Policies respective roles: Options for Public Sector Funding Support
The case of Commercialisation of Fuel Cell Electric Vehicles.

1. Introduction

1.1 FCH JU's objectives and activities

The Fuel Cells and Hydrogen Joint Undertaking (**FCH JU)** represents a public-private research partnership at European level. Its members are the EU represented by the European Commission as public representative, the 'New Industry Grouping' ("NEW IG") and the 'Research Grouping'. The FCH JU is a Joint Technology Initiative (JTI) within the Seventh Framework Programme 2007 – 2013 (FP7) and has a total budget of approx. EUR 1 billion, with an EU contribution of approx. € 0.5 billion. FCH JU brings public and private interests together in a new, industry-led implementation structure, ensuring that the jointly defined research programme better matches industry's needs and expectations, and accelerates hydrogen and fuel cell technology acquisition and deployment processes.

Beyond its support to R&D activities, the FCH JU aims at placing Europe at the forefront of fuel cell and hydrogen technologies worldwide and enabling their market breakthrough, thereby allowing market forces to drive the substantial potential public benefits by

- Evaluating the energy, environmental, economic and social sustainability of fuel cells and hydrogen technological solutions by means of horizontal activities at programme and project level.
- Monitoring progress in relation to competing and complementary technologies to assess sustainability and economic competitiveness.
- Encouraging increased public and private RTD investment in fuel cells and hydrogen technologies in the Member States and Associated countries.
- Promoting public awareness and understanding of these technologies and the contributions they can make to address energy, environment and transport policies.

1.2 Broad Political Context

The European Energy and Transport Agenda for 2050 focus on decarbonisation of the energy and transport system. This transition toward clean and innovative alternatives for today's fossil based systems requires significant investments in the energy and transport value chain, some of which are meant to develop clean carbon solutions to *substitute* existing products and services. The launch and financing of such *substitution* investment plans raises questions with respect to the respective roles of markets and public policies and the most efficient forms of the latter. Defining the cases where government support is needed to bring about a change in the energy system and how it shall be deployed is the subject of the following request for tender.

The role Fuel Cell Electric Vehicles (FCEVs) could play within this European Agenda is a good case of study of the here above issue. It shall constitute the illustrative example of the analysis requested.

1.3 Specific Context of the Study

Last year the role FCEVs could play in a future portfolio of power trains to decarbonise passenger transport was assessed. The results of this fact-based evaluation were published in November 2010 in the report *A portfolio of powertrains for Europe, a fact-based analysis. The role of Battery Electric Vehicles, Plug-in Hybrids and Fuel Cell Electric Vehicles*[1]. The results showed that FCEVs and

[1] This study is entitled *A portfolio of power-trains for Europe: a fact-based analysis. The role of battery electric vehicles, plug-in-hybrids and fuel cell electric vehicles*. It is available on the FCHJU website at http://www.fch-ju.eu/page/portfolio-power-trains-europe-fact-based-analysis. It can also be found on the zeros emissions vehicles website at http://www.zeroemissionvehicles.eu/uploads/Power_trains_for_Europe.pdf

Hydrogen refuelling infrastructure have reached the stage of development where it is necessary to explore policy options and incentives to boost the market introduction of large scale FCEVs deployment and their corresponding infrastructure by 2025 across Europe. Market introduction however requires high initial cost and will not be triggered by market forces alone.

Whilst various new technologies are complementary and it is clear that all available alternatives are needed to shift towards a low carbon economy, financial resources are limited. Various energy technologies in the transport sector and other segments are looking for regulatory support and funding mechanisms at the EU level or at Member State and Regional level. The quest for support is thus highly competitive as it can pay off in a short period of time and create a favorable environment for investment[2]. The cost of inaction on the other hand can also be very high especially if one believes that FCEVs deployment will not happen without policy intervention.

In view of this state of competition for support, given the range of Member State and EU policy initiatives on low carbon energy, sustainable transport and infrastructures, given the variety of incentive mechanisms available, the FCH JU and its members, would like to develop better insight in what regulatory and financial support mechanisms are needed to breakthrough and bring FCEVs to the market.

2. Requested Services

This document solicits the interest of selected service providers in advising the FCH JU and its members on:

1) The value proposition for the EU in playing a leading role in the market-introduction of FCEVs taking into account the benefits for society (e.g. in terms of competitiveness, climate change, health, energy security etc)
2) A gap-analysis of today's policy and regulatory landscape and its drivers, identifying what needs to be implemented in order to successfully deploy FCEVs and hydrogen infrastructure and to become cost-competitive with the "Build As Usual" scenario.
3) Recommendation regarding funding mechanisms and regulatory framework to be developed and implemented at European, National and/or Regional level to support market-introduction

The Contractor will prepare a comprehensive report that builds on existing economic studies (e.g. the EU Powertrain Report mentioned above) to present options and a recommendation for policy and funding mechanisms that would allow a sound deployment within the European context. The recommendation needs to be robust enough that they could serve to structure a potential roll out plan in defined countries in 2015.

This study may be followed by a second phase, an in-depth quantitative analysis of the policy changes required, to support the initial recommendations for change. This should be taken into account when doing the study. This second part could be commissioned by a different party.

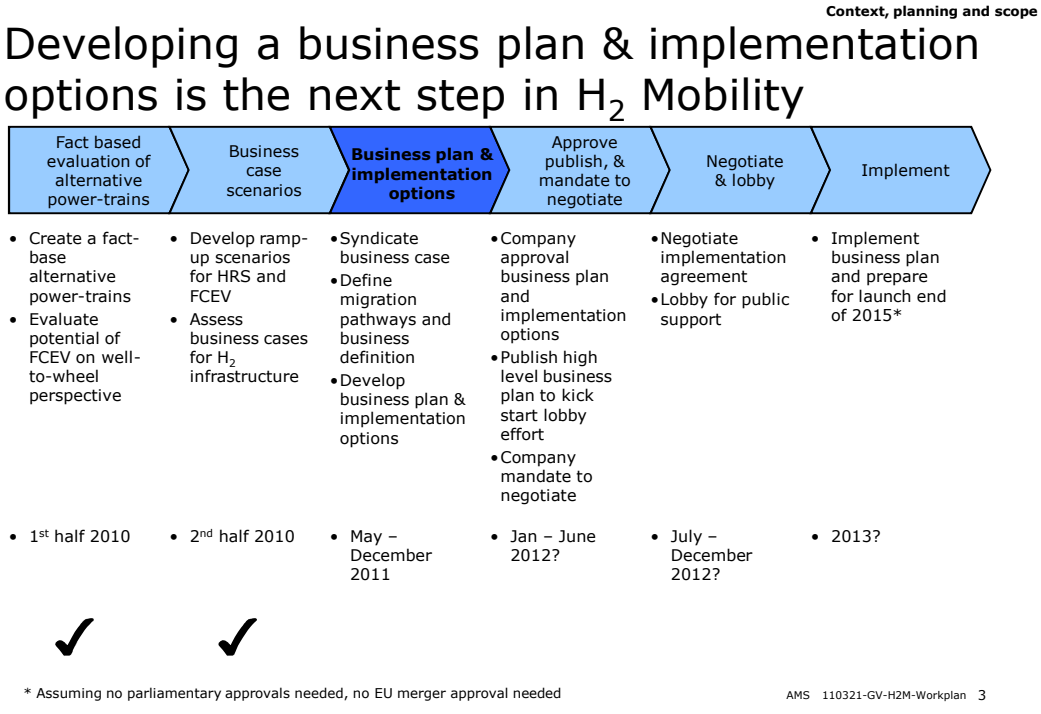
[2] Recent examples of successful campaigns for low carbon energy technologies include: 1) the campaign for funding large scale demonstration of carbon capture and storage with a special project mechanism linked to the EU ETS; 2) the automotive manufacturers lobby for incentives for battery electric vehicles which has managed to gain in a very short amount of time broad political endorsement for creating a regulatory framework to introduce BEV to the market by 2020.

2.1 Link with other initiatives

The FCH JU and its members are evaluating and planning the best routes for deployment of FCEVs and hydrogen infrastructure, with the objective to begin commercial roll-out of FCEV's and hydrogen infrastructure in 2015 in defined countries / regions.

The members of the NEW IG build their developments on the before mentioned EU Powertrain Report developed by the NEW IG, the FCH JU and other industry players, which demonstrates the case for long term need of FCEV deployment in order to reach European 2030 and 2050 carbon reduction targets. Several initiatives are now taking place in different countries to explore the business case of national or regional deployments, with the German H_2 Mobility project being the most advanced. All will need to explore with a number of external stakeholders the options for public sector funding support. The FCH JU and its members wish to provide industry players and policy makers with a neutral approach to policy funding solutions. This approach should be based on academic background, fact based analysis of other similar examples in history and a dedicated analysis of the contemplated case. The analysis and recommendations should help stakeholders engaged in the formation of initiatives for deployment to define the appropriate support routes helping their effective launch and to provide a basis for political engagement at EU and national levels.

A resume of the past and present steps already made and contemplated for dedicated initiative roll out is provided with the here under scheme (**H_2 Mobility case, the German Initiative**):



The Contractor, in developing the study, shall take into account the fact that various innovative energy and transport technologies are looking for support and funding at the EU level, even though they are sometimes complementary and all needed to generate a full transition replacing fossil based sources. They generally share with FCEVs the need for a substantial initial (financial) stimulus that can lead to self-sustaining private sector investment. Each also faces the risk that it will simply not happen without such a stimulus. The FCH JU members thus find themselves in competition with other low carbon technologies aiming at achieving EU's strategic ambitions on low carbon energy, sustainable

transport and infrastructures. Considering this background, the FCH JU and its members need to develop a targeted approach to what should be asked from policy makers from among the variety of incentive mechanisms available in order to achieve deployment objectives.

Last, based on the respective roles of Europe and Member States, the leading position in policy setting should vary and the policy support tools and options will vary as well. A pan_European deployment, using a European stimulus will not use the same incentives and regulatory schemes as a Member State based approach which would require ad hoc support from European authorities. As policy setting positions could vary in the future, the Contractor shall address the issue from several possible sides,

1. **a European-led roll out**;
2. **a concerted approach**, whereby EU and Members States implement a joint roll out plan;
3. **a Member States driven roll-out within a supportive European framework (e.g. favourable regulatory framework and/or revision of state aids limitations).**

The Contractor should eventually give a view on the most appropriate route, in particular in view of answering the case for change and best route to achieve the societal benefits.

2.2 Objectives of the Study

The study should first examine why a pure market-driven approach will not be sufficient at the start to enable commercial deployment of FCEVs.

The study should also present the case for change for Europe and address the question why the EU should lead on market-introduction of FCEVs, in particular in relation to the focus on market-introduction of other alternatives like battery electric vehicles, to achieve its low carbon transport objectives.

Furthermore the study should identify the obstacles in the current policy and funding mechanism landscape. It should answer the question what the regulatory gaps are today to overcome the so-called ‘valley of death’ between the readiness of the application and actual commercial market deployment.

Lastly the study should present recommendations to bridge this gap to the market and suggest policy recommendations and financial mechanisms taking into account the various EU roll-out scenarios mentioned before: (a) a European-led roll out scenario; (b) a concerted approach involving the EU and the Member States; (c) a Member States driven roll-out scenario within a supportive European framework.

In this way, the study should present to its readers a comprehensive outline of the policies and financial mechanisms needed to transform the EU economy into a low-carbon economy, based on the example of market-introduction of FCEVs.

2.3 Deliverables

The study will need to consider fiscal, regulatory and other measures at both Member State and EU levels; it should consider risk as well as cost, and should opine in particular on the contribution to be demanded of industry alongside the contribution of the European taxpayer and transport purchaser.

Success is described as:

1. **Funding options and policy recommendations being positively received by front runner Member States in the FCEV field (Germany, UK, potentially France), the European Commission and the European Investment Bank as a basis for implementation.**
2. **Initiatives launched at European Level to put in place some of the instruments contemplated either within the future 2014-2020 Budget priorities or within new legislation packages on transport, energy, or technologies.**
3. **Firm commitments by industry to implement plans for the provision of vehicles, fuel and infrastructure against the background of the measures to be implemented.**

The final report should address the above mentioned questions by

1. Developing the rationale for European lead in this specific industry development :
   Analyze and quantify the benefits, downsides and risks of the commercialisation of fuel cell vehicles to the public sector, by investment segment, in terms of:
   - Energy and climate change goals for the transport sector and potentially spill over to other sectors
   - Energy security (German and EU energy policy, ad hoc benefits)
   - Environment (e.g. air quality) and health
   - Competitiveness, jobs and growth
   - Risk of lock-in and potential intermediate steps and exit strategies
   - How incentive scheme reveal information for policy-makers

2. Explaining, with facts, academics and if any past benchmark cases, why a pure market approach for the build-up of the considered change in the Energy System, in the form here under considered of FCEV vehicle deployments, will not allow Europe to succeed in its ambition.

3. Providing a gap-analysis of today's policy and regulatory landscape and its drivers, identifying what needs to be implemented in order to successfully deploy FCEVs and hydrogen infrastructure and to become cost-competitive with the "Business As Usual" scenario.

4. Assessing the kind of public support for the private sector in terms of both funding and risk sharing, by investment segment that will be needed to achieve the stated FCEV implementation objectives.
   (a) Taking a European driven approach
   (b) Taking a concerted approach between the EU and the Member States
   (c) Taking a country driven approach within a supportive European framework

5. Assessing how different incentive structures leverage private capital and encourage private risk-taking, from regulatory to fiscal stimulus, including insurance type financing, subsidies and incentives (auctioning processes, grant mechanisms, tax credits…).

6. Develop policy and funding options for Europe and some of the major Member States as to the form in which the public sector contribution should be made; considerations should include:
    - Subsidies and loans to industry
    - Subsidies to consumers
    - Government underwriting
    - Government financial partnership
    - Tax-based measures (e.g. capital allowances, VAT, car tax, fuel taxes)
    - Exemptions to competition policy
    - Insurances and Guarantee mechanisms, including reimbursable advances
    - etc

7. Give clear policy recommendations around the policy options discussed.

The conclusions are to be delivered in a set of policy papers (1), an Executive Summary document or policy brief (2) and a main Report (3) that will be made publicly available. Furthermore, a consolidated presentation of the main results of the study should be presented at the Stakeholder General Assembly of the FCH JU on 23 November 2011 (4).

2.4 Working Practices

The progress of the study will be monitored by the FCH JU staff. However, the success and the relevance of this study are highly dependent on a narrow cooperation between the contractor and the industrial actors and relevant stakeholders who hold unique expertise.

Therefore to ensure an optimal steering of the studies, the FCH JU will be assisted by experts (i.e. representatives of its members). The FCH JU staff together with these experts and the contractor will constitute the *Steering Committee* governing the study.

The FCH JU and its members may also in the course of the study suggest contacting experts to give input to the study. These could be tax advisors, macro economists or public affairs specialists, as well as technical specialists where required.

3. Contractual obligations

3.1 General

The contract will be a bilateral contract between the FCH JU and the wining tenderer. In drawing up the tender, the tenderer should bear in mind the provisions of template contract attached to these Specifications.

The contractor must perform this contract to the highest professional standards.

The contractor will have the sole responsibility for complying with all legal obligations incumbent on him, notably those arising from employment law, tax law and social legislation.

The contractor may neither represent the Fuel Cells and Hydrogen Joint Undertaking nor behave in any way that would give such an impression. The contractor must inform third parties that he does not belong to the European public service, but is exercising the tasks on behalf of the Fuel Cells and Hydrogen Joint Undertaking.

3.2 Subcontracting

Sub-contracting is permitted. Certain tasks provided for in the contract may be entrusted to subcontractors, but the main contractor retains full responsibility and liability towards FCH JU for the performance of the contract as a whole. Accordingly, FCH JU will treat all contractual matters (e.g. payment) exclusively with the main contractor, whether or not the tasks are performed by a subcontractor. Under no circumstances can the main contractor avoid liability towards the JUs on the grounds that the subcontractor is at fault.

If subcontracting is proposed, the file must include a document mentioning the reasons why subcontracting is proposed; stating clearly the roles, activities and responsibilities of subcontractor(s) and a letter of intent by each subcontractor stating their intention to collaborate with the tenderer if he wins the contract.

During execution of the contract, the contractor will need FCH JU express authorisation to replace a subcontractor with another and/or to subcontract tasks for which subcontracting was not envisaged in the original tender.

Please note that if subcontractors are proposed, the declaration relating to the exclusion criteria and the documents relating to the selection criteria must be provided by each of them.

4. Calendar

Interested applicants have 21 days from the sending of this invitation to tender to submit their proposal, i.e July, 19th 2011.

It is expected that the evaluation will take place during the second half of July and that the contract will start in the first half of August.

The contractor shall submit the final reports of its study by 30 October 2011. The results of the study should be communicated to the public on the occasion of the FCH JU Stakeholders General Assembly on 23 November 2011 in Brussels.

Additional work on the finalisation and editing of the final reports may be requested after the Stakeholders General Assembly.

5. Volume of the contract and Prices

The maximum amount for this study including all the deliverables as mentioned under 2.3 is €125.000.

Tenderers shall indicate the total price they propose for carrying out the study.

In addition, the tenderers shall give an indicative repartition of this price between different categories of costs (staff, travel including accommodation and per diem costs, workshop publication costs) and the tasks/roles of the various staff members involved in the project.

The price for the tender must be quoted in euro. Tenderers from countries outside the euro zone have to quote their prices in euro. The price quoted may not be revised in line with exchange rate movements.

Prices should be fixed amounts.

Prices should be quoted free of all duties, taxes and other charges, including VAT, as the FCH JU is exempt from such charges under Articles 3 and 4 of the Protocol on the privileges and immunities of the EU; the amount of VAT should be shown separately.

Prices are indexed according to Article I.3 of the contract.

6. Legal Situation of the Tenderer: Exclusion Criteria

Tenderers shall be excluded from participation in the present procurement procedure if:

a) they are bankrupt or being wound up, are having their affairs administered by the courts, have entered into an arrangement with creditors, have suspended business activities, are the subject of proceedings concerning those matters, or are in any analogous situation arising from a similar procedure provided for in national legislation or regulations;
b) they have been convicted of an offence concerning their professional conduct by a judgement which has the force of res judicata;
c) they have been guilty of grave professional misconduct proven by any means which the contracting authority can justify;
d) they have not fulfilled obligations relating to the payment of social security contributions or the payment of taxes in accordance with the legal provisions of the country in which they are established or with those of the country of the contracting authority or those of the country where the contract is to be performed;
e) they have been the subject of a judgement which has the force of res judicata for fraud, corruption, involvement in a criminal organisation or any other illegal activity detrimental to the Communities financial interests;
f) Following another procurement procedure or grant award procedure financed by the Community budget, they have been declared to be in serious breach of contract for failure to comply with their contractual obligations.

Tenderers shall be excluded from awarding if during the present procurement procedure:
g) they are subject to a conflict of interest;
h) they are guilty of misrepresentation in supplying the information required by the contracting authority as a condition of participation in the contract procedure or fail to supply this information.

In their tenders, tenderers shall provide a declaration on their honour (based on the Model attached), duly signed and dated, stating that they are not in one of the situations listed above.
The FCH JU has the right to verify all information contained in the declaration by requiring further the documents. The tenderer is also aware of the possible consequences that may arise from any false declaration in providing the information required by the awarding authority in order to take part in the contract.

7. Selection Criteria

The tenderer has to have the necessary technical, professional, economic and financial capacity to execute the contract.
This invitation is being sent to a range of potential applicants that are regarded as suitably qualified. In order to confirm this preliminary assessment of their technical and professional capacity, tenderers shall provide:

- Details of no more than five previous assignments, in no more than 10 pages, demonstrating capacity to undertake the work required;
- CV of the staff proposed for this contract with particular reference to the principal person proposed by the tenderer to liaise with FCH JU in the performance of the contract.

8. Award Criteria and Award of the Contract

The ranking of the proposals that passed the exclusion and selection stages will be based on the quality/price ratio where quality and price will have a 60/40 weighting. The following formula shall be used:

$$\text{Score for proposal X} = \frac{\text{Cheapest price}}{\text{Price of candidate X}} \times 40 + \frac{\text{Q candidate}}{\text{Q of best candidate}} \times 60$$

The technical evaluation of tenders will be evaluated on the basis of the following award criteria:

	Criteria	**Points**
1	**General understanding of the project,** The proposal: • Shows how providing the analysis required will help to serve the objective of the FCH JU and its stakeholders. • Already shows analysis and provides first insights • Adds own aspects/views - have put in unexpected elements that are meaningful to achieve success	33
2	**Quality of the proposed services** • Quality of proposed methodology for conducting the work, and to ensure impartiality in the analysis • Time line and resource allocation is realistic and at the right level of details	33

3	**Expertise of the team** • Involvement of one or more of the most senior level staff • Involvement of specialists in key areas: fuel cells and hydrogen and competing technologies • Expertise in EU regulatory , EU policy and macro-economic analysis	34
	Total	/100

Appendix: additional background information for the study

The study entitled "*A Portofolio of power-trains for Europe: a fact based analysis*" has calculated an economic gap between the continued 100% use of hybrid internal combustion engines (using significant amounts of sustainably produced bio-fuels reducing CO2 emissions by 24%) and a scenario, which assumes a 35% of Battery Electric Vehicles, 35% of plug in Hybrids, 25% of FCEVs and 5% penetration of optimized internal combustion engine cars in 2050. This shows that a combination of the power-trains can reduce CO2 emissions almost completely, whilst reducing energy use by 50% and allow growth of transported kms by 20%. It also shows that the financing requirements of multiple infrastructures are not prohibitive under these conditions.

Hydrogen infrastructure
The total economic gap to implement a complete hydrogen infrastructure for the EU was estimated at EUR 205 billion until 2050, by which time it is estimated that FCEVs will be fully competitive. 50% of the gap can be attributed to the additional cost of the 70 million fuel cell vehicles and the other 50% can be attributed to putting in place a hydrogen infrastructure (production, distribution, retail).

Consistent with these figures, FCEVs will have a cost disadvantage to traditional technologies until manufacturing experience has driven down costs. The figures indicate that in the period until 2020, by which time a critical production volume of 1 million units will have been reached, manufacturing deficits could amount to some €20 billion. The total investment of the OEMs needed for this initial period will be higher as it will also include the "normal" cost of the car.

In the same period, €3-5 billion of deficits would be expected as a result of capital expenditure on hydrogen production, distribution and retail infrastructure. The portion of the capex related to retail infrastructure might be in the order of €1 – 1.5 billion over the period, and effectively no return to this investment would be expected within the period.

The Phase 1 Report implies that hydrogen producers would not expect a shortfall in this period to 2020, and could produce to meet demand as it arose, being paid for product at rates that would cover their costs. Because incremental capacity can be added in small units at reasonable cost, producers could respond to the market without large speculative upfront expenditures. The same would apply to road transport, envisaged in this period for distribution.

Different parts of the cost chain will need different treatment
The difference between the costs of manufacturers and of infrastructure providers is that while a manufacturer has a potential first-mover advantage, the infrastructure bears a first-mover risk. The first manufacturer in the field will be the first to harvest the benefit of descending the cost curve, so he has an incentive – as soon as the economics work – to race to beat his rivals. He may also gain a marketing advantage by being first. Financial incentives may be required to persuade a buyer (and hence a manufacturer) that the FCEV is affordable, but given that, there will be nothing to hold him back from entering
the market, provided that both buyer and manufacturer have very high confidence that the infrastructure will indeed be in place.

Infrastructure on the other hand demands a heavy upfront expenditure on building capacity that will not be filled for many years. The unit cost of infrastructure reduces over time simply because the fixed capex is used by increasing numbers of cars.

Forms of support: legislation?
Different forms of subsidy may be needed in the two cases. Gasoline is already heavily taxed throughout the EU, and various green incentives for Battery Electric Vehicles are already in place. So financial support for manufacture could be expected in the first instance to take the traditional form of

tuning the tax regime. For the period to 2020 more explicit per-vehicle subsidies could also be applied.

In the case of infrastructure support, some form of underwriting or sharing by government of investment risk may be more appropriate – the issue being not so much the cost of building the infrastructure as the risk that the market does not develop, leaving the infrastructure a stranded asset. In looking at the risks for infrastructure, there are presumably precedents for the roll-out of new fuel technologies - LPG for example. A study of the history of such cases might be helpful.

It is possible that government could elect not only to provide the carrot of support to both manufacture and infrastructure, but also the stick of legislation. Legislation would need to be credible, and might have the risk of unstable outcomes that could leave the first mover problem only partly solved. But it could have a role.

2020-2030
If there were a core of hydrogen infrastructure in place by 2020, even if it were regional, and a critical mass of FCEVs on the road, there could be both much higher willingness to invest, and more scope for finely tuned legislative measures and tax incentives. However, as 2020 approaches, it will become clearer whether target numbers and costs are being reached - and whether 1 million vehicles is indeed the critical number to achieve momentum. At this stage it seems quite possible that any government support needed in this period could be provided through the tax and regulatory systems, without special measures or subsidies.

Beyond 2030
It is probably reasonable to assume that, except for some green enthusiasts at the margin, consumers will be financially driven; they will therefore make their choice of car in response to a by-then established tax and legislative regime. Provided these regimes are stable and clear, carmakers, hydrogen producers and infrastructure operators should all be able to make investments on the basis of understood risks and appropriate projected returns.

Risk allocation
A strong case is likely to be needed to persuade governments as to the level of explicit subsidy needed. The case must centre on the public sector benefit and the fact that the industry contribution in this early stage can of its nature not receive a return in the short-medium term. At the same time, the investment environment will once established directly or indirectly, but wholly, by government fiat; industry will be subject to large political risks that it cannot control.

However, it will be important to make proposals that show how industry participants are taking responsibility for all the risks that they can reasonably analyse, control and mitigate. Discussions with Member State and EU governments are likely to focus on sharing of cost and risk between public and private sector – a political saleable idea for them.

Government will be especially sensitive in the negotiations that are to ensue in the next several months to the fact that the industry data that demonstrates the risk and economics is provided by preconception. Schemes to demonstrate transparency may be needed to ensure that government is comfortable with the data being offered.