Initial appraisal of a European Commission Impact Assessment

European Commission proposal for a Directive on the deployment of alternative fuels infrastructure


- Background

This note seeks to provide an initial analysis of the strengths and weaknesses of the European Commission's Impact Assessment accompanying the proposal for a Directive on the deployment of alternative fuels infrastructure.

In order to achieve the targets of the Europe 2020 strategy, as well as the climate goals for 2050, such as reduction of dependency on oil and reduction of greenhouse gas emissions by 60% by 2050, attention needs to be paid to achievement of a significant uptake of alternative fuels. According to the Commission, the development of the market for alternative fuels has been held back by three major and interdependent factors: technological immaturity; lack of consumer acceptance; and missing fuel infrastructure. The current proposal focuses on 'deployment of appropriate infrastructure for alternative fuels, assessing whether supporting action is needed and what the merits of different options are'. (IA, p. 6). The alternative fuels, which can substitute for oil, are: electricity, hydrogen, natural gas (LNG and CNG1), biofuels2, synthetic fuels, and liquefied petroleum gas (LPG) (Article 2 of the proposal), and can be used in road as well as waterborne transport. Appendix 3 of the IA includes a list of European initiatives affecting the uptake of alternative fuels, and the Commission recognises that previous initiatives have neglected the build-up of necessary infrastructure for alternative fuels (IA, p. 11).

- Identification of the issue at stake

The Commission clearly describes the underlying problem to be addressed in the proposal: 'insufficient infrastructure network for electricity, hydrogen and natural gas (LNG and CNG)' (IA, p. 12). The IA describes the current state of play of alternative fuels infrastructure, as well as its expected future development. The Commission notes that the 'infrastructure development across various Member States is highly uneven not only in terms of quantity, but also of quality (for example, regarding chosen technical solutions' (IA, p. 13). 'The majority of Member States

1 Liquefied natural gas and compressed natural gas.
do not have a significant number of charging points' for electric vehicles (IA, p. 13). Many Member States have their own targets regarding deployment of alternative fuels infrastructure, including the number of electric vehicles and charging points, as well as hydrogen fuel cell vehicles and their charging points. The Commission has included detailed data on industry targets for the production, for example, of electric cars, at 'around 4 million vehicles on the road by 2020' (IA, p. 17), and recognises that EU action is needed in order to adapt to the market development of vehicles powered by alternative fuels across various Member States. 'On the basis of projected market development and in comparison with what would be necessary to allow widespread commercialisation of the corresponding vehicles, the infrastructure for electric, hydrogen, LNG for trucks and vessels and CNG for road transport vehicles is likely to remain insufficient in quantity and (in particular for electricity) in quality' (IA, p. 26).

According to the Commission, the underlying problem drivers are the following:

I. 'Existing recharging/refuelling equipment cannot be connected and is not interoperable in all related alternative fuel vehicles/vessels (IA, p. 27); and
II. 'Investment uncertainty hinders the deployment of recharging/refuelling infrastructure for electricity, hydrogen and natural gas (LNG and CNG) (IA, p. 28).

The Commission concludes that 'the lack of common standards on alternative fuels infrastructure leads to the fragmentation of the internal market against the development of a European market. Even where international standards exist, their implementation is voluntary, which allows EU-wide fragmentation, thereby discouraging potential infrastructure investors, car manufacturers and consumers.' (IA, p. 27). Regarding investment uncertainty, the conclusion is that 'in order to establish a business case for alternative fuels infrastructure, the underlying coordination failure among vehicle manufactures, infrastructure providers, national authorities and final users must be addressed. Initiatives that are specifically addressed at promoting infrastructure provision appear necessary to break the deadlock and elicit consumer confidence in alternative fuel technologies.' (IA, p. 30).

The IA provides a serious analysis of each of the problem drivers, based on well-referenced data from the industry producers and Member States, as well as on results of the stakeholder consultation. This analysis is used for setting the objectives (both specific and operational), and is subsequently taken into account among the considered policy options.

**Objectives of the legislative proposal**

The general objective of this initiative is 'to ensure, within the current economic climate, the provision of a sufficient infrastructure network for alternative fuels, contributing thereby to the take-up of the alternative fuel vehicles' and vessels' market announced in the White Paper.' (IA, p. 32)

The general objective is translated into two specific objectives, corresponding to the problem drivers:

I. 'To make sure that recharging/refuelling equipment can be connected and are interoperable in all vehicles/vessels;
II. To ensure that investment uncertainty is sufficiently reduced to break up the existing 'wait and see' attitude amongst market participants.' (IA, p. 32)
Each of the two specific objectives is further divided into more detailed operational objectives. The Commission lists quantitative infrastructure goals to be attained for various fuel types by 2020.

**Range of the options considered**

In order to address the problem drivers, the IA identifies four policy options:

*Policy Option 1* ‘represents the future without any additional policy intervention to change current trends.’ (IA, p. 36);

*Policy Option 2* provides that ‘the EU will issue recommendations to ensure the application of standards developed by international and European organisations concerning alternative fuels infrastructure. At the same time, it will issue recommendations setting out basic criteria and indicative targets for the deployment of infrastructure for electricity, hydrogen and natural gas (LNG and CNG), addressed to Member States.’ (IA, p. 37-38);

*Policy Option 3* provides that ‘the EU will set out essential or specific requirements for alternative fuels infrastructure for Member States. At the same time, it will set out basic criteria for minimum infrastructure coverage, together with binding targets for the technologically most mature fuel technologies (electricity, and LNG for waterborne transport), addressed to Member States. For the remaining fuels (hydrogen and natural gas (LNG and CNG) for road transport), the targets would remain indicative. (IA, p. 38);

*Policy Option 4* provides that ‘the EU will set out essential or specific requirements for alternative fuels infrastructure for Member States. At the same time it will set out basic criteria for minimum infrastructure coverage, together with binding targets for the electricity, hydrogen and natural gas (LNG and CNG) in road and LNG in waterborne transport, addressed to Member States.’ (IA, p. 38).

The IA provides detail on the content of policy options 2, 3, and 4 in Table 7, p. 39.

Appendix 7 gives an overview of the preliminary policy options, with the soft and strict regulatory approach as the main differentiator. The policy options retained after pre-screening and described above are the most capable of simultaneously achieving both specific objectives. The Commission also offers an overview table of pre-screened possible combinations of the various types of alternative fuels, resulting in a large number of variations being added in the policy options. The selection of four fuel combinations for further analysis was based on the principle of technological neutrality — to avoid deployment of one favoured specific fuel over other technologies (Appendix 7, p. 44). The four discarded combinations were not selected because it would be ‘unjustified to apply a stricter regulatory approach to fuels and technological solutions that are in an earlier stage of technological maturity’, whilst ‘mandatory application of standards coupled with industry self-regulation for all alternative fuel infrastructure would not be effective’, because of too many industries representing their interests would lead to many cross-industry disagreements (Appendix 7, p. 45).

---

3 Appendix 7, table 5, p. 44.
4 Electricity, hydrogen, LNG for vessels and LNG for trucks, and CNG for vehicles combined with policy options 1, 2, and 4; and electricity, hydrogen, and LNG for vessels combined with the four policy options.
The preferred option of the Commission is Policy Option 3, 'since it appears to better take into account the economic constraints, particularly at a time of crisis. However, Policy Option 4 is not formally discarded as its suitability is mostly influenced by existing technological uncertainties and prospects that can change in the near future with technology progressing rapidly. This would increase the efficiency, which presently is rated medium. The overriding necessity of giving clear signals to the markets, both industry and consumers, would rather give larger political merits to the comprehensive Policy Option 4. If chosen, such a decisive step at EU level could accelerate the market development of alternative fuels in general and ensure that investments have a larger impact on economic growth in Europe.' (IA, p. 71).

- **Scope of the Impact Assessment**

The IA assesses economic, social, environmental impacts by comparing the four policy options selected. The IA explains the approach to methodology used (for example, economic modelling, comparisons of investing in infrastructure, monetary benefits to vehicle users), as well as the main challenge of the assessment: by supporting the market up-take of alternative fuels infrastructure, the initiative only tackles one of the market failures of alternative fuels, and has to be seen in the context of a wider strategy of the other initiatives (all listed in Appendix 3) (IA, p. 40). The policy options are compared with the assumption that, under Policy Option 2, 'Member States will decide to follow their own, dissimilar national rules', but under Policy Options 2 and 3, 'the Commission would set out mandatory essential or specific requirements in its proposal for a Directive' (IA, p. 41).

The economic impacts are assessed both quantitatively and qualitatively, and they include macroeconomic impacts, competitiveness, SMEs, internal market, as well as consumers (IA, p. 42). The main parameter used to assess the economic impacts is standardisation of technical requirements and infrastructure deployment. The estimated investment costs are calculated both per fuel for each policy option, as well as per country (Policy option 2 - 5 million €, Policy option 3 - 10 million €, and Policy option 4 - 10,5 million €). Appendix 10 provides a detailed cost-benefit analysis of infrastructure deployment — 'In all Member States, the ratio of benefits to costs is higher than 1.3, with several Member States (Denmark, Italy, Lithuania, the Netherlands, Portugal) having ratios exceeding 2.5.' (p. 64). The IA also mentions the criteria which could not be taken into account in the cost-benefit analysis, for example, the benefit of reduced oil-dependency, increased competitiveness and better functioning of the internal market. (IA, p. 53).

Regarding macroeconomic impacts, under the policy options 1-3 'the main macroeconomic effect would be on reduced oil consumption and avoided fuel expenditure' (IA, p. 54). Avoided fuel use is described in Appendix 10: 'from about 610 million € per year in 2020 to about 2.3 bn € per year in 2030 under Policy Option 2; 1.7 bn € per year in 2020 to 4.6 bn € per year in 2030 under Policy Option 3; and 4.2 bn € per year in 2020 to 9.3 bn € per year in 2030 under Policy Option 4' (IA, p. 54).

The internal market is looked at in the framework of technology development and the technical standards applicable to them. The Commission does not state its preference for any of the policy options in this respect, and only provides a short qualitative analysis.

Consumers are likely to bear the costs of investments as the investors will have to charge them for improved and more accessible infrastructure across the EU. Policy Options 3 and 4 have an advantage, as they would provide a wider network of infrastructure. (IA, p. 60).
Social impacts include impacts on employment, workers' skills, social cohesion and health. The Commission predicts that employment will gradually shift from the traditional oil industry to alternative fuels industry, and in the short term create even more jobs (IA, p. 63). Policy options 1-3 will have no special impact on social cohesion (IA, p. 64). Effects on health include noise and air pollution, and while there are no significant differences among the policy options regarding gradual reduction of costs related to noise protection, the effects on reduced emissions of pollutants differ significantly (PO4 — decrease by 2.8 % till 2020, PO3 — 2%, PO2 — 1.4%).

The environmental impacts of a successful build-up of alternative fuels infrastructure are considered to be significantly beneficial, notably in terms of reduced noise, pollution and CO\textsubscript{2} emissions. All the three policy options are assessed against the baseline scenario (Policy Option 1), and the Commission has chosen three deadlines against which to compare the environmental impacts — year 2020, 2030, and 2050 (the overview tables are included in pp. 67-68). Under Policy Option 4, the reduction in oil consumption is the most promising — about 2.3% by 2020, as well as the reduction of CO\textsubscript{2} emissions — 4.6% by 2050 (IA, p. 67).

- **Subsidiarity / proportionality**

The right for the Union to act in the field of transport is set out in Articles 90 and 91 of the TFEU, in Title VI on the Common Transport Policy.

There are no reasoned opinions from national parliaments relating to this proposal.

- **Budgetary or public finance implications**

The Commission states that 'only limited costs related to the follow-up on the implementation of the Directive will arise for the EU budget.' (Explanatory memorandum, p. 6) 'While there will be no implication for the EU budget, national budgets may be affected depending on the specific measures chosen by the Member States.' (IA, p. 51). No quantification of these implications for national budgets is provided.

- **SME test / Competitiveness**

No specific SME test has been included in the IA. The IA stresses that many manufacturers of alternative fuels infrastructure are 'very large global companies' (IA, p. 61). The IA states that the quantitative evidence on the impact on SMEs is limited. However, as SMEs represent traditional sectors of activity and the use of personal vehicles is a necessity to their business, SMEs and micro enterprises would benefit from the policy proposals since many of them could profit from the reduced operating costs of alternative fuel vehicles. Policy Option 4 would be the most favourable.' (IA, p. 59).

Competitiveness is looked at in the context of global competition among the EU producers of infrastructure equipment and alternative fuels vehicles, and their competitors outside the EU (IA, p. 55). Appendix 11 includes an extensive list of manufacturers of both the infrastructure equipment and vehicles and vessels both within the EU and in the third countries.
• **Quality of data, research and analysis**

Although the Commission admits that external studies 'have revealed large gaps in data availability, and confirmed uncertainties on future projections' (IA, p. 7), the IA provides a deep, detailed, and interesting analysis, based on substantiated and comprehensive data obtained from the stakeholders and external studies, as well as in-house studies and working documents. However, the economic modelling and other methods could be better explained to a non-expert reader, by providing a clearer link between the excellently presented data and the descriptions of policy options. The Commission could more precisely link the types of alternative fuels to the respective types of vehicle throughout the IA (for example, passenger road vehicles, trucks, waterborne transport, etc.). Also, it could better describe the difference between privately and publicly available electric vehicle charging points (for example, if needed for industry use or for private passenger car use). Overall, the IA seems to include high quality data and analysis within the apparent limits of the evidence available.

• **Stakeholder consultation**

The IA clearly lists the stakeholders who participated in the consultation process: energy supply and transport sector representatives; manufacturers of vehicles, vessels, aeroplanes, and trains; transport operators; transport users; public authorities; and civil society (Appendix 2, p. 4).

The IA states that 'the studies and the consultations with industry experts, national experts and the public, have arrived at the conclusion that a fuel mix of several main alternative fuels is considered the only realistic solution, not just as transition, but for the foreseeable future. All main alternative fuel options should therefore be developed in parallel.' (Appendix 2, p. 4) The Commission has followed these conclusions in the preparation of the IA.

• **Monitoring and evaluation**

The Commission calls for reporting every two years by the Member States regarding their 'plans on the build-up of alternative fuels infrastructure'. The Commission itself will report 'on the implementation and impacts of this Directive to the European Parliament and the Council' (IA, p. 71). The IA provides tools for exercising this reporting process.

• **Commission Impact Assessment Board**

The Commission's IA Board delivered a critical opinion on the draft IA on 17 August 2012 and formulated recommendations for its improvement. The IA Board asked the originating service, DG MOVE, to strengthen the problem definition, to develop options for alternative ways of reaching the objectives, to clearly indicate who will finance the infrastructure, and to elaborate more transparent cost and benefit estimates for all options, as well as to better present stakeholders' views. DG MOVE seems to have largely followed up on the recommendations of the Board, by adding much useful additional analysis and strengthening its treatment of the policy options. A second opinion of the IAB on a revised draft suggested that DG MOVE should better prove the effectiveness of targets, as well as the financial implications for the Member States and the EU budget; provide stronger evidence that all fuels covered by this initiative can be expected to become economically viable; better justify the level of infrastructure targets for each Member State, and explicitly address in the cost-benefit analysis the question of whether
there will be implications for public budgets at EU and Member State level. The treatment of the infrastructure targets for each Member State and the cost-benefit analysis regarding public budgets could still have been improved further.

- **Coherence between the Commission’s legislative proposal and IA**

The legislative proposal and IA submitted by the Commission appear to correspond. The former does not contain substantive elements that have not been addressed in the latter.

**Author:** Laura Zandersone

**Impact Assessment Unit**
Directorate G for Impact Assessment and European Added Value
Directorate General for Internal Policies of the Union (DG IPOL)
European Parliament.

This note, prepared by the Impact Assessment Unit for the European Parliament's Committee on Transport and Tourism (TRAN), analyses whether the principal criteria laid down in the Commission’s own Impact Assessment Guidelines, as well as additional factors identified by the Parliament in its Impact Assessment Handbook, appear to be met by the IA. It does not attempt to deal with the substance of the proposal. It is drafted for informational and background purposes to assist the relevant parliamentary committee(s) and Members more widely in their work.

This document is also available on the internet at:

To contact the Impact Assessment Unit, please e-mail: impa-secretariat@ep.europa.eu.

The opinions expressed in this document are the sole responsibility of the author(s) and do not represent an official position of the European Parliament. Reproduction and translation of this document for non-commercial purposes are authorized, provided the source is acknowledged and the publisher is given prior notice and sent a copy.

Manuscript completed in June 2013

DOI 10.2861/17132
CAT BA-30-13-376-EN-N