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Play by the rules? : coordination of EU sustainable development policies and the importance of the politico-legal context

Kamphof, R.

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Chapter 4: EU and Member States Formulating Policies on Alternative Fuels for Private Vehicles

4.1 Introduction

"We need to speed up action in the decarbonisation of the transport sector and its switch to alternative fuels". (Speech European Commissioner on Climate Action and Energy Miguel Arias Cañete, 17 March 2015)²⁶⁶

The issue of 'alternative' transportation fuels such as electricity, hydrogen and biofuels receives a lot of attention in the European Union. This increasing attention is the result of two current trends. Firstly, traditional combustion engines, especially diesel engines, are under severe criticism as a result of recent emission scandals including 'Dieselgate'.²⁶⁷ Secondly, in the European Union transport is nowadays almost entirely dependent on (imported) fossil fuels, particularly petroleum based fuels like gasoline and diesel. Ninety-four percent of transport relies on oil products, of which ninety percent is imported.²⁶⁸ These fuels need to be replaced by cleaner alternatives to reduce import dependency, decarbonise the economy and contribute to international agreements such as the Paris Agreement and the Sustainable Development Goals.²⁶⁹ The transport sector accounts for twenty-five percent of energy-related greenhouse gas emissions in which seventy percent of the emissions and much of the air pollution comes from road transport.²⁷⁰ Moreover, transport is the only sector in the EU where greenhouse gas emissions have actually increased in the last decades,²⁷¹ thus causing many EU Member States, the European Commission as well as companies to fine-tune their fuel ambitions promising the phase-out of traditional combustion engines for private vehicles in the EU.²⁷²

A European 'alternative fuels strategy' supports a comprehensive mix of fuels, ensuring 'technological neutrality' and diversification of energy supply.²⁷³ The four alternative fuels most often noted are electricity, hydrogen, advanced biofuels and natural gas blended with biomethane. The policies on alternative fuels for passenger cars need to be formulated by the European Union and its Member States, sharing competences on policy areas including transport, energy and climate action.²⁷⁴ European Commission President Jean-Claude Juncker recently re-committed to an ambitious 'decarbonisation' of the economy by 2025

²⁶⁶ European Commission (2015) 'Speech by Commissioner Arias Cañete: A "Renewable" Energy Union' 17 March 2015, Brussels, Accessed 7 August 2017 via http://europa.eu/rapid/press-release_SPEECH-15-4615_en.htm.

²⁶⁷ Teffer, P. (2016) 'Switching off emissions filters 'within the law' says car lobby', EU Observer, 1 July 2016, <https://euobserver.com/dieselgate/134138>.

²⁶⁸ European Commission (2015) 'Ten priorities for Europe: A new start for Europe: an EU agenda for jobs, growth, fairness and democratic change'.

²⁶⁹ The Paris Climate Change Agreement of 2015 has firmly and urgently established the reduction of greenhouse gas emissions and, hence, the 'decarbonization' of the world economy as a global policy objective to be achieved in the next few decades. United Nations Framework Convention on Climate Change (2015) Paris Agreement, https://unfccc.int/files/meetings/paris_nov_2015/application/pdf/paris_agreement_english.pdf, Accessed 13 December 2016.

²⁷⁰ European Commission (2016) 'A European Strategy for Low-Emission Mobility', COM(2016) 501 final, 20.07.2016, Brussels, p. 2

²⁷¹ Egenhofer, C. (2011) 'The EU should not shy away from setting CO2-related targets for transport', *CEPS policy brief*, No 229/January 2011.

²⁷² See e.g. Castle, S. (2017) 'Britain to Ban New Diesel and Gas Cars by 2040', New York Times, Jul 26, 2017 where it is indicated that the United Kingdom and France announced in July 2017 that they will ban sales of new diesel and gas cars by 2040. Also Volvo announced that all models from 2019 will be either hybrids or battery-powered vehicles, phasing out the traditional combustion engine.

²⁷³ European Commission (2013) Communication 'Clean Power for Transport: A European alternative fuels strategy', COM(2013) 17 final, 24 January 2013, Brussels.

²⁷⁴ See e.g. Art 4 TFEU and Art 191 TFEU.

while pointing to the current 'mismatch' in aligning promises, expectations and delivery, e.g. in the 'car emissions scandal'.²⁷⁵

Current research tends to focus on the 'technical' and 'economic' aspects of the future of fuels, focusing on the differences between (primarily) electrical and hydrogen fuel cells when compared with traditional combustion engines.²⁷⁶ Moreover, for biofuels in particular, research is oriented on related aspects such as land-use as well as more emotive topics.²⁷⁷ The EU and its Member States together receives some attention but especially in comparison with larger producers like the United States and China.²⁷⁸ Some authors focus on the normative aspects of the EU's fuel policies.²⁷⁹ However, there is only scant attention for the decision-making processes and institutional background within the European Union and even less for the mixed legal competences underneath them. This is problematic as policies on alternative fuels are mainly driven by government policies.²⁸⁰ The EU and Member State incremental process based on these competences could provide useful information about the policy formulation on more sustainable policies in practice.

The present chapter addresses whether legal competences enable or impede coordination of EU and Member State actors when formulating policies on alternative fuels. The main research question addressed by this chapter has been the following: *How do legal competences affect EU and Member State coordination in policy formulation on alternative fuels for passenger cars?* As the goal is to bring together the political and legal discourse, the effect of legal competences (independent variables) is assessed in relation to the following intervening (political-theoretical) variables: supranational versus intergovernmental dominance, the EU's position in the international constellation of power and preference heterogeneity. Moreover, this chapter addresses some other explanations that appear to hinder or enable coordination.

The findings of this chapter stem from multiple sources of information, which are brought together through triangulation. More specifically, this study makes use of a step-by-step process tracing approach revising legal documents (Treaty provisions, cases before the Court of Justice of the EU, regulations and directives), policy documents and academic literature. The qualitative part of this case study additionally relies on eleven 45-60 minutes long semi-structured interviews with leading negotiators, EU and Member State officials, (former) ministers as well as experts (see Table 4.1). These interviewees were approached after a stakeholder analysis and by means of organigrams/websites ('own initiative') and/or by referral (snowball sampling).²⁸¹ With regards to the timeframe, this analysis focuses on the

²⁷⁵ European Commission (2017) 'White Paper on the Future of Europe: reflections and scenarios for the EU27 by 2025'.

²⁷⁶ Offer, G. J., Howey, D., Contestabile, M., Clague, R. and Brandon, N. P. (2010) 'Comparative analysis of battery electric, hydrogen fuel cell and hybrid vehicles in a future sustainable road transport system'. *Energy Policy*, Vol. 38, No. 1, pp. 24-29 and Shafiei, E., Davidsdottir, B., Leaver, J., Stefansson, H., and Asgeirsson, E. I. (2015) 'Comparative analysis of hydrogen, biofuels and electricity transitional pathways to sustainable transport in a renewable-based energy system'. *Energy*, Vol. 83, pp. 614-627.

²⁷⁷ Cf Demirbas, A. (2009) 'Political, economic and environmental impacts of biofuels: a review'. *Applied Energy*, Vol. 86, p. S109.

²⁷⁸ Su, Y., Zhang, P. and Su, Y. (2015) 'An overview of biofuels policies and industrialization in the major biofuel producing countries'. *Renewable and Sustainable Energy Reviews*, Vol. 50, p. 995.

²⁷⁹ Afionis, S. and Stringer, L. C. (2012) 'European Union leadership in biofuels regulation: Europe as a normative power?'. *Journal of Cleaner Production*, Vol. 32, p. 114.

²⁸⁰ See a.o. Su, Y., Zhang, P. and Su, Y. (2015) 'An overview of biofuels policies and industrialization in the major biofuel producing countries'. *Renewable and Sustainable Energy Reviews*, Vol. 50, pp. 991-1003.

²⁸¹ These interviews have been conducted from July 2016 to March 2017; eight of these interviews have been conducted together with Thijs Bonenkamp, MSc graduate in International Relations & Diplomacy at Leiden University and research assistant at Leiden University. Three of these interviews have been conducted by the author alone and notes have been shared with Thijs Bonenkamp and colleagues from Delft University (Dr Reinoud Wolffenbuttel and Delft

process from the 2009 Fuel Quality Directive until July 2017.²⁸² The interviews have mainly been focused on biofuel policies, but other fuels and scenarios were included in the semi-structured interviews and were analysed.²⁸³ The organised approach leads to an overall assessment of the potential influence of legal competences, interaction with/autonomy from other intervening variables and other explanations for this specific case. The results from this study can, however, only be valued as 'plausibility probes', providing interesting avenues for future research, but still needing further testing in relation to other cases to become more robust.²⁸⁴

Category	No of interviews
<i>EU official</i>	2
<i>Member State official</i>	3
<i>Other societal stakeholder</i>	7

Table 4. 1 No of semi-structured interviews for case study alternative fuels

The chapter is structured as follows. Section 4.2 describes the alternative fuels and the situation in other parts of the world compared to the 'typical' EU policies. Section 4.3 describes the EU coordination process and the policies that have been formulated (dependent variable). Section 4.4 zooms in on the legal aspects, i.e. the effect of legal competences in the UN legal context, Treaty's competences, the Court's case law and the regulations and directives that are relevant in the framework of the Single Market. In the fifth section, these legal aspects are then compared with intervening variables such as 'supranational versus intergovernmental dominance', 'the EU vs the rest of the world' and preference heterogeneity. This section offers also some additional possible explanatory variables such as stakeholder interests and the emotional state of the debate. Finally, it evaluates whether the EU and its Member States are legally enabled or restrained by the division of competences or whether 'political' (or other) issues play a more prominent role. The chapter ends by providing suggestions for future research.

4.2 Alternative fuels

This section zooms in on alternative fuels such as electricity, hydrogen and biofuels. After a basic explanation of alternative fuels, the section continues with an overview of the popularity of alternative fuels outside the EU, in countries like China, Brazil and the United States. It then shows how the EU is distinctive in its appreciation of alternative fuels and that the issue

University graduate Luke Middelburg. The interview questions have been sent to the interviewees beforehand. The interviews have not been taped. Please see chapter 3 (research design) and the annex for more information on the interviews .

²⁸² For more information, see <http://ec.europa.eu/environment/air/transport/fuel.htm>. After finishing the case study (July 2017) the European Commission launched an action plan on the alternative fuels infrastructure. Cf European Commission (2017) 'Towards the broadest use of alternative fuels - an Action Plan on Alternative Fuels Infrastructure under Article 10(6) of Directive 2014/94/EU, including the assessment of national policy frameworks under Article 10(2) of Directive 2014/94/EU' (SWD(2017)365 final), 8.11.2017, Brussels.

²⁸³ These interviews were originally part of a non-technical study funded by Ford Poling Challenge in cooperation with Delft University (The Netherlands), presented at a biofuel workshop in The Hague in October 2016: <https://www.universiteitleiden.nl/en/events/2016/10/renewable-energy>. Delft University measures the gasoline/ethanol/water composition of biofuels as part of the overarching technical study. This non-technical research has been conducted in close cooperation with technical experts at Delft University and with the other non-technical expert, Thijs Bonenkamp, who is focusing on legislation and underlying motives on biofuels in the European Union and specific Member States Poland, The Netherlands, France and Sweden. We continued our cooperation afterwards, aiming for a (forthcoming) cross-disciplinary article on biofuels and EU policies.

²⁸⁴ George, A. L. and Bennett, A. (2005) *Case studies and theory development in the social sciences* (Cambridge, Massachusetts: MIT Press).

of alternative fuels is led by government policies and not so much by specific multilateral agreements.

4.2.1 Alternative fuels

Alternative fuels can make a useful contribution to transport decarbonisation, by means of lower greenhouse gas emissions and lesser effects on air quality than the currently used oil- and gas-based fuels. The four types alternative fuels that are often suggested as main options for passenger cars (and light duty vehicles for medium distances) are electricity, hydrogen, compressed natural gas (CNG) with biomethane and advanced biofuels.²⁸⁵ These alternative fuels are often seen as a 'mix', ensuring both technological neutrality as well as diversification of energy supply. One of the most reasonable alternatives before total electrification is for example the obligation of fuel suppliers to provide a certain share of alternative fuels or blend them.²⁸⁶ A small change towards more 'flexi-fuel vehicles' or 'dual-fuel technology' is then needed.

Electricity as transport fuel would decrease CO₂ emissions, improve energy efficiency and could provide for innovative vehicle solutions. Electricity as a power source causes the most radical shift for passenger cars: it requires a completely different fuel infrastructure from those for liquid-fuel-powered internal combustion engines, and it changes energy supply from a single energy source (e.g. oil) to a universal energy carrier that can be produced from all primary energy sources like sun and wind. With battery-driven technologies, it could help to balance the intermittent supply of these renewable energy technologies in energy production. These battery storage facilities are one of the unique parts, and the loading phase takes longer than re-fuelling liquids. Moreover, battery-based cars are yet more for the 'shorter' range while fuel-based cars could provide for longer distances and heavier private vehicles.²⁸⁷

Like electricity, hydrogen is a universal energy carrier, which can be used as a fuel for transport. It can in fact be used in a fuel cell with an electric motor as a complementary solution to storing electricity in batteries, but it can also be used as a fuel in 'traditional' internal combustion engines. As an alternative fuel for transport, one would need to build the necessary refuelling infrastructure for hydrogen. These costs are 'comparable' to the ones of the electricity infrastructure. The CNG with biomethane can be seen as a 'transition fuel' because it can be used in established combustion engines. Additional refueling stations could 'easily be supplied' from the existing natural gas distribution network throughout Europe.²⁸⁸

Biofuels are an additive/substitute liquid fuel that can be produced from biomass resources such as plants, agricultural and forestry residues and a large portion of waste streams.²⁸⁹ Biofuels have recently become attractive for transport due to their environmental benefits. Nevertheless, much (agricultural) land is needed for the production of biofuels. Agriculture, urbanization, settlement, transport infrastructure, ecosystems, preservation of wildlife, goods

²⁸⁵ See e.g. Report of the European Expert Group on Future Transport Fuels: Future Transport Fuels (2011)

<https://ec.europa.eu/transport/sites/transport/files/themes/urban/cts/doc/2011-01-25-future-transport-fuels-report.pdf>.

²⁸⁶ European Commission (2016) 'A European Strategy for Low-Emission Mobility', COM(2016) 501 final, 20.07.2016, Brussels.

²⁸⁷ Report of the European Expert Group on Future Transport Fuels: Future Transport Fuels (2011)

<https://ec.europa.eu/transport/sites/transport/files/themes/urban/cts/doc/2011-01-25-future-transport-fuels-report.pdf>.

²⁸⁸ Provided the quality of gas is sufficient for CNG vehicles. Cf European Commission (2013) Communication 'Clean Power for Transport: A European alternative fuels strategy', COM(2013) 17 final, 24 January 2013, Brussels. p. 6.

²⁸⁹ Demirbas, A. (2009) 'Political, economic and environmental impacts of biofuels: a review'. *Applied Energy*, Vol. 86, p. S108.

and services compete for land use increasingly, this phenomenon was caused by population growth and a rising middle class.²⁹⁰ It is a hot topic of debate whether biofuels currently have to compete between food security and the fuel economy, especially with their (first-generation) food-based fuels.²⁹¹ To tackle the concerns raised by this 'first generation' biofuels, more 'advanced' generations of biofuels were developed. The 'second generation' of biofuels derive from biomass, non-food crops including woods and waste, which is already more acceptable. The 'Third-generation biofuels' are biodegradable from algae. Microalgae are considered as a feedstock for biofuels production already since the 1950s.²⁹²

The debate with regards to the 'sustainability' of alternative fuels concerns mostly (advanced) biofuels. Critics look at the question of sustainable land use and clean production rather than at the blend itself. An important process is therefore *indirect land use change* (ILUC). As previously noted, cropland that was originally used for (other) agriculture such as growing food or feed is now typically used for biofuels production. This means that previously non-cropland including grasslands and forests need to be displaced for biofuels production or other agriculture production. ILUC risks negating the greenhouse gas savings that result from increased biofuels, as grasslands and forests typically absorb high levels of CO₂.²⁹³ Unfortunately scientific consensus on how to monitor and control ILUC is currently lacking.²⁹⁴ There is however, increasing attention on the import of raw materials necessary for the batteries of electric vehicles, e.g. lithium.²⁹⁵ Remarkably, these 'sustainability considerations' are not particularly relevant for the production process of cars, thus leading to the observation that the 'greenness' of alternative fuels seems more of an ethical political question than an economic or technical question.²⁹⁶

4.2.2 EU and the international context: the example of bio-ethanol

In countries all over the world the production of alternative fuels needs to be promoted via tax exemptions, subsidies, blending mandates or other (financial) incentives. The choice of fuels depends on country characteristics such as the traditional vehicle market share (diesel/gasoline), the prominence of the domestic car industry (and e.g. agricultural industry for biofuels) and the 'drivers' of alternative fuel policies. Among these drivers are CO₂ emission reduction, promotion of agricultural/rural development²⁹⁷, tackling air pollution²⁹⁸, fuel diversity, reducing the dependency on imported petroleum and energy security²⁹⁹, foreign exchange savings³⁰⁰ and employment³⁰¹.

²⁹⁰ European Academies Scientific Advisory Council EASAC (2012) 'The current status of biofuels in the European Union, their environmental impacts and future prospects', EASAC policy report 19, December 2012, p. 3.

²⁹¹ European Academies Scientific Advisory Council EASAC (2012) 'The current status of biofuels in the European Union, their environmental impacts and future prospects', EASAC policy report 19, December 2012, p. 11.

²⁹² *Ibid.*, p. 15.

²⁹³ European Commission DG Energy, topic 'Land use change' (2016): <https://ec.europa.eu/energy/en/topics/renewable-energy/biofuels/land-use-change>.

²⁹⁴ Afionis, S. and Stringer, L. C. (2012) 'European Union leadership in biofuels regulation: Europe as a normative power?'. *Journal of Cleaner Production*, Vol. 32, pp. 114-123.

²⁹⁵ See e.g. (in Dutch) Kamphof, R. (2013) 'Grondstoffen' (natural resources, raw materials) Nationale Commissie voor Duurzame Ontwikkeling NCDO, Amsterdam, www.kaleidosresearch.nl/download/2015/08/2013-Grondstoffen.pdf.

²⁹⁶ Seeing parallel technical research by Delft University, it seems that ethanol works the same in car motors, irrespective of the feedstocks used. Remarkably in case of biofuels, also for agricultural producers the production process itself is not different and whether they produce for the food or transport market is dependent on intermediaries such as collectors who decide where the products are marketed.

²⁹⁷ Su, Y., Zhang, P. and Su, Y. (2015) 'An overview of biofuels policies and industrialization in the major biofuel producing countries'. *Renewable and Sustainable Energy Reviews*, Vol. 50, p. 995.

²⁹⁸ Demirbas, A. (2009) 'Political, economic and environmental impacts of biofuels: a review'. *Applied Energy*, Vol. 86, p. S115.

²⁹⁹ *Ibid.*, p. S119.

³⁰⁰ *Ibid.*, p. S108.

Large government programmes help to drive the production of 'alternative fuel', as demonstrated by the example of bio-ethanol (biofuel). Brazil used to be the only country where ethanol (biofuel) production was profitable and came close to competing with gasoline.³⁰² More than 80 percent of the vehicles in Brazil use ethanol blended fuels³⁰³ and flexi-fuel vehicles have become mainstream since the early 2000s³⁰⁴. Brazil started this phenomenon in the 1970s with its *ProAlcool* programme.³⁰⁵ In Brazil, ethanol is produced from sugar cane, which is considered 'the most sustainable option currently in the market' according to Afionis and Stringer (2012: 116).

The United States is now the largest producer of biofuels since 2006, having overtaken Brazil.³⁰⁶ American Bioethanol is mainly produced from large-scale corn growing. Ethanol produced in the U.S. is considerably more expensive than the sugar cane-based ethanol from Brazil. Nevertheless, it is less expensive than the ethanol from grain and sugar beet in Europe.³⁰⁷ In the U.S., the production is largely incentivised by the government. A typical feature of American biofuel production is the close relation with security issues, promoted by the U.S. armed forces.³⁰⁸ Energy independence appears to be a significant motive behind biofuel policies in the United States and Brazil, together with the promotion of their own (agricultural) industries.

For people in rural areas of oil importing developing countries biofuels such as bioethanol give 'prospects of new economic opportunities' according to Demirbas (2009: 108). Many developing countries could end their import dependence by focusing on bioethanol production, as a number of tropical countries have a productive advantage when it comes to biofuels.³⁰⁹ However, experiences in other continents show that this needs to be driven by governmental policies.³¹⁰ China is already incentivising this development with large bioenergy and biopoly programs supported by the Chinese government³¹¹ and biofuels are subsidised in countries including Malaysia, Argentina and Indonesia. Nevertheless, the recent situation of low oil prices and the decline in gasoline and diesel prices has 'affected

³⁰¹ Afionis, S. and Stringer, L. C. (2012) 'European Union leadership in biofuels regulation: Europe as a normative power?'. *Journal of Cleaner Production*, Vol. 32, p. 116, cf Di Lucia, L. and Nilsson, L. J. (2007) 'Transport biofuels in the European Union: The state of play'. *Transport Policy*, Vol. 14, No. 6, pp. 533-543 and Banse, M., Van Meijl, H., Tabeau, A., Woltjer, G., Hellmann, F. and Verburg, P. H. (2011) 'Impact of EU biofuel policies on world agricultural production and land use'. *Biomass and Bioenergy*, Vol. 35, No. 6, p. 2385.

³⁰² Sorda, G., Banse, M. and Kemfert, C. (2010) 'An overview of biofuel policies across the world'. *Energy Policy*, Vol. 38, No. 11, p. 6977. Cf Demirbas, A. (2009) 'Political, economic and environmental impacts of biofuels: a review'. *Applied Energy*, Vol. 86, p. S116.

³⁰³ Soccol, C. R., Vandenbergh, L. P. D. S., Medeiros, A. B. P., Karp, S. G., Buckeridge, M., ... & Bon, E. P. D. S. (2011). 'Bioethanol from lignocelluloses-status and perspectives in Brazil', *Bioresour Technol.* Vol. 101, No. 13, p. 4820.

³⁰⁴ Su, Y., Zhang, P. and Su, Y. (2015) 'An overview of biofuels policies and industrialization in the major biofuel producing countries'. *Renewable and Sustainable Energy Reviews*, Vol. 50, p. 998.

³⁰⁵ Sorda, G., Banse, M. and Kemfert, C. (2010) 'An overview of biofuel policies across the world'. *Energy Policy*, Vol. 38, No. 11, p. 6981.

³⁰⁶ Demirbas, A. (2009) 'Political, economic and environmental impacts of biofuels: a review'. *Applied Energy*, Vol. 86, p. S110. See also <http://www.afdc.energy.gov/data/10331>.

³⁰⁷ Demirbas, A. (2009) 'Political, economic and environmental impacts of biofuels: a review'. *Applied Energy*, Vol. 86, p. S116.

³⁰⁸ Su, Y., Zhang, P. and Su, Y. (2015) 'An overview of biofuels policies and industrialization in the major biofuel producing countries'. *Renewable and Sustainable Energy Reviews*, Vol. 50, p. 992.

³⁰⁹ Afionis, S. and Stringer, L. C. (2012) 'European Union leadership in biofuels regulation: Europe as a normative power?'. *Journal of Cleaner Production*, Vol. 32, p. 118.

³¹⁰ Sorda, G., Banse, M. and Kemfert, C. (2010) 'An overview of biofuel policies across the world'. *Energy Policy*, Vol. 38, No. 11, pp. 6977-6988.

³¹¹ Su, Y., Zhang, P. and Su, Y. (2015) 'An overview of biofuels policies and industrialization in the major biofuel producing countries'. *Renewable and Sustainable Energy Reviews*, Vol. 50, p. 998.

discretionary blending economics' in certain markets leading to increased scrutiny of support policies for biofuels and structural challenges.³¹²

Historically, the EU production of biofuels is biased towards billions of liters of biodiesel instead of million liters of bioethanol.³¹³ As compared to countries such as U.S. and Brazil, the ethanol industry is considerably less powerful and incapable of competing with 'big oil'. Biofuels still need to be imported and this takes a much higher energy yield per hectare than biofuels produced from 'homegrown' biomass in Europa.³¹⁴ Ethanol production is thus not profitable in the EU without substantial fiscal support.³¹⁵ The 'ethanol awareness' of consumers also seems to be much lower in the EU than in other countries. This is expected to change as future legislation might obligate car producers as well as gasoline stations to inform consumers about the amount of ethanol in fuel blends. The spread of 'advanced biofuels' seems to be a new opportunity for EU leadership according to its recent Strategy for Low-emission mobility (p. 4).³¹⁶

The example makes clear that the EU is not incentivising the bio-ethanol programme in to the same extent as other major economies. One could argue that this is different for other alternative fuels. Nevertheless, this case might only be convincing for 'electricity' where there is indeed growing consumer awareness and EU sales of electric vehicles are only topped by China.³¹⁷ However, as this research later shows, this is not the result of a large coherent government programme.

4.3 EU coordination and policies

Coordination is the process of contacts between diplomats and officials from EU institutions (especially the European Commission) and Member States with the purpose of discussing an issue of common interest and working towards a common position and adjusting different positions in multiple ways. These coordination processes can be internal (within the EU) or external (internationally) and include the discussion of the 'management' of the coordination. The coordination process of policy formulation on alternative fuels is not particularly socialised, in the sense that representatives involved in formulating EU policies do not first and foremost adopt a European orientation due to the socialisation of EU practices. Socialisation is therefore not a result of the coordination process. There is a more general tendency to meet and coordinate domestically in EU Member States.

The policies in the EU and Member States on alternative fuels are characterised by some classical 'U-turns' and quite large differences across Member States. Nevertheless, the more 'overarching' energy and climate commitments are clear and originate from high-level conclusions and strategies at EU institutions. As an example, in the February 2011 European Council agreed to reduce greenhouse gas emissions by 80-95 percent before 2050 in

³¹² IEA (2015) 'Renewable Energy: Medium-Term Market Report 2015', <https://www.iea.org/Textbase/npsum/MTrenew2015sum.pdf>.

³¹³ See Demirbas, A. (2009) 'Political, economic and environmental impacts of biofuels: a review'. *Applied Energy*, Vol. 86.,p. S109 who states that EU biofuels production amounted to around 2,9 billion liters in 2004, with bioethanol totaling 620 million liters and biodiesel the remaining 2,3 billion liters.

³¹⁴ European Academies Scientific Advisory Council EASAC (2012) 'The current status of biofuels in the European Union, their environmental impacts and future prospects', EASAC policy report 19, December 2012, p. 9 of Thamsiriroj, T. and Murphy, J. D. (2009) 'Is it better to import palm oil from Thailand to produce biodiesel in Ireland than to produce biodiesel from indigenous Irish rape seed?' *Applied Energy*, Vol. 86, No. 5, pp. 595-604.

³¹⁵ Afionis, S. and Stringer, L. C. (2012) 'European Union leadership in biofuels regulation: Europe as a normative power?'. *Journal of Cleaner Production*, Vol. 32, p. 118.

³¹⁶ European Commission (2016) 'A European Strategy for Low-Emission Mobility', COM(2016) 501 final, 20.07.2016, Brussels.

³¹⁷ <http://www.hybridcars.com/top-10-plug-in-vehicle-adopting-countries-of-2016/>.

comparison to the levels in 1990.³¹⁸ In 2014 the European Council agreed to the 2030 climate and energy framework, with the aim of a 40 percent reduction by 2030 when compared to 1990 levels, a minimum 27 percent of power sourced from renewable energy as well as at least a 27 percent improvement in energy efficiency. This framework, although especially focused on the timeframe beyond 2020, asks for a 'comprehensive and technology neutral' approach to reducing greenhouse gas emissions and risks related to fossil fuel dependency.³¹⁹

The more transport-related strategies follow smoothly on from these broad commitments and are oriented on transport 'decarbonisation'. The recent Strategy on Low-Emission Mobility (2016) and the earlier White Paper on Transport Policy (2011) make the broad commitments more applicable to transport.³²⁰ The 2013 'Clean Power for Transport' strategy supports a comprehensive mix of alternative fuels, ensuring technological neutrality and diversification of energy supply. The strategy identified four priority fields for further EU actions to promote alternative fuels, which are still relevant: 1) the lack of fueling infrastructure; 2) the development of common technical specifications; 3) consumer acceptance and 4) the technological development, including fuel production and vehicles/vessels.³²¹

The Directives that have effect on (alternative) fuels mostly originate earlier, namely in 2009. The 'Fuel Quality Directive' was adopted in that year, seeking to reduce greenhouse gas intensity in fuels and moreover create a single fuel market while regulating the sustainability of biofuels.³²² In parallel, the 'Renewable Energy Directive' in 2009 aimed for a 10 percent target of biofuels in transport.³²³ The 2014 directive on 'alternative fuel infrastructure' focuses more on the deployment of infrastructure.³²⁴ Member States could develop their own 'national policy frameworks' setting out the market development of alternative fuels and deployment of relevant infrastructure.³²⁵ Reporting obligations on 'third countries' alternative fuels certification schemes are also an important policy measure. The EU is known for its stringent sustainability criteria for alternative fuels imported from countries outside the EU, although the certification scheme itself has lately been subject to critical scrutiny.³²⁶

The amendments on alternative fuels, especially biofuels, and other policies make it clear however that the policies are quite difficult to follow for stakeholders in the EU. In 2012, after the many protests over rising food prices and scientific reports,³²⁷ the 10 percent target of

³¹⁸ European Council (2011) '4 February 2011 Conclusions' EUCO 2/1/11, Brussels, 8 March 2011, para 15.

³¹⁹ European Council (2014) '23 and 24 October 2014 Conclusions' EUCO 169/14, Brussels, 24 October 2014, para 2.13.

³²⁰ European Commission (2011) 'Roadmap to a Single European Transport Area –Towards a Competitive and Resource Efficient Transport System', 28. 03. 2011, COM(2011) 144 final.

³²¹ European Commission (2013) Communication 'Clean Power for Transport: A European alternative fuels strategy', COM(2013) 17 final, 24 January 2013, Brussels.

³²² Directive 2009/30/EC of the European Parliament of the Council on the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and the specification of fuel used by inland waterway vessels, 23 April 2009, OJ. L. 140/88.

³²³ Directive 2009/28/EC of the European Parliament and of the Council on the promotion of the use of energy from renewable sources, 23 April 2009, OJ L. 140/16.

³²⁴ Directive 2014/94/EU of the European Parliament and of the Council on the deployment of alternative fuels infrastructure, 22 October 2014, L307/1.

³²⁵ An assessment of national policy frameworks is foreseen for November 2017. See European Commission (2017) Communication 'Europe on the Move: An agenda for a socially fair transition towards clean, competitive and connected mobility for all', COM (2017)283 final. Brussels, 31 May 2017, p. 17.

³²⁶ See European Court of Auditors (2016) 'The EU system for the certification of sustainable biofuels', Special Report no 18. Luxembourg: Publications Office of the European Union and European Academies Scientific Advisory Council EASAC (2012) 'The current status of biofuels in the European Union, their environmental impacts and future prospects', EASAC policy report 19, December 2012.

³²⁷ European Academies Scientific Advisory Council EASAC (2012) 'The current status of biofuels in the European Union, their environmental impacts and future prospects', EASAC policy report 19, December 2012.

biofuels in transport target from RED2009 was amended to 7 percent *without* food-based biofuels. In the more recent 'Strategy on Low-Emission Mobility' (2016, p. 5) the Commission suggests to phase out all subsidies to these first generation biofuels by 2020. The transition towards advanced biofuels was adopted for after long and difficult ILUC discussions in November 2015. Without regard to the drivers of these policies, the *effects* of these policies are clear: the car industry currently towards electrification and cleaner alternative fuels such as hydrogen. While originally included in the list of alternative fuels, blending biofuels with gasoline as well as solutions like CNG with bio-methane seems only to be a *transitional* phase. Symptomatically, few funds promote biofuel-related research: the DG CLIMA-managed NER-300 programmes have almost stopped and the Horizon2020 research funding on biofuels almost stopped after 2015/2016.³²⁸ In comparison, there is much more EU attention directed towards electrification. References for alternative fuels are not yet clearly stated in transport policy documents themselves. Moreover, the responsibility is dispersed across Directorates-General in the European Commission with DG Energy and DG CLIMA responsible for Fuel Quality and Renewable Energy Directives, and DG MOVE (transport) and DG AGRI (agriculture) mostly sidelined. DG DEVCO (as well as foreign ministries in Member States) is further involved in monitoring the 'global' effect of discussions such as food versus fuel.

The 'U-turns' in policies on alternative fuels the Member States have led to fragmented initiatives, with some countries focusing on hydrogen (e.g. Germany), others on electrification and newer EU13 Member States focusing on the traditional combustion engines or instead food-based biofuels. The fragmented responsibility chain seems to be copied within Member States, with a large role for finance ministries in taxation. Different market failures show that the EU is moreover missing the opportunity to become a world leader in advanced sustainable fuel and vehicle technology. The recent Communication 'Europe on the Move' (2017) could lay the framework for more coherent action on alternative fuels, but the implementation of this strategy is beyond the timeline of this study.

One of the most dramatic 'anti-coordination' practices has been the 'collusion' between German carmakers coordinating their activities in more than a thousand meetings according to the investigative reporting of *Der Spiegel*.³²⁹ These practices are contrary to the very idea of European coordination. There have been examples of technical coordination practices, such as the 'European Expert Group on Future Transport Fuels'.³³⁰ However, these kinds of groups have only temporary assignments, mostly focused on technical expertise rather than decision-making processes.

4.4 The division of competences, legal issues and policy formulation

How does the division of competences in the Treaty affect the policy formulation on alternative fuels for private vehicles in the EU and the Member States? This section starts with an overview of the multilateral context that is not specifically focused on alternative fuels. Thereafter, the research briefly analyses how shared competences on transport,

³²⁸ Horizon 2020 program possesses a total amount of 82.7 million Euros in both 2014/2015 and 2015/2016 to promote research and innovation into 2nd generation biofuels.

³²⁹ Dohmen, F. & Hawranek, D. (2017) 'The Cartel: Collusion between Germany's biggest carmakers', *Der Spiegel*, 27 July 2017, accessed: <http://www.spiegel.de/international/germany/the-cartel-collusion-between-germany-s-biggest-carmakers-a-1159471.html> at 3 August 2017.

³³⁰ Report of the European Expert Group on Future Transport Fuels: Future Transport Fuels (2011) <https://ec.europa.eu/transport/sites/transport/files/themes/urban/cts/doc/2011-01-25-future-transport-fuels-report.pdf>.

climate change and energy have an effect on alternative fuel policies together with exclusive competences (trade) and Member State autonomy (taxation, energy mix). Furthermore, the legal issues important to the functioning of the single market, e.g. the Emission Trading System and Effort Sharing Decision, are discussed. The section ends by analysing the effects of case law of the Court of Justice of the European Union and of the opening infringement proceedings in Member States.

4.4.1 Multilateral context

The alternative fuel market is a global market. The EU and its Member States cannot act on their own and need to follow international guidelines. There are a number of important international institutions and agreements at the United Nations level. First, the Paris Agreement, concluded in 2015 within the UNFCCC framework, is a universal, partly legally binding global climate agreement setting out a global action plan to limit global warming to well below 2°C above pre-industrial levels.³³¹ The Paris Agreement is set to come into effect at the latest in 2020. The EU is implementing these guidelines through the 2030 Climate and Energy Package.

Secondly, the World Trade Organization (WTO) is an important standard setter. WTO standards attribute strict rules on state aid and (non-) tariff barriers. Therefore, it is impossible for example to subsidise the agricultural sector in the EU to make biofuel production more profitable. The issue of sustainability criteria for (bio)fuels is entering the agenda of the WTO.³³²

Thirdly, the Agenda 2030 and its 17 Sustainable Development Goals (SDG) set universal goals for the future. While transport and future fuels do not have a specific overarching goal or targets, many related targets are covered within for example SDG 2 (food security), SDG 7 (energy), SDG 9 (infrastructure), SDG 11 (sustainable cities), SDG 12 (responsible production and consumption) and SDG 13 (climate action). The EU, as well as (local and national) governments of EU Member States, plays a role in facilitating cross-sector collaboration for the SDGs.³³³

Besides these three 'overarching' institutions and global commitments, the EU and its Member States are involved in international negotiations, such as the International Transport Forum (OECD), the UNECE World Forum for Harmonization of Vehicle Regulations (WP.29) and specific multilateral negotiations on guidelines, including the Worldwide Harmonized Light Vehicles Test Procedure (WLTP). The EU (and the Member States) also act bilaterally with important biofuel producing countries, such as the United States, Brazil, China and developing countries like Indonesia. The European Commission supports the 'Global Fuel Economy Initiative'³³⁴ as well as the G20 work on the vehicle fuel economy³³⁵. Nonetheless, it is fair to say that the multilateral negotiations only indirectly (and often voluntarily and not universally)³³⁶ relate to the issue of alternative fuels and therefore the fuel conditions for

³³¹ See chapter 5.

³³² Daugbjerg, C. and Swinbank, A. (2015) 'Globalization and new policy concerns: the WTO and the EU's sustainability criteria for biofuels'. *Journal of European Public Policy*, Vol. 22, No. 3, pp. 429-446.

³³³ See chapter 6.

³³⁴ <https://www.globalfuelconomy.org/about-gfei/endorsements> with an endorsement by Jos Delbeke, Director-General DG Climate Action.

³³⁵ G20 Energy efficiency action plan: voluntary collaboration on energy efficiency (2014), https://ipeec.org/upload/publication_related_language/pdf/11.pdf.

³³⁶ Brazil is e.g. not a member of multilateral forums such as the International Transport Forum and WP.29.

private vehicles are left within the remit of governments themselves. The issue of alternative fuels is 'barely' discussed in a multilateral context.³³⁷ Therefore, the remainder of this section will focus on EU and Member State legal competences on alternative fuels.

4.4.2 Competences EU and alternative fuels: overview and practice

Transport is a common policy of EU and Member States. By following the logic of the Treaty, the issue of transportation fuels could be interpreted as falling under the transport policy 'shared competence', where both the Union and the Member States have legislative power.³³⁸ The issues related to alternative fuels are however not only in the field of 'transport' policies but also connected to climate action and energy. EU action in these fields is justified on the grounds of subsidiarity as provided for in Articles 91, 191 and 194(1) TFEU. These policy areas are also 'shared competences' even though this is an highly debated issue.³³⁹

The large 'energy' component visible in the leading role of DG ENER could influence policy to be more lenient towards the 'energy mix autonomy' of Member States. Energy is considered as perhaps 'the only field' in which the EU has moderated its common - almost teleological - drive towards an ever closer union.³⁴⁰ In its 2001 Green Paper on energy security, the Commission regrets that the Union 'suffers from having no competence (...) in energy matters'.³⁴¹ Article 194 TFEU also shows the difficulty of combining common policies and national autonomy, coined as a 'double-edged sword' by officials of the European Parliament.³⁴²

Alternative fuels for private vehicles are actually not limited to the domains of energy, transport and climate, they can in fact be considered as an emblematic 'mixed competence' example. In almost all policy areas related to alternative fuels (primarily transport, energy, environment, agriculture and development cooperation), the EU and Member States *share* competences, with trade and taxation as notable examples³⁴³. Member State governments hold the right to decide the amount of taxes that they wish to levy for different types of fuel, while there is a European minimum as stipulated in the Fuel Taxation Directive.³⁴⁴ Both in internal and external forums the EU and Member State actors need to coordinate their actions. In practice, though, the interviews portray an environment in which the European Commission sets the limits and boundaries of fuels and transport policies and it is up to the governments of Member States to support and/or hinder the introduction and deployment of these alternative fuels (infrastructures). The energy mix autonomy and taxation autonomy

³³⁷ Interview other societal stakeholder, 28-7-2016.

³³⁸ Art 4 TFEU, e.g. internal market, environment, transport, energy, consumer protection, agriculture.

³³⁹ Kamphof, R., Bonenkamp, T., Selleslaghs, J.M.H.M.R. and Hosli, M.O. (2017) 'External competences in energy and climate change' in Leal-Arcas, R. and Wouters, J. (eds) *Research Handbook on EU Energy Law and Policy* (Edward Elgar Publishing), pp. 30-47.

³⁴⁰ Leal-Arcas, R. and Rios, J.A. (2015) 'The Creation of a European Energy Union' *European Energy Journal*, Vol. 5, No. 3, p. 27 and Andoura, S., Hancher, L. and Van der Woude, M. (2010) 'Towards a European Energy Community: A Policy Proposal by Jacques Delors'. *Notre Europe*, p. 7.

³⁴¹ Cf Lavenex, S. (2004) 'EU external governance in 'wider Europe'. *Journal of European Public Policy*, Vol. 11, No. 4, p. 692.

³⁴² Braun, J.F. (2011) 'EU Energy Policy under the Treaty of Lisbon Rules: Between a new policy and business as usual', EPIN Working Paper Vol. 31, p. 7.

³⁴³ The EU has exclusive competence on trade but Member States have autonomy on taxation issues.

³⁴⁴ Directive 2003/96/EC of the Council restructuring the Community framework for the taxation of energy products and electricity, 27 October 2003, OJ L 283. See https://ec.europa.eu/transport/modes/road/road_charging/fuel_taxation_en for the overview of derogations.

are often used by Member State actors to hinder EU-wide deployment of alternative fuel infrastructure.³⁴⁵

4.4.3 Single road fuel market: legal barriers

The concept of sustainable development is directly linked to the internal market in the Treaties.³⁴⁶ The internal market is encouraging EU integration and 'was and is the hard core of the EU' in the field of transport and energy policies.³⁴⁷ As a result, there is a single market for road fuel and vehicles, and refineries and other fuel production facilities are widely distributed throughout the EU. Many interviews highlight the importance of directives in this area.³⁴⁸ Moreover, the EU is known for its stringent sustainability criteria that apply when entering the internal market.³⁴⁹ However, some legal considerations have to be kept in mind, as they affect the functioning of this 'single market' on alternative fuels. First, as indicated before, there are substantial barriers resulting from national taxation schemes, not only on transport fuels, but also on energy. This 'lack of harmonization' appears to conflict with the security of supply objectives and can lead to 'excess tax competition'.³⁵⁰

Secondly, the alternative fuels are not part of the more stringent Emissions Trading System (ETS). Instead, the division of competences (see above) shows that these are 'non-ETS' sectors most often within the discretion of Member States. This affects the necessity of emission reduction commitments and the legally binding nature of such commitments. The emission reduction effort has been differentiated in a reduction of 43 per cent for the EU ETS-sector and one of 30 per cent for the non-ETS sector by 2030 when compared to 2005. Furthermore, there is no 'sector-specific' goal for transport in the non-ETS emission reduction target, although it is noted that measures include 'a shift away from transport based on fossil fuels' in the context of the Effort Sharing Decision. These overall reduction commitments are, however, a shared burden together with e.g. buildings, agriculture, small industry and waste.³⁵¹ Moreover, while the Effort Sharing Decision from the 2030 EU Energy and Climate Package sets some national annual binding targets for emissions not covered under the EU emission trading scheme (ETS), those specifically relevant for biofuels, emissions from land use, land use change and international shipping are not included.³⁵² As a result, some Member States feel that the specific transport emission reduction efforts can be transferred to other Member States who do not have a large automotive sector.³⁵³

Thirdly, many of the policies related to alternative fuels for private vehicles are regulated through directives, such as the fuel quality directive, renewable energy directive and directive on alternative fuel infrastructure. This gives more freedom (and time) to Member States to

³⁴⁵ Interview Other societal stakeholder 1, 27-3-2017, Interview other societal stakeholder 2, 27-3-2017, Interview other societal stakeholder, 28-7-2016.

³⁴⁶ Cf Article 3(3) TEU: "The Union shall establish an internal market. It shall work for the sustainable development of Europe based on balanced economic growth and price stability, a highly competitive social market economy, aiming at full employment and social progress, and a high level of protection and improvement of the quality of the environment. It shall promote scientific and technological advance."

³⁴⁷ Pelkmans, J. (2016) 'Why the single market remains the EU's core business'. *West European Politics*, Vol. 39, No. 5, p. 1095.

³⁴⁸ Interview EU official, 7-9-2016, Interview other societal stakeholder, 20-7-2016, Interview MS official, 10-8-2016, Interview MS official, 7-9-2016.

³⁴⁹ Interview MS official, 10-8-2016.

³⁵⁰ Steenberghen, T. and Lopez, E. (2008) 'Overcoming barriers to the implementation of alternative fuels for road transport in Europe'. *Journal of Cleaner Production*, Vol. 16, No. 5, p. 584.

³⁵¹ https://ec.europa.eu/clima/policies/effort_en.

³⁵² DG Climate Action (2016) http://ec.europa.eu/clima/policies/effort/index_en.htm; accessed 22-8-2016.

³⁵³ Interview other societal stakeholder, 28-7-2016.

pursue the provisions as they see fit when compared to directly enforceable regulations. The many amendments (see section 4.2) show that this is hindering coordination in formulation of policies, thus leading to the private sector becoming hesitant in investments. While the necessary vehicle modifications, including the introduction of 'flexi-fuel vehicles', are relatively cheap and easy,³⁵⁴ these activities are currently being postponed.

4.4.4 Court of Justice: threatening with infringement proceedings

The semi-structured interviews show that the issue of alternative fuels for passenger cars used to be a policy area where regulatory measures were 'softer'. These softer measures included stimulation of clean technology, deployment of infrastructure for alternative fuels, subsidies, research projects and demonstration zones. In a way, these 'softer' measures meant that the Court of Justice of the European Union was not an actor in this policy area. Nevertheless, the recent 'scandals' with traditional combustion engines, especially diesel engines, have paved the way for a harder line of sanctions, thus causing threats of fines and opening of infringement proceedings due to 'laxity on car emissions'.³⁵⁵ Moreover, the directives are legally binding and therefore enforceable by the European Commission and the Court of Justice. In that sense, it is not the absence of legal competences itself but instead the absence of *using* this legal competences that explains policies on alternative fuels³⁵⁶. Therefore, the next section points to more 'political' issues that affect EU and Member State actors in their policy formulation on alternative fuels.

4.5 Political issues and policy formulation

This section zooms in on the so-called 'political' issues that affect policy formulation on alternative fuels for private vehicles in the EU and Member States. After an evaluation of the 'institutional turf battles' between the Council and the Commission and the distinctive profile of the EU against the rest of the world, the 'preference heterogeneity' of Member States is offered as an important variable explaining the level of coordination of policy formulation on alternative fuels. The remainder of the section focuses on other explanatory variables, such as the interests of 'other societal stakeholders', the emotional state of the debate, and scientific uncertainty.

4.5.1 Supranational versus intergovernmental dominance

Transport policies in general are traditional 'institutional turf battles' in which Member States are reluctant to transfer powers to the European Commission.³⁵⁷ Even after the 'Dieselgate' scandal, the Commission was not put in charge with 'tougher competences', as consumer affairs Commissioner Jourouva puts it.³⁵⁸ While the inclusion of transport in ETS and national 'hard targets' is often suggested as a solution,³⁵⁹ this is rejected by the Council and some Member States, especially Germany. Interestingly, there is also 'intra-institutional'

³⁵⁴ Interview MS official, 10-8-2016.

³⁵⁵ Teffer, P. (2016) 'EU states under pressure for laxity on car emissions', 9 September 2016, <<https://euobserver.com/dieselgate/135011>>.

³⁵⁶ After the case study has been conducted, the Commission has asked Bulgaria, Denmark, Estonia, France, Lithuania, Malta, Poland, Romania and Sweden to fully transpose EU rules on the deployment of alternative fuels infrastructure (Directive 2014/94/EU) in October 2017. It remains to be seen whether this will lead to infringement proceedings in the near future.

³⁵⁷ Egenhofer, C. (2011) 'The EU should not shy away from setting CO₂-related targets for transport', *CEPS policy brief*, No 229/January 2011, p. 4.

³⁵⁸ Teffer, P. (2017) 'Dieselgate: EU disappointed with VW's treatment of customers', *EUObserver*, 21 February 2017.

³⁵⁹ Egenhofer, C. (2011) 'The EU should not shy away from setting CO₂-related targets for transport', *CEPS policy brief*, No 229/January 2011.

competition which causes many DGs (and ministries) to have different powers. Mostly, DG ENER takes the lead with policy initiatives, but competences and responsibilities are dispersed across DGs with DG MOVE (transport) and DG AGRI (agriculture) remarkably absent.³⁶⁰ The European Parliament is slightly less involved due to its lack of technical expertise, but the MEPs had a louder voice in the 'emotional' debate on biofuels in the late 2000s and early 2010s.³⁶¹

4.5.2 EU's position in the international constellation of power

A strong and difficult 'external environment' affects EU and Member State actors in policy formulation with relation to 'the rest of the world'. Many scholars blame this on the typical historical evolution, its hybrid supranational-intergovernmental polity as well as the shared competences between the EU and Member States, with the consequence that the EU is viewed as a 'normative power' in world affairs, especially in environmental diplomacy.³⁶² There is already large import dependence on traditional (oil-based) fuels, with the reliance 'a very sparse number of energy suppliers' meaning they could use this situation as a 'political weapon'.³⁶³ While reducing import dependence is raised as a motivating factor in alternative fuel policies one can argue that there is a greater import dependence in the case of alternative fuels, e.g. the raw materials for electric vehicles and more 'sustainable' biofuels such as the ones based on sugarcane. This would then cause the European Commission to play a larger role and the EU could use its combination of 'aid and trade' muscle in pursuit of multiple objectives.³⁶⁴ However, while there is a global market for alternative fuels, the multilateral context is weak. Moreover, as Afionis and Stringer (2012: 115) state, the EU has been 'inconsistent' in using its powers in relation biofuels. In practice, it seems as if the EU and its Member States, when acting together as a large trading entity, seeks to protect its own (agricultural, automotive) industries first rather than promoting environmental diplomacy. Thus, the external environment has only a moderate effect on EU and Member State policy formulation, reducing the call or larger Commission powers.

4.5.3 Preference heterogeneity

As indicated by the literature, 'preference heterogeneity' – in the sense of (the absence of) aligning interests – could be considered a primary cause of EU and Member State behavior in policy formulation above or alongside legal powers. This study shows a large preference heterogeneity across Member States in the choice of alternative fuels. That might be a positive development, as the 'mix' of alternative fuels could help in reaching objectives and targets. However, the preference heterogeneity present in the case of alternative fuels is hindering coordination of policy formulation, because it is a mix of divergent and often contradictory preferences. The European Commission does not have the necessary powers to coordinate this situation. The substantive divergence is largely the result of historical fuel

³⁶⁰ Interview EU official, 7-9-2016, Interview MS official, 7-9-2016, Interview other societal stakeholder, 7-9-2016, Interview EU official, 31-3-2017.

³⁶¹ Interview other societal stakeholder, 3-3-2017, Interview other societal stakeholder 2, 27-3-2017, Interview EU official, 31-3-2017.

³⁶² Manners, I. (2002) 'Normative power Europe: a contradiction in terms?'. *JCMS: Journal of Common Market Studies*, Vol. 40, No. 2, pp. 235-258. Cf Oberthür, S. and Roche Kelly, C. (2008) 'EU leadership in international climate policy: achievements and challenges'. *The International Spectator*, Vol. 43, No. 3, pp. 35-50. For a more critical contribution, see Afionis & Stringer (2012) and Falkner (2007).

³⁶³ Leal-Arcas, R. and Rios, J.A. (2015) 'The Creation of a European Energy Union' *European Energy Journal*, Vol. 5, No. 3, p. 24.

³⁶⁴ Afionis, S. and Stringer, L. C. (2012) 'European Union leadership in biofuels regulation: Europe as a normative power?'. *Journal of Cleaner Production*, Vol. 32, p. 115, see also Van Schaik, L. and Kamphof, R. (2015) 'Now or never: using the EU's trade power as leverage for a climate deal in Paris'. Clingendael Policy Brief, November 2015.

choices, different job markets and strong stakeholder interests and lobbies in Member States. The 'imbalance' of diesel and petrol (and alternative fuels) makes it very difficult to come up with an integrated EU approach and blending is very country-specific.³⁶⁵ To illustrate, Scandinavian countries are more oriented on biomass than other countries, the 'EU13' countries are focused on traditional fuels, Germany has a large car industry and France has a large agricultural industry (for food-based fuels).³⁶⁶ These stakeholders and divergent interests all have powerful representatives in Brussels. Therefore, as has been stated by Falkner (2007: 508), EU 'leadership' on environmental issues needs to be analysed against the background of the (domestic) political economy of European biotechnology.³⁶⁷ Until now, according to the interviews, this has resulted in 'soft' measures stimulating clean technology and alternative fuels, sometimes with intermittent subsidies.³⁶⁸ This might turn into a harder line, for example with e.g. CO₂ taxation³⁶⁹ and 'punishing' traditional combustion engines, but this is very much dependent on national preferences.

4.5.4 Alternative explanations

While the explanations above definitely affect EU and Member State cooperation in policy formulation on alternative fuels, alongside legal considerations there are some other factors that were raised in the interviews. This section ends with two of these factors. Firstly, and especially in the case of biofuels, the 'U-turns' in EU policies have been the result of 'emotional' debates and inconclusive 'science-based' policies on food vs fuel. The ILUC debate on this matter paralyzed the implementation of biofuel policies for at least three years, until the issue was eventually solved in 2015. Earlier, the Fuel Quality Directive and Renewable Energy Directive were amended, which can be attributed to the heated 'food versus fuel' discussions. The alternative fuel discussion has been hijacked by emotive arguments according to some of the interviews.³⁷⁰ In that way, these discussions on alternative fuels can be compared with other ethical discussions in the EU such as the debates on genetically modified organisms, carbon capture and storage, nuclear power and radioactive waste.³⁷¹

The uncertainties have led some people to state that it is logical that the 'precautionary principle' is used and that, in this case of 'unknown risk', production is decreased or halted.³⁷² These 'precautionary' objectives could also affect EU and Member State action. However, one could argue that these 'precautionary principles' pave the way for more concrete action to decrease *fossil* fuels while the policy formulation on alternative fuels is rather slow.

Secondly, an alternative explanation for EU and Member State policy formulation on alternative fuels is the influence of 'other societal stakeholders' in this policy area. This seems indeed a credible explanation. In Europe, the automotive industry has been hesitant

³⁶⁵ Interview other societal stakeholder, 19-7-2016.

³⁶⁶ Interview other societal stakeholder 1, 27-3-2017, Interview MS official, 7-9-2016.

³⁶⁷ Falkner, R. (2007) 'The political economy of 'normative power' Europe: EU environmental leadership in international biotechnology regulation'. *Journal of European Public Policy*, Vol. 14, No. 4, p. 508.

³⁶⁸ Interview EU official, 7-9-2016. Interview EU official, 31-3-2017. Interview other societal stakeholder, 20-7-2016.

³⁶⁹ Egenhofer, C. (2011) 'The EU should not shy away from setting CO₂-related targets for transport', *CEPS policy brief*, No 229/January 2011.

³⁷⁰ Interview other societal stakeholder 1, 27-3-2017, Interview other societal stakeholder 2, 27-3-2017, Interview MS official, 7-9-2016, Interview EU official, 7-9-2016, Interview EU official, 31-3-2017, Interview other societal stakeholder, 19-7-2016.

³⁷¹ Cf Di Lucia, L. and Nilsson, L. J. (2007) 'Transport biofuels in the European Union: The state of play'. *Transport Policy*, Vol. 14, No. 6, pp. 533-543.

³⁷² Afionis, S. and Stringer, L. C. (2012) 'European Union leadership in biofuels regulation: Europe as a normative power?'. *Journal of Cleaner Production*, Vol. 32, p. 119.

to act in the absence of credible long-term regulatory measures from the government, even holding back in quite 'simple' moves like introducing flexi-fuel vehicles.³⁷³ There are some more outspoken strong interests and lobbies, such as the oil industry and fuel suppliers against the large-scale introduction of bio-ethanol. On the other hand the agricultural industry also has a heavy lobbying presence in Brussels supportive of (food-based) alternative fuels. Concurrently, the agricultural lobbyists seem to be more strategically positioned to prioritise trade concerns and to hinder progress on relaxing import tariffs from outside Europe.³⁷⁴ Of course, there are national equivalents of all these EU-wide interest groups with differing stakes across EU Member States. Furthermore, civil society organisations are particularly vocal on the topic of alternative fuels, aggregated by CSOs such as Transport & Environment. Among their concerns are food vs fuel, the interests of developing countries, poor working conditions in developing countries³⁷⁵ (stricter) environmental standards as well as biodiversity.³⁷⁶ All interests of stakeholders find their way into reports by Members of the European Parliament, who are equally keen to contribute to this debate.³⁷⁷ However, as it is the case also for other politicians, they do not seem to be driven by technological neutrality, but rather by their own preferences for electricity; in this way transition (biofuels, biogas) and alternative fuels (e.g. hydrogen) end up being neglected.³⁷⁸

The drive for alternative fuels seems to be led by the European people who highly value environmental protection.³⁷⁹ Conversely, consumers seem to be rather hesitant to choose flexi-fuel vehicles and high alternative fuel blends. As it has been discussed in the previous section, the EU and Member State governments and their directorates/ministries play a very powerful role in this field by means of measures, taxes and subsidies. Importantly, according to the interviewees biofuel policies within the European Commission are especially driven by DG Energy and DG Climate Action; DG Agriculture, DG Environment, DG Mobility and Transport and DG Trade are considerably less active in this regard.³⁸⁰ The same might be true for governmental stakeholders within EU Member States. Accordingly, the distinction between EU and Member States might be a bit too abstract as, in practice, it is more up to individual ministries, or, in the case of the European Commission, specific DGs. The different interests of these actors make it very difficult to coordinate policy formulation on alternative fuels across the EU.

4.6 Discussion/conclusion

The main question addressed in this chapter has been the following: *How do legal competences affect EU and Member State coordination in policy formulation on alternative*

³⁷³ Interview MS official, 10-8-2016, Interview other societal stakeholder, 20-7-2016, Interview other societal stakeholder, 28-7-2016.

³⁷⁴ Afionis, S. and Stringer, L. C. (2012) 'European Union leadership in biofuels regulation: Europe as a normative power?'. *Journal of Cleaner Production*, Vol. 32, p. 120.

³⁷⁵ Cf Nuffield Council on Bioethics (2011) 'Biofuels: ethical issues' (Nuffield Press, Oxfordshire), http://nuffieldbioethics.org/wp-content/uploads/2014/07/Biofuels_ethical_issues_FULL-REPORT_0.pdf.

³⁷⁶ See e.g. the website of CSO Transport & Environment (T&E) and their specific actions on fuels: <https://www.transportenvironment.org/browse/transport-mode/fuels>.

³⁷⁷ See e.g. European Parliament resolution of 15 March 2012 on a Roadmap for moving to a competitive low carbon economy in 2050 (2011/2095(INI)).

³⁷⁸ Interview other societal stakeholder 1, 27-3-2017, interview other societal stakeholder 2, 27-3-2017, interview MS official, 22-7-2016, Interview EU official, 31-3-2017.

³⁷⁹ European Commission Special Eurobarometer (2014) 'Attitudes of European citizens towards the environment', Special Eurobarometer 416, September 2014. Cf Falkner, R. (2007) 'The political economy of 'normative power' Europe: EU environmental leadership in international biotechnology regulation'. *Journal of European Public Policy*, Vol. 14, No. 4, p. 510.

³⁸⁰ Interview EU official, 7-9-2016, Interview MS official, 7-9-2016, Interview other societal stakeholder, 7-9-2016, Interview EU official, 31-3-2017.

fuels for passenger cars? As the objective of this study to combine political and legal perspectives, the effect of the division of competences is analysed alongside 'political' issues, such as the supranational versus intergovernmental dominance, the EU's position in the international constellation of power and preference heterogeneity. This research is based on review and analysis of literature, policy documents, case law, legislation, and is complemented by twelve semi-structured interviews with (mainly) EU and Member State officials at policy adviser ranks, (assistants of) Members of Parliament and 'other stakeholders' in the car industry, agricultural industry as well as Civil Society Organisations.³⁸¹ The study focuses on a timeframe between the introduction of the Renewable Energy Directive and Fuel Quality Directive (2009), almost coinciding with the entry into force of the Lisbon Treaty, and July 2017.

'Legal competences' may not be considered crucial when explaining policy formulation on alternative fuels by EU and Member State actors, but reviewing the Treaty provisions, the Court's case law and legal documents like directives provides for some clarification for (the lack of) coordination. First, mixed competences on alternative fuels make it sometimes difficult to coordinate. The EU and Member States share competences in policy areas such as climate change (environment), transport and energy. Even though the Commission has exclusive competence on related fields (such as trade), there is no multilateral context in which these trade competences could be used and additionally other competences in which Member States are more autonomous, such as taxation, are deemed more important. Moreover, within the primary shared competence of energy, the 'energy mix' is within the remit of individual Member States, which negatively affects the EU cooperation on alternative fuels. Secondly, the legal context of the Single Market makes it clear that transport (and energy) is sometimes a category that is distinct from more binding procedures like the Emission Trading System. Thirdly, the Court's case law could help in bringing the EU and Member States together. However, the Commission has not started infringement proceedings on the lack of cooperation in the automotive sector. Fourthly, the directives on fuel quality, alternative fuel infrastructure and renewable energy give some guidance. However, the past few years have seen many 'U-turns' in policies which affected the directives.

When comparing the effects of these procedural arrangements and legal competences with alternative 'political' issues, some explanations seem stronger, while others seem less important. Large 'preference heterogeneity' between and within Member States seems to affect EU and Member State actors in formulating policies more heavily than the differences between the EU and the 'rest of the world'. Moreover, the interviews and, to a lesser extent, the literature, demonstrated that there are two alternative explanations that seem to have a strong effect. First, the scientific uncertainty and emotional state of the debate on alternative fuels, primarily on biofuels, seem to have an effect on policy formulation. Secondly, the alternative fuels policy area is characterised by powerful (domestic) stakeholders with often divergent interests, such as the car industry, oil industry, CSOs and the agricultural industry. Moreover, the 'governmental' stakeholders within EU and Member State seem to have divergent interests with often (national) ministries and (European Commission) DGs having opposing views on this topic. These explanations affect EU and Member State coordination alongside and often above legal considerations, meaning that they explain EU and Member

³⁸¹ See the annex for an (anonimised) overview of the interviews and chapter 3 for the methodological justification.

State coordination more than legal coordination in this specific case study. The effect of the explanations is visualised below (see Figure 4.1).

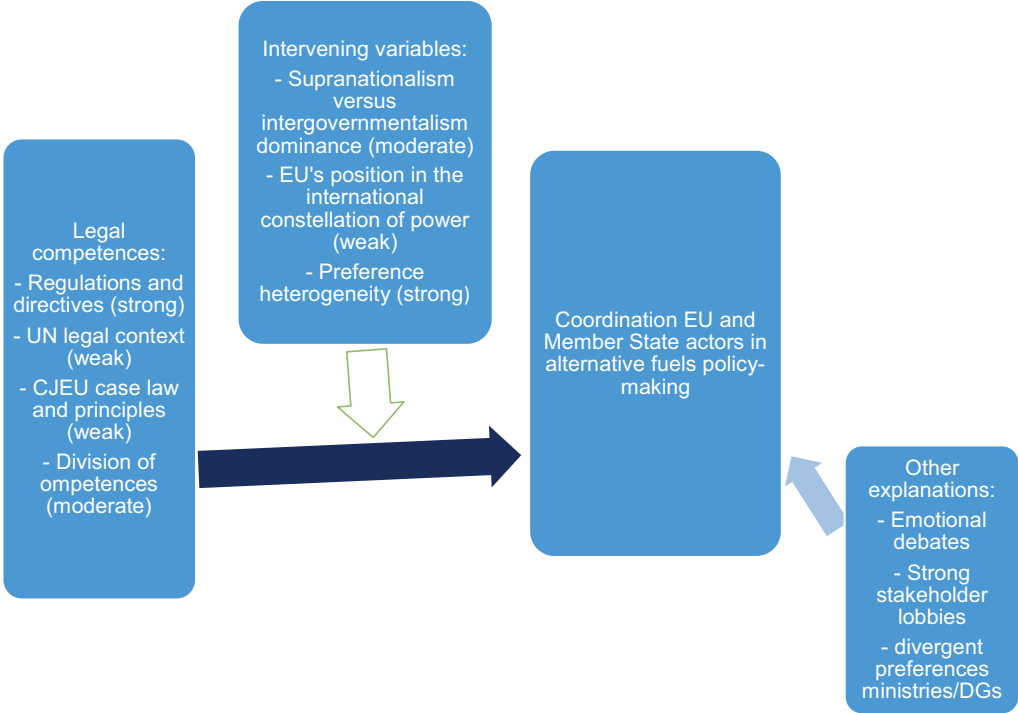


Figure 4. 1 Variables and effects on EU and Member State coordination in alternative fuels policy making

The adoption and ratification of the Paris Agreement, greater energy security concerns, concerns about traditional combustion engines and higher ambitions on alternative fuels could lead to legal and political debate on whether it would more effective, efficient and closer to the rationale of the Treaty, to grant the Commission a bigger role. Recent years have seen many U-turns in EU and Member State policies, which proved to be detrimental to mass-scale introduction of e.g. flexi fuel vehicles. Some of the stakeholders speak of a classical ‘chicken and egg situation’ in which stakeholders keep each other in custody on this topic before moving forwards.³⁸² The situation on alternative fuels in other parts of the world already makes it clear that governmental policy could really encourage this agenda. In that sense, one would expect a larger discussion on legal competences on alternative fuels in the near future, and more specifically on ‘energy mix’, taxation and climate action.

Further research

The European Commission appears to be right in its recent strategy on Low-Emission Mobility in which it holds that the EU could lead on the introduction of some alternative

³⁸² Interview other societal stakeholder, 20-7-2016, Interview other societal stakeholder 1, 27-3-2017, Interview other societal stakeholder, 28-7-2016.

fuels.³⁸³ This leading potential could indeed be used for other transport sectors beyond the scope of this study, like aviation, shipping and (heavy-weight) freight, as there is not yet a sustainable alternative for these heavy polluting industries as it has been held in strategic visions of Member States.³⁸⁴ Nevertheless, the automotive industry could in addition take the lead towards more sustainable fuels. With electrification still in its infancy, blending of fuels can contribute towards a more sustainable future, in the transitional phase and within the European Union. While the mass-scale introduction of flexi-fuel vehicles seems far-fetched, it is definitely possible to take incremental steps towards alternative fuels and increasing awareness thereof. More political and legal research on this topic could reveal the 'institutional' constraints that currently hinder the real introduction of a 'single market' on alternative fuels. This study already claims that the nature of policy change in the EU is more 'incremental' than 'radical'. A more historical institutionalist approach could therefore use these build-up of incremental steps to explain (the absence of) EU-wide policies on alternative fuels. One of the explaining factors might be the current difficulty of multilateral cooperation on this topic, which keeps EU and Member State decision-makers within their own (conservative) ambition cycle heavily influenced by domestic stakeholders.

Moreover, one could have a better appraisal of other explaining factors that this study came across. The increasing importance of other societal stakeholders like the private sector, lobbying actors and CSOs seem to have strong, but divergent, effect on technology-neutral fuel policies for private vehicles. Furthermore, the scientific uncertainty seems to have affected the cooperation rather heavily and lessons could be learned from other 'ethically loaded' topics in the EU such as GMOs or nuclear waste. Additionally, the experience of working together with technical experts and technical universities has proven refreshing, and combinations of these disciplines could work well in explaining decision-making on global challenges including emission reduction in transport.

SUMMARY CHAPTER 4

The chapter identified how the allocation of competences, i.e. legal competences, affect EU and Member State actors in their policy formulation on alternative fuels for passenger cars such as electricity, biofuels and hydrogen. The 'mixed' competences on energy, transport and climate affect coordination on alternative fuel policies. Taxation, land use policies and energy mix choices remain within the discretionary autonomy of Member States. Moreover, the related directives on topics including fuel quality have been amended due to scientific uncertainty. With regards to the UN legal context, the topic of alternative fuels is not covered by a multilateral platform. The Commission seems hesitant to start infringement proceedings against misconduct involving traditional combustion engines. Therefore, (other) political factors like large preference heterogeneity between Member States and between individual ministries/DGs seem to have important effects. This study likewise points to alternative explanations such as (domestic) stakeholder interests and the emotional/science-critical debate, which affects coordination on alternative fuel policies.

³⁸³ European Commission (2016) 'A European Strategy for Low-Emission Mobility', COM(2016) 501 final, 20.07.2016, Brussels, p. 5.

³⁸⁴ See e.g. Ministerie van Economische Zaken and Ministerie van Infrastructuur en Milieu (2016), 'Biomassa 2030: Strategische visie voor de inzet van biomassa op weg naar 2030'. Interview MS official, 22-7-2016.