

# **AN ANALYSIS OF ENERGY TAXES IN LIGHT OF ELECTRIFICATION OF TRANSPORT**

**Energy taxation – sustainable transport – electric vehicles — tax design**

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With the rise of environmental awareness, electric vehicles lie at the cornerstone of European and national energy policies. This paper analyses the implications on energy taxation resulting from electrification of the transport system. It departs from the observation that in the context of transport electrification, fuel and electricity play a similar role. Yet, shifting from fuel consumption to electricity consumption is not trivial with regard to taxation, as taxes on fuel and taxes on electricity fulfil different functions and ally to different concerns, which have shaped their design and evolution. As such, current tax frameworks appear to be poorly suited to the scale-up of electric vehicles, arguing that transport electrification may require the adoption of well-tailored tax instruments, such as a per-kilometre tax. This contribution provides an analysis of the national framework in Belgium and of the EU framework on energy taxation to illustrate this assertion.

## Introduction

Fuel and electricity are both imbedded into citizen's daily lives.<sup>2</sup> Yet, from an historical standpoint they have served different purposes. In the transport sector, motor fuel established itself as the main source of energy, in conjunction with the establishment of the automobile as the dominant mode of transport. Although electric- and combustion-engine cars competed with one another at the early developments of the automobile industry in the 1900's, electric vehicles have remained confined to small market niches.<sup>3</sup> In light of pressing environmental challenges society currently faces, electric vehicles technology has reappeared as one possible solution to curb greenhouse gas (GHG) emissions and reduce air pollutants in the transport sector. Accordingly, a variety of policy documents and regulations have promoted transport electrification both at the European Union (EU) level and at the individual level of Member States.<sup>4</sup>

From a fiscal perspective, the literature has mainly focused on how tax instruments could foster the large-scale adoption of electric vehicles. In contrast, the implications resulting from electrification of the transport system on energy taxation has largely remained unaddressed. This paper departs from the observation that in the context of transport electrification, motor fuel and electricity have a similar role. Yet, shifting from motor fuel consumption to electricity consumption is not trivial with regard to taxation, as taxes on fuel and taxes on electricity fulfil different functions and ally to different concerns, which have shaped their design and evolution. As such, current tax frameworks appear to be poorly suited to the scale-up of electric vehicles. The analysis of the national framework in Belgium

<sup>2</sup> For the purposes of clarity, the following is a list of terms used that could lead to a certain amount of confusion:

1. Fuel – any hydrocarbon-based fuel, including petrol, diesel, kerosene and gas
2. Motor fuel – hydrocarbon-based motor (combustion engine) fuel products such as petrol, diesel, and liquefied gas (methane).
3. Diesel – EU. Council Directive 2003/96/EC refers to both “gas oil” and “diesel”, which are synonymous (Section 20 of the directive refers both to gas oil and diesel). In this paper, the word diesel is used throughout.
4. Mineral oils – any hydrocarbon-based oils used as a motor fuel. This is to distinguish between ‘mineral oils’ which are also hydrocarbon based and used in the manufacture of products such as lipstick. The level of taxation of the latter form of mineral oil is not relevant to this paper.

<sup>3</sup> F. W. Geels (2005) The dynamics of transitions in socio-technical systems: A multi-level analysis of the transition pathway from horse-drawn carriages to automobiles (1860–1930), *Technology Analysis & Strategic Management*, 17:4, 445-476.

<sup>4</sup> For instance the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee of the Region (2016), A European Strategy for Low-Emission Mobility, COM/2016/0501 final, p. 6.; the Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure, *OJ L 307*, 28.10.2014, p. 1–20; Directive 2009/33/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of clean and energy-efficient road transport vehicles *OJ L 120*, 15.5.2009, p. 5–12.

(Section 1) and of the EU framework on energy taxation (Section 2) illustrate this assertion. Based on this background, this paper argues that transport electrification may require the adoption of new tax instruments, such as a per-kilometre tax (Section 3).

### **1. National framework on energy taxation: the example of Belgium**

Driven by energy taxes harmonisation at an EU level, main Belgian taxes on energy products take the form of excise duties. Excise duties are taxes imposed on the consumption of certain goods. With the scale-up of electric vehicles, excise duties on the consumption of motor fuel is expected to shift to excise duties on the consumption of another energy product, namely electricity. In addition, electricity consumption, unlike motor fuel consumption, gives rise to the payment of an array of taxes, surcharges and levies, which are imposed both by the federal authority and by the regions (Table 1). These taxes pursue fulfil different functions (1.1.) and ally to different concerns (1.2.), which have been reflected into their tax structure.

Table 1. Overview of taxes on fuel and on electricity in Belgium

Taxes on fuel		Taxes on electricity															
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin-bottom: 5px;">Excise duties</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin-bottom: 5px;">Special excise duties</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px;">Energy contribution</div> </div>	} Excise duties	Federal level	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin-bottom: 5px;">Excise duties</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin-bottom: 5px;">Special excise duties</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px;">Energy contribution</div> </div>	} Excise duties													
		Regional levels	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Electricity &amp; gas Contribution</td> <td style="text-align: center;">Complementary pensions surcharge</td> </tr> <tr> <td style="text-align: center;">Surcharge off-shore wind farm</td> <td style="text-align: center;">Strategic reserve surcharge</td> </tr> <tr> <td style="text-align: center;"><b>Walloon Region</b></td> <td style="text-align: center;"><b>Flemish Region</b></td> </tr> <tr> <td style="text-align: center;">Fee for public domain use</td> <td style="text-align: center;">Energy fund contribution</td> </tr> <tr> <td style="text-align: center;">Corporate income tax tariff</td> <td style="text-align: center;">Surcharge rational use of energy</td> </tr> <tr> <td style="text-align: center;">Fee for grid connection</td> <td style="text-align: center;">Surcharge renewable energy</td> </tr> <tr> <td style="text-align: center;">Surcharge renewable energy</td> <td style="text-align: center;">Pylons and trenches surcharge</td> </tr> <tr> <td style="text-align: center;">Green certificate surcharge</td> <td style="text-align: center;">Green certificate surcharge</td> </tr> </table>		Electricity & gas Contribution	Complementary pensions surcharge	Surcharge off-shore wind farm	Strategic reserve surcharge	<b>Walloon Region</b>	<b>Flemish Region</b>	Fee for public domain use	Energy fund contribution	Corporate income tax tariff	Surcharge rational use of energy	Fee for grid connection	Surcharge renewable energy	Surcharge renewable energy
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Green certificate surcharge	Green certificate surcharge																

### 1.1. The functions of taxes on energy

In his contribution to the goals of taxation, Avi Yonah asked “What are taxes for?”. While the author uses the word “goal”, I prefer the word “function”, based on the view that taxes may fulfil certain functions, regardless what the legislator’s actual objective is.<sup>6</sup> The function of taxes must be distinguished from their impact, as taxes in practise may fail to fulfil their function for a variety of reasons. The first function of taxation is budgetary; taxes raise revenue necessary to public policies.

<sup>5</sup> Due to space constraints we present only the charges and levies on electricity in Wallonia and in Flanders and not in the Region of Brussels-capital. The expression used (tariffs, fees, charge) are the official name. They do not influence the qualification as a tax, fee or other charge.

<sup>6</sup> R. S. Avi-Yonah (2006) The three Goals of Taxation, Tax L. Rev. 60 :1 (2006), 1-28.

Then, as noted by Avi Yonah, taxes have two other functions. They have a redistributive function, “aimed at reducing the unequal distribution of income and wealth that results from the normal operation of a market-based economy” and a regulatory function.<sup>7</sup> The regulatory function refers to the idea that taxes, by imposing a price on certain goods or services, may influence or steer behaviours. This last function is closely linked to the economic theory of internalisation of external costs.<sup>8</sup> Accordingly, taxes may correct market failure by the internalisation of negative externalities and, hence, provide an incentive to avert or mitigate such damage.<sup>9</sup>

Taxes on motor fuel have two major functions: they raise revenue (budgetary function) and they internalise external costs associated with transport (regulatory function). In Belgium, excise duties on motor fuel represent a substantial source of income for the federal authority and, therefore, fulfil a central budgetary function for the State. They accounted for €5,34 billion (€4,35 billion for diesel and €0,99 billion for petrol in 2017).<sup>10</sup> In comparison, excise duties on heating fuel amounted to €0,06 billion in 2017.<sup>11</sup> Although revenues are generally not earmarked in Belgium – in compliance with the budgetary principle of universality – the energy contribution is earmarked to finance social security.<sup>12</sup> This explains why the electricity contribution has been conceived independently and has remained independent from other excise duties.

In the absence of a kilometre tax, taxes on fuel perform another important function, albeit as a second-best economic instrument, as they internalise externalities associated with road transport.<sup>13</sup> On the one hand, greenhouse gas (GHG) emissions are proportional to fuel consumption. On the other hand, other externalities such as accidents, congestion and air pollution vary by time and place and are therefore

<sup>7</sup> Ibid p. 3

<sup>8</sup> A.C. Pigou, *The Economics of Welfare* 168 (1920). In regard to the economic theories underlying environmental taxes in particular see C. A. Dias Soares (2011) *The design features of environmental taxes*. MPhil thesis, The London School of Economics and Political Science, in particular 34-42.

<sup>9</sup> See the definition of “Pigovian taxes” in Glossary of Environment Statistics (1997) Studies in Methods, Series F, 67, United Nations, New York.

<sup>10</sup> Belgian National Debate on Carbon Pricing (2018), Final Report, 32, retrieved from <https://www.climat.be/fr-be/politiques/politique-belge/politique-nationale/debat-tarification-carbone/>.

<sup>11</sup> Ibid.

<sup>12</sup> See article 16 of the Law of July, 22<sup>nd</sup> 1993 introducing a contribution in order to safeguard competitiveness and employment, Belgian official journal July, 29<sup>th</sup> 1993. The budgetary fund for social security balance is regulated by article 39bis of the Law of June, 29<sup>th</sup> 1981 setting the general principles of social security of workers, Belgian official journal July, 2<sup>nd</sup> 1981.

<sup>13</sup> See B. de Borger, S. Proost (2017) What can European experience teach us for Belgian transport policy? », *Reflète et perspectives de la vie économique*, 2 :LVI, 33-53.  
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not proportional to fuel consumption for the number of kilometres driven.<sup>14</sup> The regulatory function of fuel taxes legitimise why the level of excise duties on fuel is higher when fuel is used as a propellant than when it is used for heating purposes (Table 2).

Table 2. Rates levels of excise duties on fuel in Belgium

Fuel (in euros per 1000 L - 15°C)	Ordinary excise duties	Special excise duties	Energy contribution
	Leaded Petrol	245,4146	393,7887
Unleaded Petrol NC 2710 11 49 High sulphur content	245,4146	356,4177	28,6317
Unleaded Petrol NC 2710 11 49 Low sulphur content	245,4146	340,7080	28,6317
Unleaded petrol NC 2710 11 41 and 2710 11 45	245,4146	340,7080	28,6317
Diesel, with sulphur content > 10mg/kg	198,3148	340,9734	14,8736
Diesel, with sulphur content > 10mg/kg Industrial or commercial use	18,5920	4,2925	0
Diesel, with sulphur content ≤ 10mg/kg	198,3148	325,2638	14,8736
Diesel, with sulphur content ≤ 10mg/kg Industrial or commercial use	18,5920	4,2925	0
Heating gasoil <sup>15</sup>	0	0	7,2564

In comparison, the rates of electricity taxation are the following. At the federal level, the energy contribution taxes electricity consumption at a rate level of €1,9261 per MWh and the electricity and gas contribution at a rate level of €3,3829 per MWh.<sup>16</sup> The rate level of other taxes, charges and levies on electricity vary to a large extent depending on the region and the tax in question. On a baseload profile of 100 GWh per year, total taxes on electricity (federal and regional level) in 2018 amounted to approximately €23 per MWh in Wallonia and €13 per MWh in Flanders.<sup>17</sup> Unlike taxes on fuel, electricity taxes do not differentiate according to the purpose (transport vs. other) of electricity use. Most revenues derived from electricity taxes are allocated to specific purposes. In other words, they serve specific financing objectives. For instance, the federal surcharge “green certificates” aims to

<sup>14</sup> Ibid.

<sup>15</sup> In addition, a fee of 10 euros for control costs is due.

<sup>16</sup> Information retrieved from <https://www.creg.be/sites/default/files/assets/Tarifs/CotFed/CotFedE2019FR.pdf>.

<sup>17</sup> Deloitte (2018) Benchmarking study of electricity prices between Belgium and neighbouring countries, retrieved from <http://www.febeli.ec.be/data/1520415400Report%20Benchmarking%20study%20electricity%202018%20FINAL.pdf>.

compensate the costs resulting from the difference between the purchase price of green certificates and their sale price on the market.<sup>18</sup> Other examples include the federal surcharge for the costs of supplementary pensions and the Flemish energy fund contribution.<sup>19</sup>

### *1.2. The underlying concern(s) of taxes on energy*

From an historical standpoint, excise duties on fuel have been largely allied to budgetary and economic considerations. Excise duties on fuel have repeatedly been increased to maintain budgetary stability. Economic concerns have also guided the design of these taxes, as well as the reason why they were amended over time. An historical example is the suspension of excise duties on fuel at the end of the second world war, in order to facilitate the economic recovery of the country.<sup>20</sup> Such concerns have also justified the historical distinction of tax rate levels between diesel and petrol, which tends to be a relic from the oil crisis that occurred in the 1970s.<sup>21</sup> Similarly, the rates are distinguished depending on the commercial and industrial or, rather, private use of motor fuel, the latter being set at a higher rate.

It is only recently that environmental considerations were integrated into excise duties on motor fuel. In 2015, the federal government decided to end the historical difference between excise duties on petrol and on diesel by progressively bringing tax rates closer to each other<sup>22</sup>. According to the government agreement, the measure aims to dissuade the use of diesel, which is considered to have a more-detrimental effect on health and the environment. With a view to ensuring a tax neutrality, the additional revenues resulting from the reform are deemed to reduce taxes on labour, although these are not earmarked.<sup>23</sup> Yet, excise duties in Belgium, contrary to countries such as Sweden, Denmark and Finland, have never been directly based on environmental parameters such as carbon dioxide (CO<sub>2</sub>) or

<sup>18</sup> Law of April, 29<sup>th</sup> 1999 concerning the organisation of the electricity market, Belgian Official Journal May, 11<sup>th</sup> 1999, in particular article 7, § 1<sup>st</sup>.

<sup>19</sup> Respectively the Law of April, 29<sup>th</sup> 1999, *op. cit.*, in particular articles 12 and 12*quinquies*); Flemish Energy Decree of May, 8<sup>th</sup> 2009, Belgian Official Journal July, 7<sup>th</sup> 2009, in particular articles 14.1.1-14.2.3.

<sup>20</sup> Chamber of the representatives, *Parliamentary documents*, session 1958-59, n°323.

<sup>21</sup> A. Van Steenberghe (2015) Fuel excise reform in Belgium Long term effects on the environment, traffic and public finance, Working document of the Federal Planning Bureau, 9, 5.

<sup>22</sup> Approximation between excise duties on petrol and on diesel is conducted by an anticipated indexation of excise duties on diesel and by modification of ratchet system. On this system see D. De Vlioger et B. Van Maele (2015) Diesel: augmentation des accises et nouveau 'cliquet' dès le 1er novembre, *Fiscologue*, 1449, 1.

<sup>23</sup> Federal Government agreement, October, 14<sup>th</sup> 2014, 81, retrieved from [https://www.premier.be/sites/default/files/articles/Accord\\_de\\_Gouvernement\\_-\\_Regeerakkoord.pdf](https://www.premier.be/sites/default/files/articles/Accord_de_Gouvernement_-_Regeerakkoord.pdf).

air pollutant emissions (e.g. sulphur dioxide and nitrogen oxide).<sup>24</sup> Their tax base corresponds to the volume of fuel consumed, to which a flat rate in euros is imposed. This rate is determined with a total lack of transparency, with no explicit link to environmental criteria. It is nevertheless worth noting that a reform of excise duties is currently being discussed in Belgium, in order to better internalise CO<sub>2</sub> emissions.<sup>25</sup>

In contrast, electricity taxation has historically been set based on a broader range of considerations. The way and the extent to which these concerns have been implemented into the tax structure depends to a great extent on the instrument in question. In respect to some taxes, economic concerns seem to justify a decrease in the rate when energy consumption increases. It is, for instance, the case of the federal surcharge for green certificates and of the Walloon levy for electricity and gas grid connection.<sup>26</sup> Electricity affordability has also been a major concern in Belgium, which is deeply imbedded into social considerations. This has been translated into a number of provisions. For example, electricity consumers who are in a social or financial situation regarded as precarious, benefit from the status of “protected clients”. This status provides them support measures, including financial support, with respect to their electricity consumption<sup>27</sup>. Accordingly, they benefit from the lowest electricity price and distribution and transmission tariffs. In the Flemish Region, “protected clients” are exempted from the payment of the energy fund contribution.<sup>28</sup>

Finally, a number of specific provisions reflect environmental concerns, by aiming to promote the use of electricity from renewable sources. For instance, Wallonia has implemented a support scheme for renewable electricity production known as “net metering”, which applies to owners of a “small

<sup>24</sup> M. Skou Andersen, Denmark - Reflections on the Scandinavian Model: Some Insights into Energy-Related Taxes in Denmark and Sweden, *European Taxation*, 2015, 55(6).

<sup>25</sup> Information regarding the National Debate on Carbon Pricing can be retrieved from <https://www.climat.be/fr-be/politiques/politique-belge/politique-nationale/debat-tarification-carbone/>. The present author is contributing to a report on the legal aspects associated with the implementation of carbon pricing in Belgium, which will be released soon.

<sup>26</sup> Respectively the Law of April, 29<sup>th</sup> 1999, *op. cit.*, in particular article 7, § 1<sup>st</sup> and the Walloon Decree of April, 12<sup>th</sup> 2001 concerning the organisation of the regional electricity market, *Belgian Official Journal* of May, 1<sup>st</sup>, 2001, in particular article 51sexies.

<sup>27</sup> This system, which also applies to gas consumption, has been introduced both at the federal and regional level. See the Law of April, 29<sup>th</sup> 1999, *op. cit.*, in particular article 20§2. At the regional level, see notably the Walloon Decree of April, 12<sup>th</sup> 2001, *op. cit.*, in particular articles 26-28; Decree of the Walloon government of March, 30<sup>th</sup> 2006 on public service obligation in the electricity market, *Belgian Official Journal* of April, 27<sup>th</sup> 2006.

<sup>28</sup> Flemish Energy Decree of May, 8<sup>th</sup> 2009, *op. cit.*, in particular article 14.1.3/1. This system was introduced following the judgement 83/2017 of the Constitutional Court on May, 22<sup>nd</sup> 2017. The judgement had annulled in reason of a violation of the rules on the distribution of competences the previous system of taxation according to which the tax rate would increase proportionally to the electricity consumption.

photovoltaic installation” (less than 10 kVa).<sup>29</sup> Net metering consists of a meter that runs forward when drawing electricity from the grid and backward when injecting electricity into the grid. In this system, electricity injected into the grid is valued at the retail electricity price and excess electricity is not valued. In addition, taxes, levies, and tariffs are calculated on the basis of the net energy consumed. This implies that owners of a small photovoltaic installations, unlike other electricity consumers, are not taxed on the basis of the total amount of electricity they purchase from electricity suppliers.<sup>30</sup>

## 2. EU framework on energy taxation

Under EU law, fuel and electricity, as energy products, are subject to excise duties, which have been harmonised at the EU level<sup>31</sup>. The EU framework on the taxation of energy products consists of harmonised minimum levels and a harmonised structure of taxation. Although harmonisation of taxes on fuel and on electricity has followed a roughly similar logic, both processes have differed to some extent.<sup>32</sup> On the one hand, harmonisation of fuel and of electricity taxes have not been associated with the same concerns. While harmonisation of taxes on fuels has been based on economic and budgetary considerations, harmonisation of taxes on electricity has taken into account, besides economic concerns, environmental and social considerations. On the other hand, electricity – with one exception – has not been considered for transport purposes.<sup>33</sup>

<sup>29</sup> Brouhns, I. (2014). Les certificats verts en Belgique et dans l’UE – Status questionis 2014. *Amén*, 5, 216–232 ; Gerkens, I. (2015). La promotion des énergies renouvelables en Belgique et en Europe : opportunités et contraintes – La flexibilité dans tous ses états. La flexibilité de l’accès au réseau électrique pour la production décentralisée, une approche innovante. *RDIR – TRNI*, 1, 43–55.

<sup>30</sup> However, in the future, prosumer will be compelled to pay a grid tariff, based on the fact that they use the grid like any other electricity consumer when they do not consume electricity at the moment it is produced by the solar panel installation. For more information see <https://www.cwape.be/?dir=7.9>.

<sup>31</sup> In particular, Council Directive 92/81/EEC of 19 October 1992 on the harmonization of the structures of excise duties on mineral oils, O.J. L 316, 31 October 1992, pp. 12-15; Council Directive 92/82/EEC of 19 October 1992 on the approximation of the rates of excise duties on mineral oils, OJ L 316, 31 October 1992, pp. 19-20; Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity, OJ L 283, 31 October 2003, pp. 51-70; Council Directive 2008/118/EC of 16 December 2008 concerning the general arrangements for excise duty and repealing Directive 92/12/EEC, OJ L 9, 14 January 2009, pp. 12-30.

<sup>32</sup> This paper focuses only on the Directives 92/81/EEC, 92/82/EEC and 2003/96/EC as they specifically concern energy, in contrast for instance to the directive 2008/118/EC.

<sup>33</sup> Article 15, 1, (e) of the energy taxation directive refers to the use of electricity for the transport of goods and passenger by train, tram and bus.

## 2.1. Purpose of harmonisation

The process of harmonising energy taxes initially started with mineral oils, including transport fuels, and was then broadened to other types of energy products such as electricity.<sup>34</sup> The initial purpose was to guarantee the proper functioning of the internal market by removing fiscal barriers and prevent potential distortions due to different tax rates between Member States. This was part of a larger process of harmonisation of excise duties, which began with a limited number of products, i.e. alcohol, wine, beer and tobacco. These products were selected because they represented a large source of income and hence a potential high source of distortion. For Member States, excise duties on fuel play an important budgetary function as they are the main source of excise duties revenue. In 2017, they covered 82.5% of all excise duty revenue from energy products, the rest being shared by electricity (10.9%), gas (6.3%) and coal (0.3%).<sup>35</sup>

Directive 92/81/EEC on the harmonisation of the structure of excise duties on mineral oils provided a definition of mineral oils, together with a common structure for excise duties. Under this scheme, mineral oils were deemed to encompass *inter alia* leaded petrol, unleaded petrol and diesel. Directive 92/82/EEC on the approximation of the rates of excise duties on mineral oils compelled Member States to apply rates equal to or above the minimum rates of taxation laid down in the directive.<sup>36</sup> The corresponding rates of taxation were respectively ECU337 per 1000 litres for leaded petrol, ECU287 per 1000 litres for unleaded petrol and ECU245 per 1000 litres for gas oil.<sup>37</sup> These rates were established on the basis of existing rates imposed at the level of Member States, which were in turn influenced by a variety of considerations such as raising revenue, practicability and ensuring a competitive balance between different types of mineral oils.<sup>38</sup>

<sup>34</sup> Council Directive 92/81/EEC, *op. cit.*, pp. 12-15; Council Directive 92/82/EE, *op. cit.*, pp. 19-20.

<sup>34</sup> On the process of harmonisation of energy taxation see D. Berlin (2012), Chapter III: Le choix de la fiscalité indirecte la plus neutre possible: le rapprochement des droits indirects sur certains bien, Politique fiscale, Editions de l'Université de Bruxelles, 498-601; B.J.M. Terra & P.J. Wattel (2012) Chapter 7 "Excises and Energy Taxation", European Tax Law, Wolters Kluwer.

<sup>35</sup> Commission (2019) Energy prices and costs in Europe, Commission staff working document Accompanying the document report from the commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, SWD(2019) 1 final, Part 4/11, 239.

<sup>36</sup> Council Directive 92/82/EE, *op. cit.*, pp. 19-20.

<sup>37</sup> In particular articles 25 of the directive.

<sup>38</sup> Commission of the European Communities, Amended proposal for a Council Directive on the approximation of the rates of excise duty on mineral oils, Brussels, 19 December 1989, COM(89) 526 final, pp. 3-4.

The updating of existing directives was associated with new goals. In 2003, the directive 2003/96/EC on the taxation of energy products (hereafter “energy taxation directive”) replaced the above-mentioned directives (92/82/EEC and 92/81/EEC), pursuing a two-fold purpose. On the one hand, the purpose was to redirect tax policy to tackle unemployment, in accordance with the internal market.<sup>39</sup> On the other hand, it aimed to provide more flexibility to Member States to use taxation in order to pursue goals associated with an energy, environmental and transport policy.<sup>40</sup> Accordingly, the scope of the directive was broadened to include, among others, electricity. Although the directive preamble highlights the central role of electricity prices – which are influenced by taxation – in energy, transport and environmental policies and refers to environmental objectives (e.g. EU commitments to the Kyoto Protocol), the minimum rates of taxation, like in the case of the previous directives, were not based on environmental criteria.

The adoption of a more ambitious environmental framework on energy taxation, which would foster the adoption of genuine environmentally driven tax measures has, on the contrary, always failed, in spite of the proposals from the Commission.<sup>41</sup> In 2011, the Commission proposed to reform the energy taxation directive in order to ensure a taxation of CO<sub>2</sub> emissions in a broad manner, while avoiding overlap with the ETS. Accordingly, it was suggested energy taxes be based on two components: CO<sub>2</sub> emission on the one hand and calorific value of energy products on the other hand. This approach was similar to the 1992 proposal. However, the Commission could not reach unanimity among Member States and withdrew its proposal in 2015.<sup>42</sup>

## *2.2. Concerns associated with taxes*

Provisions of the energy taxation directive determining the tax rate, tax exemptions and tax reductions differ according to the type of energy, its use and its specific purpose. The provisions reflect a balance

<sup>39</sup> D. Berlin (2012), *op. cit.*, 535.

<sup>40</sup> *Ibid.*

<sup>41</sup> Commission of the European Communities, Proposal for a Council Directive introducing a tax on carbon dioxide emissions and energy, Brussels, 30 June 1992, COM(92) 226 final; Proposal for a Council Directive amending Directive 2003/96/EC restructuring the Community framework for the taxation of energy products and electricity, Brussels, 13 April 2011, COM(2011) 169 final.

<sup>42</sup> Withdrawal of Commission Proposals, List of Withdrawn proposals, 7 March 2015, JO C 80, pp. 17-23.

between the proper functioning of the internal market and economic, environmental and social considerations. Regarding the rate of taxation, the directive applies different rates depending on whether fuel is used as a propellant – thus for transport purposes – or for heating purposes. In the second case, tax rates are significantly lower. This corresponds to the historically higher levels of taxation at the level of Member States for fuel used as propellant, compared to other types of use<sup>43</sup>. Such a distinction does not exist with respect to electricity, to which lower rates – if compared on the basis of per-kilometre driven – are also applied.<sup>44</sup> These rates are summarised in the Table 3 below.

Table 3. Minimum rate levels of taxes on motor fuel and on electricity from 1 January 2010

Type of energy product	Rate level
Leaded petrol (in euro per 1000l)	421
Unleaded petrol (in euro per 1000l)	359
Diesel (in euro per 1000l)	330
Gas oil for heating purpose (in euro per 1000l)	21
Electricity (in euro per MWh)	Business use 0,5
	Non-business use 1,0

With regard to fuels used as a propellant, economic impact resulting from the harmonisation of excise duties has been widely considered, sometimes at the cost of other objectives such as environmental policy. For instance, tax rates applied to diesel are lower than those applied to petrol, although there is no economic basis to do so.<sup>45</sup> The reason is that because diesel is predominantly used in the freight transport industry, most Member States have been reluctant to levy the same level of excise duty on diesel as on petrol.<sup>46</sup> For the same reason, the energy taxation directive allows Member States to differentiate between commercial and non-commercial use of diesel used as propellant, within the minimum levels laid down in the directive.<sup>47</sup> In contrast, the directive does not reflect any social concern with regard to motor fuel taxation, which would have echoes in an idea of transport poverty.<sup>48</sup>

<sup>43</sup> Energy taxation directive, *op. cit.*, point 18  
<sup>44</sup> Taxes on fuel tend to have more regressive effects when they are used for heating purposes than for transport purposes, which can explain this difference. See [https://www.oecd-ilibrary.org/fr/taxation/the-distributional-effects-of-energy-taxes\\_5js1qwkqrbv-en](https://www.oecd-ilibrary.org/fr/taxation/the-distributional-effects-of-energy-taxes_5js1qwkqrbv-en)  
<sup>45</sup> See B. de Borger, S. Proost (2017), *op. cit.*  
<sup>46</sup> European Commission (1997), Vehicle taxation in the European Union 1997, Background paper, retrieved from [https://ec.europa.eu/taxation\\_customs/sites/taxation/files/resources/documents/306-98\\_en.pdf](https://ec.europa.eu/taxation_customs/sites/taxation/files/resources/documents/306-98_en.pdf), 34-35  
<sup>47</sup> Art 7, 2 of the energy taxation directive.  
<sup>48</sup> On this idea of transport and fuel poverty see notably G. Mattioli, K. Lucasa, G. Marsden (2017) Reprint of Transport poverty and fuel poverty in the UK: From analogy to comparison, Transport policy (in press).

Beyond economic considerations, the energy taxation directive expresses a wider range of concerns regarding electricity, especially environmental and social considerations. For example, it introduces a facultative exemption in favour of “electricity, natural gas, coal and solid fuels used by households and/or by organisations recognised as charitable by the Member State concerned”.<sup>49</sup> Several provisions also integrate environmental concerns. For example, the directive allows Member States to exempt electricity from renewable sources, which affords them flexibility with respect to their *environmental* policy.<sup>50</sup> However, the Commission has acknowledged that taxation of electricity resulting from the directive is not well-suited to pursue environmental purposes.<sup>51</sup> Electricity is a secondary source of energy, which means that it is made from other sources of energy. This offered two possible approaches: either to tax fuels used in the production of electricity (input tax) or to tax electricity itself (output tax). The approach followed by the directive 2003/96/EC was to tax electricity based on output. Yet, the Commission recognised that output taxation does not allow Member States to directly differentiate tax levels based on environmental characteristics of the fuel used.<sup>52</sup> At the time, it was suggested that Member States should be allowed “a) to add an additional (non-harmonised) input tax in the case of non-environmentally desirable fuels; and b) to refund to electricity producers who use environmentally preferable fuels the tax paid by the final consumer”<sup>53</sup>.

Ultimately, the close connection between excise duties on fuel used as propellant and transport policy clearly appears from article 7, § 4 of the energy taxation directive. This provision regulates situations in which Member States can introduce a system of road user charges for motor vehicles intended exclusively for the carriage of goods by road. In such a case, Member States are allowed to apply a reduced rate on diesel used by such vehicles, provided that the overall tax burden remains broadly equivalent and respects the minimum rates laid down in the directive.<sup>54</sup> In contrast, only one provision of the energy taxation directive considers electricity as a source of energy for transport purposes, by

<sup>49</sup> Art. 15, 1, h energy taxation directive.

<sup>50</sup> Art. 15, 1, b. The directive also allows « Member States may also refund to the producer some or all of the amount of tax paid by the consumer on electricity produced from products specified in paragraph 1(b) ». (Art. 15, 2).

<sup>51</sup> Ibid

<sup>52</sup> Ibid

<sup>53</sup> Ibid

<sup>54</sup> Such systems of taxation have been in place in several Member States for several decades in regard to heavy duty vehicles and are now harmonised at the EU level (see directive ...).

allowing Member States to “exempt energy products and electricity used for the carriage of goods and passengers by rail, metro, tram and trolley bus”.<sup>55</sup> However, this article does not apply to electricity used for private transport by car.

### **3. Shifting from motor fuel to electricity consumption: which conclusions?**

Shifting from motor fuel to electricity consumption as a source of fuel is expected to lead to a decrease of the amount of excise duties obtained from levies placed on motor fuel and, conversely, to an increase in revenue obtained from taxes on electricity. Based on the functions and concerns associated with energy taxation, such a change will have the following implications.

In respect of the budgetary function of taxes, the scale-up of electric vehicles could imply a loss of revenue for the State. This would be the case in Belgium with the current rates of taxation and presumably in the EU more generally. This can be illustrated by the following example.

Assuming that a combustion-engine petroleum car uses 6,5 litres of diesel to cover a distance of 100 kilometres and an electric car uses 20 kWh for cover the same distance, with a tax rate of €0,538 per litre of diesel and a tax rate of €0,023 per kWh, revenues derived from excise duties on diesel are €3,497 and from taxes on electricity are €0,46.<sup>56</sup>

In that regard, the minimum rates laid down in the energy taxation directive tend to stabilise this situation. Economic analysis would be meaningful to inform more precisely the budgetary impacts resulting from such shift in consumption. In a federal country like Belgium, all other things being equal, this change could have distributional impacts in terms of revenues between the federal authority and the regions, in relation to the current rates of electricity taxes and the distribution of tax powers. These impacts are particularly relevant to the extent that some revenues are earmarked for dedicated funds to finance specific policies.

Regarding the regulatory function of taxes on motor fuel, it was noted that they internalise external costs associated with transport, which may legitimise their high rate. In contrast, taxes on electricity

<sup>55</sup> Article 15, 1, (e) of the energy taxation directive.

<sup>56</sup> These respectively correspond to the rate of €538,4522 applicable in Belgium per litres of diesel with a low sulphur content used for a private purpose and to a rate of €23 per MWh as applicable in Wallonia.

tend to internalise externalities at a much lower rate. In particular, there is a tendency, both at the EU level and in Belgium, to consider taxes on energy as a means to curb GHG emissions, although this has not resulted yet in any legally binding instrument. While certain externalities such as climate change are dependent on the source of energy used for transportation, other external costs (e.g. congestion, accidents, etc.) are not. Here again, thorough economic analysis will inform policy makers in that regard.

As a result, policy makers will have to deal with the impact of transport electrification on energy taxation. To this end, a first option is to increase taxes on electricity. However, this should be done based on the following caveats:

- First, both for reasons of efficiency and of equity, it would be necessary to distinguish the level of tax on electricity based on the reason for the consumption of electricity. On the one hand, an efficient use of taxes on electricity to internalise transport externalities would necessitate them being specifically tailored for transport users and, therefore, to distinguish the tax rate according to the purpose of electricity consumption. On the other hand, failing to make such a distinction could have important social impacts. As has been observed, both the EU energy taxation directive and Belgian tax framework on electricity tend to take into account social concerns associated with current forms of electricity consumption (and with kerosene), but it is not the case with fuel used as a propellant. Making a distinction between electricity used for cars and electricity used for domestic/household purposes, may be easy at independent charging stations, but presumably more difficult for home-based vehicle charging stations. Yet, this could be feasible via a separate smart meter. Further studies are necessary to assess the feasibility of such an option and the also the administrative costs (e.g. control costs) associated with it.
- Secondly, taxes on electricity are badly suited to serving the regulatory function performed by motor fuel tax with regard to climate change. Indeed, unlike motor fuels, electricity is a secondary source of energy, which implies that GHG emissions resulting from electricity consumption will largely depend on the source of energy (i.e. fossil, nuclear or renewable) to produce electricity. Therefore, taxes on electricity consumption, as output taxes, represent a

poor instrument to internalise GHG emissions. This remark is not rebutted by the fact that, in respect to electricity, GHG emissions are internalised by the means of the EU emission trading system (ETS). The current price per tonne of CO<sub>2</sub> emission is indeed rather low compared, for instance, to the carbon price recommended by the High level group on carbon prices, which could incite Member States to implement a complementary scheme.<sup>57</sup>

- Thirdly, unlike taxes on motor fuel, taxes on electricity comprise a variety of levies and charges, as opposed to one single form of taxation. Steering behaviours by using energy taxation would require a minimum level of consistency between all of these instruments. In federal countries like Belgium, the fact that these levies are imposed at different levels may hamper the drive for consistency. In addition, these taxes may serve well-tailored objectives, which could be in contradiction with the internalisation of externalities associated with transport.

The implementation of a specifically tailored instrument offers an alternative to that end. It could take the form, for instance, of a per-kilometre tax, which has echoes of the 2017 proposal of the Commission for a directive amending the 1999/62/EC directive on the charging of heavy good vehicles for the use of certain infrastructures.<sup>58</sup> With respect to GHG emissions, Member States could decide to introduce a carbon-floor, like that implemented in the UK.

<sup>57</sup> High-Level Commission on Carbon Prices. 2017. Report of the High-Level Commission on Carbon Prices. Washington, DC: World Bank. They suggest explicit carbon price should at least equal US\$40–80/tCO<sub>2</sub> (€35-70 /tCO<sub>2</sub>) by 2020 and US\$50–100/tCO<sub>2</sub> (€44-88/tCO<sub>2</sub>) by 2030. In comparison, the current carbon price resulting from the EU ETS is approximately €24/tCO<sub>2</sub>.

<sup>58</sup> COM/2017/0275 final.