

# Germany's Ecological Tax Reform: A Retrospective

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After months of heated political debate, the German government adopted a new Energy Concept in September 2010, setting out a broad framework for federal energy policy until 2050. Elaborated by the ruling center-right coalition, this document aims at turning Germany into one of the “most energy-efficient and greenest economies in the world while enjoying competitive energy prices and a high level of prosperity.”<sup>1</sup> In line with a campaign pledge set out in the government’s coalition agreement, the Energy Concept defines ambitious objectives for the medium and longer term.<sup>2</sup> Energy pricing through taxes and charges has traditionally held a prominent position in the German energy policy mix, and will also be central to achieving the targets adopted with the new Energy Concept.

Mineral oil and other fuels had already been subject to a system of excise taxes dating back to prewar Germany. It was not until the late 1990s, however, that energy taxation also became a vehicle for Germany’s green agenda. Before that, environmental benefits of taxation had been no more than an indirect, if not unwanted, side effect in the process of creating public revenues.<sup>3</sup> As part of its electoral campaign, however, the center-left coalition of Social Democrats and Green Party that came to power in 1998 expressly pledged the introduction of new fiscal instruments to reduce the tax burden on labor and shift part of it to energy consumption. In doing so, it sought to harness the multiple benefits touted by advocates of green taxes: greater flexibility and cost efficiency than traditional regulation in achieving environmental policy objectives, a robust and economically effective incentive to develop

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<sup>1</sup> Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and Federal Ministry for Economic Affairs (BMWi), Energy Concept for an Environmentally Sound, Reliable and Affordable Energy Supply, available on the Internet at <[www.bmu.de/files/english/pdf/application/pdf/energiekonzept\\_bundesregierung\\_en.pdf](http://www.bmu.de/files/english/pdf/application/pdf/energiekonzept_bundesregierung_en.pdf)> (last accessed on 15 March 2011).

<sup>2</sup> Under the Energy Concept, primary energy consumption is to fall by 20 percent compared to 2008 levels by 2020, and at least 50 percent by 2050; renewable energy is to account for 18 percent of final energy consumption in 2020, and at least 80 percent of electricity consumption in 2050; and greenhouse gas emissions are to see cuts of 40 percent by 2020 and at least 80 percent by 2050, both relative to 1990 levels, see BMU et al., *supra*, note 1. For comparison, in the United States, the Administration under President Barack H. Obama has pledged a cut in greenhouse gas emissions of 17% by 2020 relative to 2005 levels; in his State of the Union speech in 2011, moreover, in January 2010, the President called on the United States to generate 80 percent of its electricity from clean energy sources and to give 80 percent of Americans access to high-speed rail, both within 25 years.

<sup>3</sup> Wolfgang Ritter, “Oekosteuern – Wohin steuern wir?“, 51 *Der Betriebsberater* (1996), pp. 1961-1967, at p. 1961; among economists, of course, the notion of controlling externalities by imposing a system of unit taxes or subsidies has been discussed ever since it was proposed by Arthur C. Pigou, *The Economics of Welfare* (London: Macmillan, 1920).

innovative clean technologies, and the ability to raise revenues for public investments or tax cuts in other areas, such as labor costs.<sup>4</sup>

Yet the proposed tax reform was by no means uncontroversial: from the outset, it encountered public opposition triggered by rising prices for crude oil and concerns over industrial competitiveness. Initial resistance was, in fact, so great that many observers already expected the entire effort to end up a casualty of partisan politics. And yet, nearly a decade and several governing coalitions later, the ecological tax reform remains in place. What were its main characteristics, how was it adopted, and what have been its main impacts? Drawing on an historical retrospective, this chapter attempts to formulate some answers to these questions.

## 1. Introducing a Price on Energy: Good Policy and Good Politics?

### 1.1 The “Ecological Tax-Reform Act” of 1999

As stated earlier, the notion of an Ecological Tax Reform was put forward by the ruling coalition. For a policy proposal to become formally enacted as an act of German Parliament, however, a legislative initiative needs to pass both houses of Parliament in a sophisticated process. On 3 March 1999, the German *Bundestag*, or Lower House of Parliament, launched the first stage of the Ecological Tax Reform by adopting the corresponding bill<sup>5</sup> with a narrow vote of 332 to 299 representatives. After obtaining approval by the Federal Council, or *Bundesrat*,<sup>6</sup> the “Ecological Tax-Reform Act” entered into force on 1 April 1999.<sup>7</sup> Consisting of an act with merely three articles, the first stage of the ecological tax reform introduced a separate law for the taxation of electricity<sup>8</sup> and an amendment of existing legislation on mineral oil taxes.<sup>9</sup> Both steps were specifically aimed at encouraging changes in polluting behavior and, thus, at improving overall environmental quality.<sup>10</sup> The revenues from environmental taxation were allotted to reducing

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<sup>4</sup> The considerations brought to bear in favor of this type of instrument have been widely discussed; in essence, proponents claim that taxes and other market mechanisms such as charges, tradable permits or conditional subsidies offer greater effectiveness than conventional regulatory approaches while costing less. First, they can allow firms and individuals to choose to reduce pollution where the costs of doing so are least, and can thus achieve a given degree of pollution control at lower economic cost than regulations applied across-the-board. Second, market-based instruments provide a continuous incentive to develop less-polluting products and processes, whereas regulations tend to encourage only minimum compliance, see Stephen Smith, “Taxation and the Environment: Theoretical Framework”, in International Fiscal Association (ed.), *Environmental Taxes and Charges* (The Hague: IFA, 1995), pp. 7-15, at p. 9; see also Kalle Määttä and Michael Mehling, “Energy, the Environment, and Price-Based Instruments: Environmental Taxes as a Tool for Energy Sustainability and Climate Policy”, in Michael Rodi (ed.), *Realising the Paradigm Shift towards Energy Sustainability: Climate Change, Technological Innovation, and the Challenge of an Optimal Instrument Mix* (Berlin: Lexxion, 2010), pp. 49-64.

<sup>5</sup> Official Records of Parliament (*BT-Drucks.*) 14/40 of 17 November 1998.

<sup>6</sup> Official Records of the Federal Council (*BR-Drucks.*) 105/99 of 19 March 1999.

<sup>7</sup> Federal Act on the Initiation of the Ecological Tax Reform (*Gesetz zum Einstieg in die ökologische Steuerreform*; hereinafter referred to as the Ecological Tax-Reform Act) of 24 March 1999, Federal Law Gazette (*BGBI.*) Part I (1999), pp. 378–384.

<sup>8</sup> Paras. 1–12 Electricity Tax Act (*Stromsteuergesetz*), in: Art. 1 Ecological Tax-Reform Act (*supra*, note 7).

<sup>9</sup> Amendment of the Excise Tax on Mineral Oils Act (*Mineralölsteuergesetz*) of 21 December 1992, in: Art. 2 Ecological Tax-Reform Act (*supra*, footnote 7).

<sup>10</sup> On the reasoning of the Federal Government, *cf.*, *inter alia*, Official Records of Parliament 14/40 of 17 November 1998, pp. 1 ff.; *cf.* also the Finance Committee, in: Official Records of Parliament 14/440 of March 1, 1999, p. 1, and

Germany's traditionally high non-wage labor costs, which include the employers' share of pension contributions, unemployment insurance, health insurance and other social security contributions. With the first year's revenues, an estimated 11.3 billion deutschmarks (approximately 5.8 billion euros),<sup>11</sup> non-wage labor costs were reduced by 0.8 percent to 19.5 percent of wages.<sup>12</sup> With hiring rendered less expensive, the ecological tax reform was to help promote employment. The government also forecast a beneficial effect on the structure of German trade and industry, maintaining that greater usage of the innovative potential offered by energy conservation measures would reinforce the country's leadership position in that field.<sup>13</sup>

The two principal features of the Tax-Reform Act were a levy on electricity of 2 pfennigs per kilowatt-hour<sup>14</sup> and an increase in mineral oil taxation by 6 pfennigs per liter on fuel, 4 pfennigs per liter on heating oil, and 0.32 pfennigs per kilowatt-hour on gas.<sup>15</sup> Massive protests from interest groups and general concern for the competitiveness of German industry, however, prompted the legislator to include a number of exemptions and abatements. Accordingly, the manufacturing, agricultural and forestry sectors were to benefit from a reduced tax rate on electricity if their yearly tax burden rose above 1000 deutschmarks.<sup>16</sup> Likewise, manufacturing industries were allowed to claim a refund in the event that their tax payments significantly exceeded savings incurred by labor-cost cuts.<sup>17</sup> For the manufacturing sector, in particular, this ensured that the Ecological Tax Reform would not introduce net additional costs and hence compromise its ability to compete in international markets.

As an incentive to promote its goal of improved environmental quality, the Tax-Reform Act also provided for a full exemption for electricity obtained from wind energy, solar energy, geothermal energy, biogas, biomass, and hydroelectric plants.<sup>18</sup> Further abatements, among them a generally reduced rate on electricity used for public transportation and railway traffic, were included with regard to the unique significance of the affected sectors.<sup>19</sup> Proposals aimed at a

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section 3 (3) of the Coalition Agreement between the Social Democratic Party (*SPD*) and the Green Party (*Bündnis 90/Die Grünen*) of 20 October 1998.

<sup>11</sup> Starting on 1 January 1999, the euro replaced the deutschmark as the official currency for all financial transactions, initially as an accounting currency, from 2002 onwards also as in general circulation.

<sup>12</sup> Official Records of Parliament 14/40 of 17 November 1998, at p. 2.

<sup>13</sup> German Stability Pact of 1 January 1999, p. 14.

<sup>14</sup> Para. 4 Electricity Tax Act (*supra*, footnote 8); a detailed description of the Electricity Tax Act has been provided by Thomas Möller, "Das Gesetz zum Einstieg in die ökologische Steuerreform", 20 *Zeitschrift für Kommunal Finanzen* (2000), pp. 26–34, at pp. 28 *et seq.*

<sup>15</sup> Art. 2 Nos. 2 and 3 Ecological Tax-Reform Act (*supra*, footnote 7); the changes in mineral oil taxation incurred at the time are described in detail by Matthias Bongartz, "Die Änderungen des Mineralölsteuerrechts durch die ökologische Steuerreform", 75 *Zeitschrift für Zölle + Verbrauchsteuern* (1999), pp. 182–192.

<sup>16</sup> One fifth of the normal rate, i.e., 0.4 pfennigs per kilowatt-hour on electricity, Para. 9 (3) Electricity Tax Act (*supra*, footnote 8); the sectors benefiting from this abatement are defined in Paras. 2 Nos. 3–6 (for further details, see Klaus Friedrich, "Die 'Ökologische Steuerreform'", 52 *Der Betrieb* (1999), pp. 661–666, at p. 664); all abatements and exemptions required possession of a permit obtainable from the main customs office (*Hauptzollamt*), Para. 9 (4) Electricity Tax Act.

<sup>17</sup> Para. 10 Electricity Tax Act (*supra*, footnote 8).

<sup>18</sup> Para. 9 (1) in conjunction with Para. 2 No. 7 Electricity Tax Act (*supra*, footnote 8).

<sup>19</sup> Para. 9 (2) Electricity Tax Act (*supra*, footnote 8); the abatement, a fifty percent rebate off the normal rate, also applied to thermal storage heating stoves, albeit for social reasons.

general tax exemption for energy-intensive industries,<sup>20</sup> however, had to be abandoned in face of pressure from the European Commission.<sup>21</sup>

The electricity tax introduced with this Act has been generally levied whenever an end user draws electricity supplied by a provider through the transmission grid; the second, and less frequent, chargeable event arises when a provider draws electricity for its proprietary use.<sup>22</sup> Electricity sold to a re-seller may, thus, be exempt from the tax. Although the tax is payable by the provider, not the end user,<sup>23</sup> the resulting cost burden is typically passed on to rate payers.<sup>24</sup> As a consequence, the latter bears the actual burden of the tax, justifying the tax abatements and refunds for the manufacturing, agricultural and forestry sectors as well as renewable energy and public transportation.

A number of abatements were also included with regard to mineral oil taxation. Designed to prevent an excessive tax burden on certain industries as well as on the forestry and agriculture sectors, a provision in the Tax-Reform Act froze existing rates on heating fuel and gas used in manufacturing processes or for the production of electricity.<sup>25</sup> Combined heat and power systems with a minimum operating efficiency of seventy percent, for instance, were completely exempt from mineral oil taxation, whereas comparable systems with an efficiency of sixty percent or more are exempt from all rate increases. And finally, tax benefits for gas-propelled vehicles were affirmed for an interim period.<sup>26</sup>

## 2.2 The “Ecological Tax Reform Continuation Act” of 2000

Draft legislation for subsequent stages of the tax reform was submitted by the Federal Government on 25 August 1999.<sup>27</sup> With the ruling coalition short of an absolute majority in the Upper House, and confronted with setbacks in several regional elections, it remained uncertain until the very end whether the bill would be able to surmount all obstacles on the path to parliamentary approval. The hearings were, not surprisingly, accompanied by heated disagreement.<sup>28</sup> In the Upper House, the opposition parties launched several petitions with requests for an amendment of the bill. At an earlier date, moreover, the minority caucus of the Liberal Democratic Party (*FDP*) had submitted an alternative proposal for an ecological tax

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<sup>20</sup> Para. 9 (1) No. 1 of the draft Electricity Tax Act, in: Official Records of Parliament 14/40 of 17 November 1998, p. 4.

<sup>21</sup> The then acting EU Competition Commissioner *Karel van Miert* expressed concerns that such a measure might afford the beneficiaries an unfair advantage over European rivals and other German firms and could thus violate EU state aid rules; the amended Ecological Tax-Reform Act was eventually endorsed by the E.U. Commission on 21 April 1999.

<sup>22</sup> Para. 5 (1) Electricity Tax Act (*supra*, footnote 8).

<sup>23</sup> Para. 5 (2) Electricity Tax Act (*supra*, footnote 8).

<sup>24</sup> This was also intended by the legislator, see Official Records of Parliament 14 / 40 of 17 November 1998, p. 10.

<sup>25</sup> Art. 2 No. 6 (a) and (b) Ecological Tax-Reform Act (*supra*, footnote 7).

<sup>26</sup> Art. 2 No. 3 (a) (bb) Ecological Tax-Reform Act (*supra*, footnote 7); thus, when used as vehicle fuel, liquefied gas was only taxed at 25,57 pfennigs per kilogram and natural gas at 1,98 pfennigs per kilowatt-hour.

<sup>27</sup> Draft Federal Act on the Continuation of the Ecological Tax Reform (*Entwurf eines Gesetzes zur Fortführung der ökologischen Steuerreform*) of 25 August 1999, in: Official Records of Parliament 14/1524 of 2 September 1999; 14/1668 of 29 September 1999.

<sup>28</sup> See the minutes of the parliamentary proceedings, in Plenary Protocol 14/69 of 11 November 1999, pp. 6184–6215.

reform, hoping to stall any efforts of the Federal Government and the ruling coalition.<sup>29</sup> Notwithstanding strong support from members of both opposition parties, this counter-proposal failed to receive the required amount of votes.<sup>30</sup> Two major petitions for an amendment of the bill were equally rejected during the parliamentary proceedings of the Federal Council.<sup>31</sup>

Overcoming this fierce opposition, the “Ecological Tax-Reform Continuation Act”<sup>32</sup> eventually passed both Houses of Parliament with a narrow majority of 331 to 285 votes,<sup>33</sup> and took effect as scheduled: on 1 January 2000, the second of five designated stages of the tax reform incurred rate hikes in mineral oil and electricity taxation, picking up where the first stage had left off. Consisting of four draft bills, this package included a sizeable amendment to the initial Ecological Tax-Reform Act of 1999.<sup>34</sup> Compared with the previous year, the rate hikes in 2000 were predicted to yield additional revenues of 5.1 billion marks (2.6 billion euros) in 2000, 10.5 billion marks in 2001, 15.8 billion marks in 2002 and 21.2 billion marks in 2003.<sup>35</sup> Altogether, the Federal Government expected to cut non-wage labor costs by a further percentage point.<sup>36</sup> Indeed, already the second stage of the tax reform allowed for a reduction of pension fund contributions by 0.2 %, bringing down the applicable rate to 19.3 %.<sup>37</sup> Larger cuts were ruled out with regard to the demographic development at the time, which added to significant structural deficiencies in the prevailing social insurance scheme.

Notwithstanding the ample proportions of the second stage, the structure of the original Tax-Reform Act – including the rules on abatements and refunds – was essentially retained.<sup>38</sup> The government had taken heed of its opponents, and was signaling its intention to safeguard the international competitiveness of German industry.<sup>39</sup> Accordingly, the central feature of the new act consisted of a series of consecutive and, as the government emphatically pointed out, moderate rate hikes.<sup>40</sup> From 1 January 2000, onward, the electricity tax was subjected to an annual increase of 0.5 pfennigs per kilowatt-hour, amounting to a total increase of 2 pfennigs by

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<sup>29</sup> Draft Federal Act on an Effective Ecological Conversion of Taxation without Burdening Citizens and the Economy (*Entwurf eines Gesetzes über eine ökologisch wirklich wirksame Umstellung der Besteuerung ohne Mehrbelastung für Bürger und Wirtschaft*), in: Official Records of Parliament 14/339 of 23 February 1999.

<sup>30</sup> Plenary Protocol 14/69 of 11 November 1999, pp. 6184–6215, at p. 6211.

<sup>31</sup> *Ibid.*, at pp. 6205 *et seq.* and pp. 6208 *et seq.*

<sup>32</sup> Federal Act on the Continuation of the Ecological Tax Reform (*Gesetz zur Fortführung der ökologischen Steuerreform*, hereinafter referred to as the Ecological Tax Reform Continuation Act) of 16 December 1999, in: Federal Law Gazette Part I (1999), pp. 2433–2440.

<sup>33</sup> Plenary Protocol 14/69 of 11 November 1999; Official Records of the Federal Council 638/99 of 26 November 1999.

<sup>34</sup> The amendment was contained in a separate act, the Draft Federal Act on the Continuation of the Ecological Tax-Reform (*supra*, footnote 29).

<sup>35</sup> Official Records of Parliament 14/1524 of 2 September 1999, p. 9.

<sup>36</sup> Johanna Hey, “Fortführung der ökologischen Steuerreform – Übergang zur Routine?”, 53 *Neue Juristische Wochenschrift* (2000), pp. 640–642, at p. 640; Reinhard Schultz, parliamentary speaker of the Social Democratic Party, calculated a reduction of labor costs of 115 billion marks over 5 years, in: Plenary Protocol 14/69 of 11 November 1999, pp. 6184–6215, at p. 6184.

<sup>37</sup> Para. 1 Federal Act on Social Insurance Contributions for the year 2000 (*Beitragssatzgesetz 2000*) of 12 December 1999, in: Federal Law Gazette Part I (1999), pp. 2534–2551, at p. 2544.

<sup>38</sup> Alfred Kruhl, “Gesetz zur Fortführung der ökologischen Steuerreform verabschiedet”, 55 *Der Betriebs-Berater* (2000), p. 25.

<sup>39</sup> See, for instance, Reinhard Schultz, in: Plenary Protocol 14/69 of 11 November 1999, pp. 6184–6215, at p. 6185.

<sup>40</sup> For an overview of the amendments, see Klaus Friedrich, “Die Fortführung der ‘Ökologischen Steuerreform’”, 53 *Der Betrieb* (2000), pp. 110–113.

1 January 2003.<sup>41</sup> As an additional incentive for the usage of renewable energy sources, the tax exemption for electricity thereby obtained was no longer limited to power plants with a maximum output of 5 megawatts.<sup>42</sup>

The new act also provided for a rate hike on mineral oils, including diesel and gasoline. The rate was augmented by 6 pfennigs a year for a total increase of 24 pfennigs per liter over the following four years.<sup>43</sup> Tax rates on natural and liquefied gas used for vehicle fuel were adjusted to the rates on mineral oil.<sup>44</sup> The rates on heating fuels, however, were to remain unaltered for social reasons, as it was feared that low-income households would be hit hardest, and residential heating is not a form of energy usage that can be easily altered.<sup>45</sup> In order to reduce the burden on German authorities, the new rules also applied a uniform rate on heating fuels, therefore making no distinction between fuels used for heating purposes and fuels used to obtain electricity.

Environmental considerations prompted the inclusion of an additional hike in taxes on high-sulfur fuel, which took effect on 1 November 2001.<sup>46</sup> Moreover, the decentralized production of electricity was given further impetus by extending the exemption formerly reserved for combined heat and power plants to all plants operating with joint gas and steam turbines at an efficiency ratio of 57,5 % or more, provided those plants were put to use between 31 December 1999 and 3 March 2003.<sup>47</sup> Public transportation continued to benefit from a substantial abatement on the normal rates.<sup>48</sup> And finally, a sizeable portion of the revenue from the ecological tax reform, 200 million marks, were used each year to support the usage of renewable energy sources.<sup>49</sup>

### 2.3 The “Energy Tax Act” of 2006

In 2005, the center-left coalition of Social Democrats and Green Party was replaced by a center-right coalition between the Social Democrats and the Christian Democratic Party (CDU/CSU), bringing a slightly changed political dynamic to the discussion on energy taxation. On 29 June 2006, the Lower House of Parliament adopted an act to modify the taxation of energy products and amend the Electricity Tax Act. Approved by the Federal Council on 7 July 2006, this act entered into force on 1 August 2006<sup>50</sup> and deferred further rate hikes for energy products as set out in the coalition agreement between the SPD and the CDU/CSU under Chancellor Angela

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<sup>41</sup> Art. 2 No. 2 Federal Act on the Continuation of the Ecological Tax-Reform (*supra*, footnote 32).

<sup>42</sup> Art. 2 No. 1 (f) Federal Act on the Continuation of the Ecological Tax-Reform (*supra*, footnote 32); this does not apply to hydroelectric power plants, whose wattage may not exceed 10 megawatts.

<sup>43</sup> Art. 1 No. 1 (a) Federal Act on the Continuation of the Ecological Tax-Reform (*supra*, footnote 32).

<sup>44</sup> Art. 1 No. 1 (b) Federal Act on the Continuation of the Ecological Tax-Reform (*supra*, footnote 32).

<sup>45</sup> Part B of the Reasoning for the Draft Federal Act on the Continuation of the Ecological Tax-Reform (*supra*, footnote 27).

<sup>46</sup> Art. 1 No. 1 (a) Draft Federal Act on the Continuation of the Ecological Tax-Reform (*supra*, footnote 32) required that the mineral oil tax rate on fuels with less than 50 mg (10 mg after 2003) of sulfur per kg be reduced by 3 pfennigs.

<sup>47</sup> Art. 1 No. 3 (d) Draft Federal Act on the Continuation of the Ecological Tax-Reform (*supra*, footnote 32).

<sup>48</sup> The tax rate on diesel used for public transportation, for instance, was increased by only 50 %, see Art. 1 No. 3 (a) (bb) Draft Federal Act on the Continuation of the Ecological Tax-Reform (*supra*, footnote 32).

<sup>49</sup> See Reinhard Loske, parliamentary speaker of *Bündnis 90/Die Grünen*, in: Plenary Protocol 14/69 of 11 November 1999, pp. 6184–6215, at p. 6191.

<sup>50</sup> *Gesetz zur Neuregelung der Besteuerung von Energieerzeugnissen und zur Änderung des Stromsteuergesetzes* of 15 July 2006, Federal Law Gazette (BGBl.) Part I (2006), pp. 1534 *et seq.*

Merkel.<sup>51</sup> Passed to fulfill this political commitment, the act also transposed a directive of the European Union<sup>52</sup> and responded to a judgment of the European Court of Justice of 29 April 2004, which had censured Germany for applying the definition of “heating fuel” too narrowly.<sup>53</sup> To this end, the act placed energy taxation in Germany on an entirely new legal basis. Aside from revising the rules on electricity taxation, it repealed earlier legislation on mineral oil taxes and introduced a tax on coal and lignite used for heating purposes. All that was incorporated in a uniform Energy Tax Act, or *Energiesteuergesetz*, setting out a common fiscal framework for energy products through harmonized definitions, taxation rules, and exemptions.<sup>54</sup> Application of the new act is facilitated by an ordinance guiding the implementation of individual provisions.<sup>55</sup>

Altogether, the adoption of this comprehensive act clearly marked a new stage in German energy taxation. On closer view, however, the changes incurred by the new act are not as dramatic as they may have initially seemed. Consisting of 67 provisions, the Energy Tax Act retained large parts of the earlier Mineral Oil Tax Act it was set to replace. With rates largely left unchanged, the amendments have been largely structural in nature. For instance, in keeping with requirements under European Union law, all energy products used for electricity generation are now equally exempt from taxation. Gas is no longer taxed at the point of insertion into the distribution grid, but rather with its supply to end users, and preferential treatment of liquid gas and natural gas will continue until 2018. Simplified rules on abatements for combined heat and power generation and generally favorable rules on efficient gas and steam turbines, moreover, were seen to improve the prospects for greenhouse gas reductions in the power sector.

Genuine changes have been largely confined to the introduction of new taxes on coal, lignite, coke, and biofuel. For the first time, coal, lignite and coke used for the generation of heat were subjected to an energy tax of 33 cents per gigajoule of energy content, although private households were again exempt from payment until 2010 out of concern that rising heating bills would affect low-income households hardest, with few opportunities for behavioral change to avoid paying the tax. Likewise, following lengthy negotiations, a compromise was reached to implement a system of gradually increasing rates for previously exempt biofuels, a measure that would complement a mandatory quota scheme for conventional fuel. Until the end of 2007, vegetable oil remained exempt from taxation, while pure biodiesel was subjected to a tax of 9 cents per liter. Between 1 January 2008 and 31 December 2012, taxes on vegetable oil and biodiesel are being successively raised until they reach a level of 45 cents per liter in 2012. Biodiesel used as an additive to conventional fuels for attainment of the mandatory quota has been taxed at 15 cents per liter from 1 January 2007 onwards. Biofuels used in agriculture and forestry, however, have remained exempt from taxation, as have all fuels – including biofuel – used in public transportation. Tax waivers have also been retained for a number of energy intensive sectors, such as the production of cement, glass, and metals.

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<sup>51</sup> See *Gemeinsam für Deutschland: Mit Mut und Menschlichkeit – Koalitionsvertrag von CDU, CSU und SPD*, 11 November 2005, p. 53.

<sup>52</sup> See Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity, Official Journal L 283, pp. 51 *et seq.*

<sup>53</sup> European Court of Justice (ECJ), Case C-240/01, *Commission of the European Communities v. Federal Republic of Germany*, European Court Reports (2004), pp. I-04733 *et seq.*

<sup>54</sup> See Art. 1 of the Energy Tax Act (*supra*, note 50).

<sup>55</sup> *Verordnung zur Durchführung energiesteuerrechtlicher Regelungen und zur Änderung der Stromsteuer-Durchführungsverordnung* of 31 July 2006, Federal Law Gazette (BGBl.) Part I (2006), pp. 1753 *et seq.*

### 3. Assessing the German Ecological Tax Reform

Although comprehensive, the ecological tax reform described in the preceding section should not be misconstrued as an indicator of unconditional acceptance in Germany. Throughout the legislative process, numerous stakeholders voiced serious concerns about the reform project. Opponents voiced their fear of a negative impact on the German economy and argued that the new fiscal burden would increase the confusion and uncertainty already prevalent in German tax law while failing to achieve the original goal of reducing environmental pollution.<sup>56</sup> Such resistance was summarized in a recommendation submitted to the Federal Council by the Parliamentary Committee on Economic Affairs.<sup>57</sup> In this document, the Committee explicitly accused the proposed tax reform of placing an unnecessary strain on the German economy, while achieving no progress in the field of environmental protection. Specifically, it forecast a further decline in the global competitiveness of German industry and denounced an inequitable distribution of the ensuing tax burden, which, as the Committee held, would place certain members of society at a substantial disadvantage. Rather than produce the expected “double dividend”, the ecological tax reform would cause certain industries to leave the country. At the same time, the cost of energy was feared to reach unwarranted levels in the eastern part of Germany, an area still struggling with the economic burden of its past. In spite of a complex abatement scheme, the Committee also forecast an increase in expenses for the public transportation sector, an effect which, it added, would prove counterproductive to the goal of environmental protection. Further arguments relating to the structure of the bill and its prospects of inviting similar measures from neighboring countries were, finally, brought forward to solidify the opposition against the tax reform.

How do these dire projections hold up against actual experience a decade later? In retrospect, Germany has fared quite well despite the increased energy costs incurred by the ecological tax reform. As intended, between 1999 and 2003, the tax reform resulted in a gradual increase of energy costs. Over this period, the rates for gasoline and diesel grew by 3 cents per liter each year, the rates for heating oil by 2 cents per liter, and the electricity tax, which had first been introduced on 1 April 1999 with 1 cent per kilowatt hour, by 0.26 cent per kilowatt hour. Liquefied natural gas, coal, lignite and coke used for transport or heating purposes as well as previously exempt biofuels have also been subject to the energy tax. Overall, however, the fiscal burden resulting from the environmental tax reform has been moderate compared to already existing taxes: for instance, only 15 cents of the 66 cents currently charged in taxes on every liter of gasoline are a result of the ecological tax reform, with the far greater share originating in the excise taxes already imposed prior to 1999. Altogether, the share of ecological taxes in the tax burden only rose from 5.2 percent in 1998 to 6.5 percent in 2003, and has since declined again to 5.3 percent in 2008, nearly the level where it started in 1999.<sup>58</sup>

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<sup>56</sup> See, *inter alia*, the critical remarks of Hans-Olaf Henkel, president of the Federation of German Industries (BDI), in *Die Welt*, 22 May 1999, p. 17; Karl Heinz Däke, president of the Confederation of Tax Payers (BdSt), in *Berliner Morgenpost*, 1 April 1999, p. 1; Hubertus Schmoldt, chairman of the Trade Union for the Chemical, Mining and Energy Industries (IGBCE), in *Frankfurter Allgemeine Zeitung*, 23 October 1998, p. 17; and the earlier demands for a “cessation of all eco tax plans” expressed by Hans Peter Stihl, president of the German Chamber of Commerce and Industry (DIHT), in *Frankfurter Allgemeine Zeitung*, 7 April 1998, p. 17.

<sup>57</sup> Recommendations by the Committee, in: Official Records of the Federal Council 638/1/99 of 16 November 1999.

<sup>58</sup> Damian Ludewig, Bettina Meyer, and Kai Schlegelmilch, *Greening the Budget: Pricing Carbon and Cutting Energy Subsidies to reduce the financial deficit in Germany* (Washington DC: Heinrich Böll Stiftung, 2010), p. 15.

## Share of Taxes in Gasoline Price

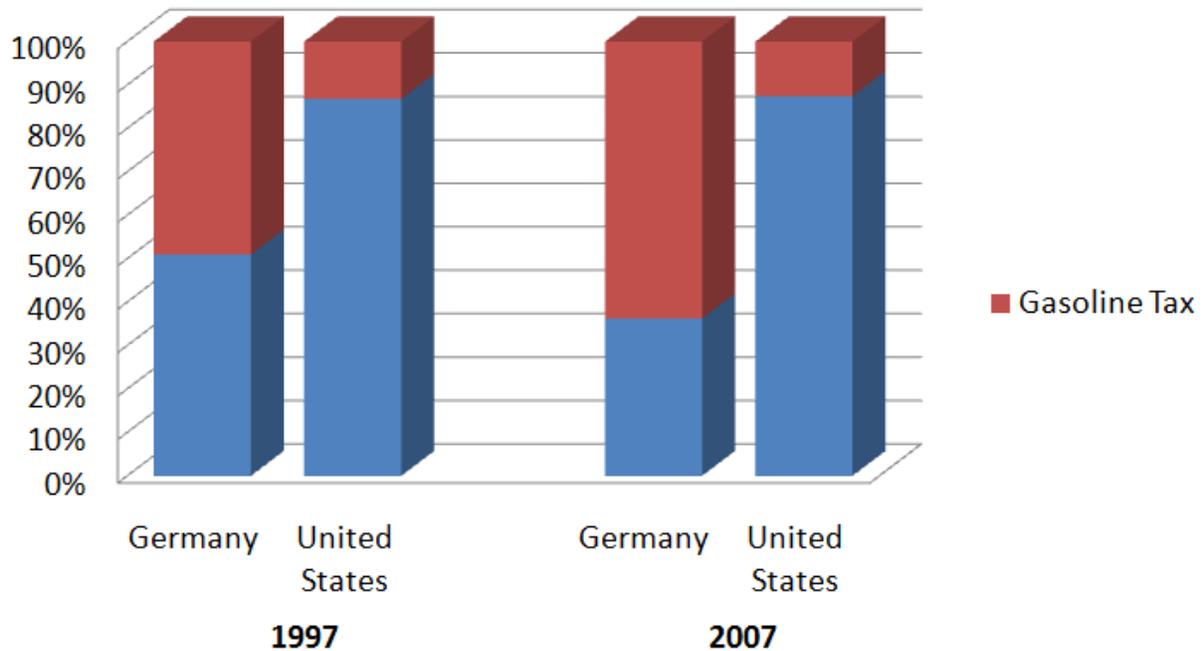


Fig.: Share of Taxes in Gasoline Price 1997 and 2007 (Source: author, based on data by the German Statistical Office and the Energy Information Administration)

Mostly, this observation can be ascribed to the fact that fossil fuel consumption has continually declined in Germany since the introduction of the environmental tax reform. According to the German Federal Statistical Office, gasoline consumption in 2000 decreased by 4.5 percent compared to the previous year, and continued to decrease in 2001 and 2002 by 3.0 and 3.3 percent respectively, exceeding the previous average reduction of 2 percent due to general improvements in vehicle technology and transport planning.<sup>59</sup><sup>58</sup> The targeted increase in energy costs has also created an identifiable incentive for behavioral change in other sectors, encouraging deployment of energy efficient technologies and processes, including alternative energy sources. Reductions of CO<sub>2</sub>-emissions are estimated to have reached 3 percent annually, equivalent to 24 million metric tons of CO<sub>2</sub>.<sup>60</sup> At the same time, revenues of the Ecological Tax Reform have been almost fully returned to taxpayers, with the largest share used for a gradual reduction of social security contributions. In 2003, for instance, roughly 16.1 billion euros raised through the tax reform were used to reduce and stabilize non-wage labor costs, allowing pension contributions to be lowered by 1.7 percent.<sup>61</sup> With hiring rendered less expensive, the Ecological Tax Reform is said to have promoted employment and thereby contributed to the creation of an estimated 250.000 new jobs.<sup>62</sup> A smaller fraction of proceeds

<sup>59</sup> Ibid. In the meantime, gasoline consumption in the United States steadily rose, from 161,411 million gallons in 1999 to 167,730 in 2002.

<sup>60</sup> Michael Kohlhaas, *Gesamtwirtschaftliche Effekte der ökologischen Steuerreform* (Berlin: DIW, 2005), p. 14.

<sup>61</sup> Markus Knigge and Benjamin Görlach, *Die Ökologische Steuerreform – Auswirkungen auf Umwelt, Beschäftigung und Innovation* (Berlin: Ecologic, 2005), p. 5.

<sup>62</sup> Kohlhaas, *supra*, note 60.

was used to subsidize the deployment of renewable energies and the modernization of buildings.

Unlike many of its European neighbors, Germany has emerged from the recession with a robust economy, thanks in large part to flourishing exports. At least part of this success is ascribed to Germany's dominant market share in various green technologies, a sector also employing a substantial share of the German workforce.<sup>63</sup> As a result, Germany has earned wide recognition for its successful alignment of prosperous and sustainable growth, and the greening of the its economy is unmistakably also the product of targeted policy design and implementation, including the Ecological Tax Reform. As a former minister central to Germany's recent success has stated: "green policy is merely good industrial policy".<sup>64</sup>

#### 4. Conclusion: Lessons from the German Ecological Tax Reform

Like everywhere else, taxes are a politically sensitive issue in Germany. Unsurprisingly, opponents of the environmental tax reform – including the current ruling coalition – were quick to launch a determined media campaign against the proposed legislation. Given the complexities of its design, it was easy for critics to portray the tax reform as a mere increase in the fiscal burden, while downplaying or disputing the accompanying reduction in labor costs and expected employment benefits. Industry representatives have condemned the act for failing to simplify taxation rules while worsening the competitive position of German industry with higher rates than in neighboring states. The Association of German Chambers of Industry and Commerce, for instance, decried the Energy Tax Act for being "ineffective for purposes of energy policy, unfair in its distribution of the fiscal burden, and complicated in the procedure it sets out."<sup>65</sup> At the other end of the spectrum, environmental advocates contended that the tax reform was a missed opportunity to eliminate subsidies for energy intensive sectors and expand energy taxation to sectors traditionally exempt from fuel charges, such as aviation and shipping, within the narrow boundaries afforded by the international and European Union law.<sup>66</sup>

Despite such resistance from several sides, Germany's parliamentary system and its strict party discipline allowed the governing coalition at the time to pass the tax reform against partisan resistance. Ironically, the need to close a growing budget deficit has made the current conservative government, previously an ardent adversary of environmental taxes, now depend on the revenue they yield. As the rationale and benefits of the tax reform have become more widely known, so has public acceptance of the incremental increase in energy cost. It stands to reason that better communication in the early stages of the tax reform could have alleviated some of the early concerns. Also, describing it as an environmental tax arguably did not help;

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<sup>63</sup> Torsten Henzelmann, "Weltmarktführer beim Umweltschutz", 30(12) *Harvard Business Manager* (2010), pp. 44-49.

<sup>64</sup> Stefan Theil, "No Country Is More 'Green By Design'", *Newsweek* Special Report, 7-14 July 2008, available on the Internet at <[www.newsweek.com/id/143679](http://www.newsweek.com/id/143679)> (last accessed on 15 March 2011); see also the analysis of Peter Debaere, in this volume, who discusses whether stricter environmental regulations can promote the emergence of competitive industries better able to succeed in the global marketplace.

<sup>65</sup> DIHK, letter dated 12 May 2006, available on the Internet at <[www.ihk-koeln.de/Navigation/FairplayRechtUndSteuern/Steuern/Anlagen/EnergieStGesStellungnDIHK.pdf](http://www.ihk-koeln.de/Navigation/FairplayRechtUndSteuern/Steuern/Anlagen/EnergieStGesStellungnDIHK.pdf)> (last accessed on 15 March 2011); translation by the author.

<sup>66</sup> See, for instance, Grüne Liga e.V., letter dated 17 February 2006, available on the Internet at <[www.grueneliga.de/aktuell/stellungnahme\\_biogene\\_kraftstoffe.pdf](http://www.grueneliga.de/aktuell/stellungnahme_biogene_kraftstoffe.pdf)> (last accessed on 15 March 2011).

more advisable might have been a stronger focus on the innovation and employment potential of the proposed tax. And clearly, a gradual and transparent trajectory of rate hikes was of central importance in making the tax reform acceptable in the first place. Ultimately, however, the positive outcome of the tax reform is the most compelling lesson from the German experience: contrary to the early fears, behavioral change and innovation prompted by the rising energy prices have actually strengthened the German economy. Energy efficient technologies are now among the fastest growing export products, and the incentive to reduce energy use has helped the German economy become more resilient to fluctuations in global oil and gas prices.

What the German Ecological Tax Reform has shown, hence, is that environmental taxes, while no panacea, can be a useful addition to existing policies to promote greater energy efficiency and cleaner energy sources.<sup>67</sup> But that is not their only attraction. By shifting the tax burden from labor toward polluting inputs, they also afford a less distortionary way of raising revenues,<sup>68</sup> in the process benefitting the labor market and at the same time providing impetus to certain industries. In Germany, environmental taxes have thus provided a tool in the ongoing effort to address some of the larger difficulties faced by our modern-day economies, foremost the demographic trend apparent in a rapidly aging society, while simultaneously encouraging environmentally sound, innovative technologies. Given the robust pace of the German economy, fears that the tax reform would stifle growth and prosperity clearly seem overstated in hindsight. As the German Federal Environmental Agency rightly concluded, the Environmental Tax Reform delivered on its promise of improved labor conditions and greater sustainability, resulting in what it describes – in a typically German understatement – as a “positive macroeconomic balance.”<sup>69</sup>

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<sup>67</sup> Terry Barker, “Taxing Pollution Instead of Jobs”, in Timothy O’Riordan (ed.), *Ecotaxation* (London: Earthscan, 1997), pp. 163 ff., at p. 196; Anselm Görres, Henner Ehringhaus and Ernst Ulrich von Weizsäcker, *Der Weg zur ökologischen Steuerreform* (Munich: Olzog-Verlag, 1994), pp. 27 ff.

<sup>68</sup> So-called “double dividend” of environmental taxes, often defined as “(1) the improvement in environmental quality, and (2), any extra benefits derived from using the revenue to reduce pre-existing distortions in the economy”, see Daniel McCoy, “Reflections on the Double Dividend Debate”, Timothy O’Riordan (ed.), *Ecotaxation* (London: Earthscan, 1997), pp. 201 *et seq.*, at p. 201; Ruud de Mooij/Lars Bovenberg, “Environmental Taxes, International Capital Mobility and Inefficient Tax Systems: Tax Burden vs. Tax Shifting”, 5 *International Tax and Public Finance* (1998), pp. 7– 39, at p. 31.

<sup>69</sup> Umweltbundesamt, *Quantifizierung der Effekte der Ökologischen Steuerreform auf Umwelt, Beschäftigung und Innovation* (Berlin: UBA, 2004), p. 2.