

CO₂ Taxation in Sweden

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20 Years of Experience and Looking Ahead*

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Abstract

This paper describes the Swedish carbon dioxide (CO₂) taxation with a focus on the development of tax structure and tax levels between 1991 and 2011. The Swedish experiences so far can be summarized by an early introduction of the CO₂ tax as part of a major tax reform, gradually increased tax levels, addressing the risk of carbon leakage by a lower tax level for certain sectors and during recent years steps taken towards a more uniform national price on fossil CO₂. Further, CO₂ taxation in Sweden has been adapted to the introduction of the European Union Emission Trading Scheme (EU ETS). The Swedish experience may be of interest for countries contemplating to introduce or develop their taxation of energy in general and of fossil fuels in particular and be relevant in the ongoing discussions of a harmonized CO₂ taxation in the EU as well as the development of CO₂ taxation globally.

Key words: carbon dioxide (CO₂) tax, energy tax, climate policy, Sweden, energy taxation directive

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Introduction

The urgent climate challenge demands well-functioning strategies to achieve reduced greenhouse gas emission targets. An important tool is the use of economic instruments, such as taxes and emissions trading. A carbon dioxide (CO₂) tax is a powerful and cost-effective measure and such a tax has thus a key role in sectors not covered by an emissions trading scheme. Moreover, by a CO₂ tax the Polluter Pays Principle is observed, which is an essential political signal. A central goal and characteristic of CO₂ taxation is to create a price for fossil CO₂ emissions irrespective of what kind of fossil fuel is being used.

This paper outlines the Swedish CO₂ tax structure and tax levels between 1991 and 2011. The Swedish experiences so far can be summarized by an early introduction of the CO₂ tax as part of a major tax reform, gradually increased tax levels, addressing the risk of carbon leakage by a lower tax level for certain sectors and most recently, steps taken towards a more uniform national price on fossil CO₂. Further, CO₂ taxation in Sweden has been adapted to the introduction of the European Union Emission Trading Scheme (EU ETS). The Swedish experience may be of interest for countries contemplating to introduce or develop their taxation of energy in general and of fossil fuels in particular. It may also be relevant in the ongoing discussions of a harmonized CO₂ taxation in the EU as well as the development of CO₂ taxation globally.

Sweden is among the lowest CO₂ emitters (per capita) within the EU. The Swedish figure is 6.7 tonnes per inhabitant, to compare with the EU-27 average of 9.1 tonnes per inhabitant (figures for 2007). In Sweden, 35 % of the gross inland consumption of energy in all sectors of the society consists of fossil fuels. The EU-27 average is 77 %. (European Commission, 2010) Over the last decades, there has been a major decrease of fossil fuels being used in Sweden. The CO₂ tax has been and remains the primary instrument for Sweden to reduce the fossil fuel consumption and thus the CO₂ emissions from sectors outside the EU ETS. The transition to a low-carbon economy has further been facilitated by the fact that Sweden has major national renewable energy resources, such as hydro power and various biomass products, primarily from the forestry sector. Also household waste is increasingly used as an energy source.

The paper introduces the main design of the tax, its development over the years and how it is calculated and levied. The current tax rules are presented in more detail and already politically decided upcoming tax changes are highlighted. Finally, comments are given on the recently proposed revision of the EU Energy Taxation Directive and its possible effects on the future design of the Swedish CO₂ taxation.

Main design and development of the Swedish CO₂ tax

Energy taxation in Sweden - 1924 to 2011

Sweden has applied taxation on energy for a long time³. Petrol has been taxed since 1924 and diesel since 1937. Energy tax on electricity as well as on oil and coal used for heating purposes has been collected since the 1950's. Later on taxation was extended to cover also liquefied petroleum gas (LPG) and natural gas. Up until the 1970's, the primary reason for taxation was to raise public revenues and taxation consisted of one single tax, an energy tax. The oil crisis during the 1970's led to an increased awareness of the security of supply of oil products, which implied higher

³ The Swedish taxation of energy is regulated by the Act on Excise Duties on Energy (SFS 1994:1776), which is designed within the framework of relevant EU legislation, notably Directive 2003/96/EC (the Energy Taxation Directive), and as far as administrative matters, Directive 2008/118/EC.

taxation of these products. However, the energy tax was not calculated in a uniform way, but different political concerns have over the years determined the actual levels of taxation.

Sweden complemented the energy tax with specific CO₂ and sulphur taxes in 1991, as environment policy was becoming increasingly important on the political agenda. The energy tax and CO₂ tax are to be seen in combination, as two tax components rather than as two separate taxes. Sweden has been using these taxes as instruments to support various policy objectives. Apart from raising revenues, the energy tax takes account of other external effects than CO₂ emissions (such as noise, congestion and road wear from traffic) and also acts as a way of generally stimulating energy efficiency.

The prevailing principle has been to levy energy and CO₂ taxes on fossil fuels when used as motor fuels or heating fuels⁴. Sweden has significantly increased the CO₂ tax rates with the purpose of achieving cost effective emission reductions. At present, the general CO₂ tax corresponds to 1.05 SEK per kg CO₂ (114 € per tonne⁵). The industry has faced a considerably lower CO₂ tax on fuels used for heating purposes and in stationary motors, see Table 1 for the development of the two tax levels. Motor fuels used in vehicles are basically taxed according to the general CO₂ tax level.

An essential aspect when designing the Swedish energy taxation system has been to strike a balance between fulfilling environmental objectives and accounting for the risks of carbon leakage (which in turn is related to securing the competitiveness of certain sectors being subject to international competition). Thus, a lower tax level has ever since the introduction of the CO₂ tax been applied on fuels used for heating purposes by the industry. Such a lower tax level has been the prerequisite for a high tax level for other sectors and one important cause of the emission reductions achieved in these sectors. Assessment of a need to apply a lower level of taxation to

⁴ However, aviation spirit and jet fuel are not taxed when used for commercial air navigation, neither are bunker fuels used in shipping and other commercial sea navigation. Certain other areas of use also qualify for tax reliefs.

certain sectors of the economy is done from a carbon leakage perspective⁶. Moreover, a two level system could also reduce the alleged need for border tax adjustments.

Special tax rules for energy intensive industry and horticulture have been applied ever since energy taxation on heating fuels was introduced in Sweden during the 1950's. When the CO₂ tax was introduced, the existing provisions were extended to cover also the CO₂ tax. Energy intensive industrial companies were granted tax reliefs by individual Government decisions, while for horticulture a lower tax level of 15 % of the general CO₂ tax was applied. This system was not only administrative burdensome and non-transparent, but also risked to distort competition between enterprises as well as between different industrial sectors. On 1 January 1993, the present two level tax system was thus introduced and a lower level of 25 % of the general CO₂ tax came into force (Government Bill 1991/92:150, Annex I:5). About 80 % of the fuel consumption by industry was covered by the earlier individual company based system and the actual tax paid, at an aggregated level, roughly corresponded to the 25 % tax level introduced in 1993. The two level system was supplemented by a special rule for energy intensive companies, enabling them to get a further CO₂ tax reduction. These provisions have changed over the years, but the general construction has been a linkage between tax paid and a certain percentage of the value added for the manufactured products. Only a limited number of companies have been granted tax reliefs from these provisions, which will be totally abolished in 2015.

⁵ An exchange rate of 9.2183 SEK per €, official rate per 1 October 2010, is used throughout this paper.

⁶ When high CO₂ and energy taxes imply that industries will move their production and consequently their emissions outside the "Kyoto bubble", an ambitious climate policy can give rise to undesirable effects in the form of *higher* global CO₂ emissions.

Table 1. Development of the (nominal level) of Swedish CO₂ tax for different areas of use*

	A. Households and services, SEK/kg	B. Households and services, €/tonne	C. Industry, % of A
1991	0,25	27	25
1992	0,25	27	25
1993	0,32	35	25
1994	0,34	37	25
1995	0,34	37	25
1996	0,37	40	25
1997	0,37	40	50
1998	0,37	40	50
1999	0,37	40	50
2000	0,37	40	50
2001	0,53	57	35
2002	0,63	68	30
2003	0,76	82	25
2004	0,91	99	21
2005	0,91	99	21
2006	0,92	100	21
2007	0,93	101	21
2008	1,01	110	21/15
2009	1,05	114	21/15
2010	1,05	114	21/15
2011	1,05	114	30/0

* The CO₂ tax rate expressed in SEK per kg is used to calculate the tax for respective fossil fuel by volume or weight units (e.g. SEK per litre) in the Act of Excise Duties on Energy. Diesel as motor fuel in tractors and other agricultural and forestry machinery is not included in the Table, see Figure 3 for special tax provisions for such diesel use in 2011.

A. The sharp increase of CO₂ taxation between 2000 and 2004 was to some extent offset by a reduction of the energy tax as far as motor fuels were concerned. The CO₂ tax proportion of the total tax on fuels (energy tax and CO₂ tax) was heavily increased. For example, the total tax on unleaded petrol was between 2000 and 2004 raised from 4.47 to 4.79 SEK per litre. This included an increase of the CO₂ tax proportion from 19 to 44% of the total tax. On the other hand, the sharp CO₂ tax increase was not combined with energy tax cuts on heating fuels used by households and services. As can be noted by the figures in column C, the increases of the general CO₂ tax were until 2006 compensated by a lower percentage tax rate for industry in order to maintain roughly the same tax level for this sector.

B. An exchange rate of 9.2183 SEK per €, official rate per 1 October 2010, is used.

C. The lower industry level also applies to heating fuels used in certain other sectors, namely since 1 July, 2000 agriculture, forestry and piscicultural works and since 1 January 2004 heat production in CHP (combined heat and power) plants. However, heat production in CHP plants has been granted various forms of tax reductions within the energy taxation system since 1 July, 1991. From 1 July 2008 two different levels of CO₂ taxation are applied for industry and heat production in CHP plants. The lower level is for industry and CHP plants *within* the EU ETS and the higher one for use in such installations *outside* the EU ETS. The higher level also applies to heating fuels used in agriculture, forestry and piscicultural works. Within the EU ETS, from 1 January 2011 industry does not pay any CO₂ tax, while the CO₂ tax for heat production in CHP plants amounts to 7 % of the general CO₂ tax. Other heat plants within the EU ETS are subject to 94 % of the general CO₂ tax.

Hands on – how to levy a CO₂ tax on fossil fuels

In order to levy an accurate CO₂ tax there is no need to measure actual emissions.

Instead taxation can be based on average carbon content. What makes this simple, is

that a sufficiently exact relation between fossil carbon content and fossil CO₂ emissions can be established for the relevant fuels. This major simplification does not imply any large errors in providing a neutral incentive between fuels to reduce CO₂ emissions. Calculations made by Government officials based on the average carbon content of the fuels can determine the tax rates laid down in the tax legislation. A country introducing a CO₂ tax can thus – like Sweden – choose to express their CO₂ tax rates by volume or weight units (such as litre of petrol or tonne of coal). These are standard trade units and such an approach facilitates tax administration. The method also broadly corresponds to the guidelines countries follow when reporting CO₂ emissions to the UNFCCC (IPPC National Greenhouse Gas Inventories). The way of calculating the Swedish CO₂ tax is in detail explained in Table 2.

When the CO₂ tax was introduced in Sweden in 1991, it was levied on all major fossil fuels at rates equivalent to SEK 0.25 per kg CO₂ emissions. At the same time the energy tax rates were reduced by 50 %, which implied a varying net tax increase for all the fuels. The total tax for the most commonly used fossil fuel, heating gas oil, was almost unaffected by the CO₂ tax introduction, while taxation of coal was heavily increased. The changes in energy and CO₂ taxation reform of energy taxation implied net tax revenues. However, these changes were part of a major tax reform, which included reduced and simplified labor taxes. In other words, this was an early example of a green tax shift reform. Other policy packages including such tax reform elements have during the last decade been applied in Sweden. It should be noted that green tax bases typically are relatively small in comparison to for example income taxes and other “goods” which there may be a desire to lower. However, it is worth remembering that it is in principal correct to internalize externalities. Hence, a CO₂ tax is motivated in its own right and does not need to be part of a specific green tax reform. Still, revenues from a CO₂ tax can be used for various policy purposes, one being to address undesirable distributional consequences.

Table 2 Calculation of the Swedish CO₂ tax

<i>Fuel</i>	<i>Unit</i>	<i>Energy content, kWh/unit (1)</i>	<i>CO₂ emissions, kg/MJ_{fuel}^a (2)</i>	<i>CO₂ emissions, kg/unit^b (3)</i>	<i>CO₂ tax SEK/unit in 1991^c (4)</i>	<i>CO₂ tax, SEK/unit in 2010^h (5)</i>
Gas oil	m ³	9 900	0.077	2 744	714 ^d	2 998
Heavy fuel oil	m ³	10 700	0.077	2 966	714 ^d	2 998
Coal	tonne	7 500	0.092	2 484	621	2 608
Natural gas	1000m ³	10 800	0.055	2 138	535	2 245
LPG ^e	tonne	12 790	0.065	2 993	748	3 143
Petrol	m ³	8 720	0.074	2 323	581	2 439
Wood and logging residues ^f	tonne	3 530	0 ^g	0 ^g	0 ^g	0

^a MJ_{fuel}=mega joule per unit of fuel.

^b Column 3 is obtained by multiplying column 1 with column 2 and the conversion factor 3.6MJ_{fuel}/kWh.

^c Column 4 is obtained by multiplying column 3 with 0.25 SEK per kg CO₂.

^d The average tax rate on heavy fuel oil and gas oil is obtained by $686 \cdot 0.5 + 742 \cdot 0.5 = 714$ SEK per m³.

^e LPG (liquefied petroleum gas) used as heating fuel. In 1991, the tax on LPG as motor fuel was 0.40 SEK per litre and was calculated as follows. 1 kg of LPG is equivalent to approx. 2 litres of LPG. An emission factor of 3 kg per kg LPG is equivalent to 1.5 kg CO₂ per litre. Multiplied by 0.25 that gives a tax rate of approx. 0.40 SEK per litre.

^f 30 % moisture content.

^g The exemption of wood, logging residues and other biofuels from the CO₂ tax is justified by the fact that emissions of CO₂ from burning bio fuels are compensated by CO₂ absorbed when trees are replanted.

^h Column 5 is obtained by multiplying column 3 with 1.05 SEK per kg CO₂, i.e. CO₂ tax in 2010. However, the actual tax rates as they appear in the Act of Excise Duty on Energy differ slightly from these figures (less than 1 %). The reason is that the CO₂ tax per unit (e.g. m³), since 1994, is adjusted yearly according to the development of the Consumer Price Index. The purpose of this adjustment, which also is applied to the energy tax, is to secure the real value of the tax levels, both for maintaining the desired steering effect and for securing tax revenues.

Sources: Swedish Government Bill 1989/90:111 p. 147 – 154 (an English summary can be found in the report "Taxation, environment and employment" by the Swedish Green Tax Commission [1997]) and own work.

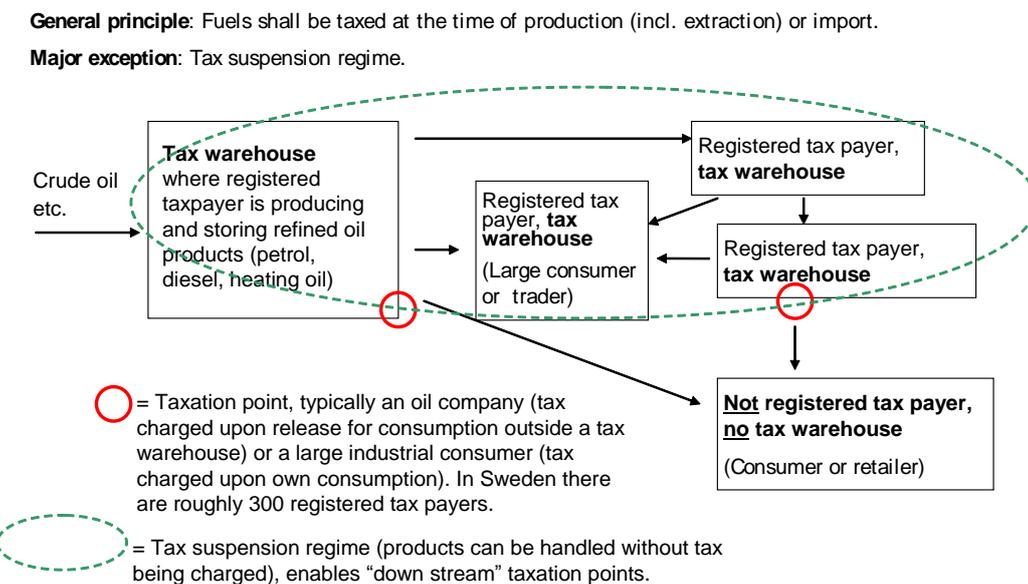
It should be stressed that when increasing the CO₂ tax, say from 0.25 SEK per kg to 1.05 SEK per kg (see columns 4 and 5 in Table 2), this increase will apply uniformly across fuels. Another way of expressing this is that CO₂ tax increases are tax neutral between fossil fuels, not favoring or discriminating any fuel.

Administrative aspects

The Swedish taxation system has low administrative costs, approximately 0.1 % of the total revenues from energy and CO₂ taxes. An administratively simple system for both tax payers and tax officials, which still ensures sufficient monitoring and control, has been a key priority when designing the way taxes are levied in Sweden.

The tax suspension regime, which is the core of this system, is illustrated in Figure 1.

Figure 1. Taxation points for energy and CO₂ taxes on fuels in Sweden



The number of tax payers for fuels is limited. There are 900 000 registered business companies in Sweden, among them 55 000 in the industry sector. However, only around 300 companies are authorized to produce and hold energy products without tax being charged and declare the tax upon delivery outside the suspension regime.

Major environmental and economic effects

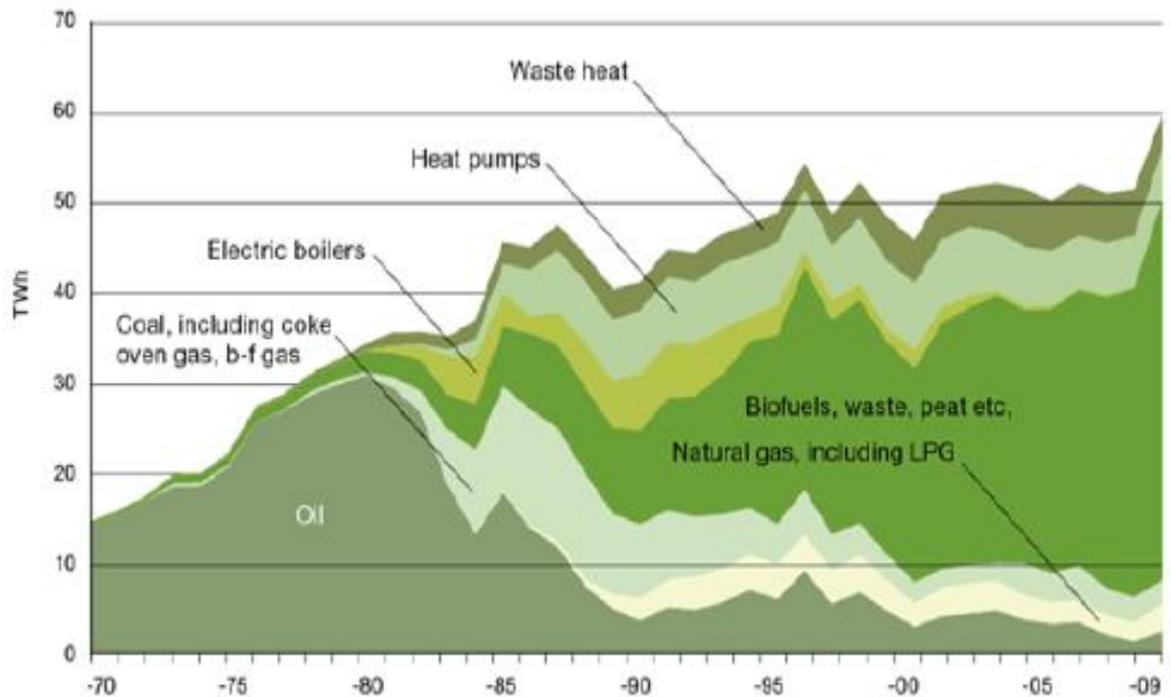
The CO₂ tax has during its 20 years of existence contributed to a reduced fossil fuel consumption in Sweden. This is in particular the case for the household and service sectors and district heating production, where the full CO₂ tax has been applied. The increase of biofuels (exempted from CO₂ tax) has been substantial during the last decades following a steadily increased level of the full CO₂ tax (see Table 1).

In the Swedish context the effect on district heating is interesting, since it constitutes a central example of how heat producers substitute away from fossil fuel inputs to bio fuels⁷. Figure 2 shows the different energy sources, used as input in Swedish district heating during 1970 – 2009. A couple of things are worth noticing. *Firstly*, it typically takes time to change energy systems. *Secondly*, substitution away from oil

⁷ 42 TWh of biofuels, peat and waste were in 2009 used for heat production (i.e. excluding electricity production) in district heating plants. Wood fuels (logging residues and other solid by-products from the forest products industry as well as densified fuels such as briquettes and pellets) supplied 27 TWh, black liquors and tall oil pitch 1 TWh, waste 11 TWh and peat 3 TWh. Waste has been used for

started as a result of the oil crises during the 1970's. *Thirdly*, the use of district heating has quadrupled over the 40 years period. It is the most common form of heating in apartment buildings, today supplying heat to more than 75 % of all apartments. *Fourthly*, the introduction of the CO₂ tax implied that the substitution from oil to fossil free alternatives increased. One important explanation for the relatively direct and sharp increase of biofuels was the use at the time of Government investment aid schemes promoting biofueled combined heat and power plants. When the CO₂ tax was introduced in 1991, there was, hence, already techniques in place allowing for an simple and swift change of energy inputs. In that context the CO₂ tax could do its job in a very cost effective way.

Figure 2. Energy input in district heating in Sweden 1970-2009



Source: Swedish Energy Agency (2011)

The Swedish experience is that the CO₂ tax base is inelastic to price changes when it comes to petrol and diesel implying quite stable tax revenues. On the other hand, the CO₂ tax seems to have had a major impact on fuels used for heating purposes, where biofuels and other non-fossil energy sources (such as energy from waste and surplus heat from industrial processes) have significantly increased their shares. The latter is, of course, an expected and desired effect from the perspective of the goal for

district heating production since the 1970s. Between 1990 and 2009, the quantity, and in particular

increased use of renewable energy sources as well as from a climate policy perspective.

There is normally a close link between economic growth and increased greenhouse gas emissions. However, the Swedish experience shows that this link can be broken and that emission reductions can be combined with economic growth. During the 1990 – 2007 period, the CO₂ equivalent emissions were reduced by 9 % while at the same time our country experienced an economic growth of + 51 %. The figures until 2009 show a higher reduction of emissions, - 17 %, which however partly is explained by the economic downturn as the economic growth for the period 1990 – 2009 was only + 42 %.

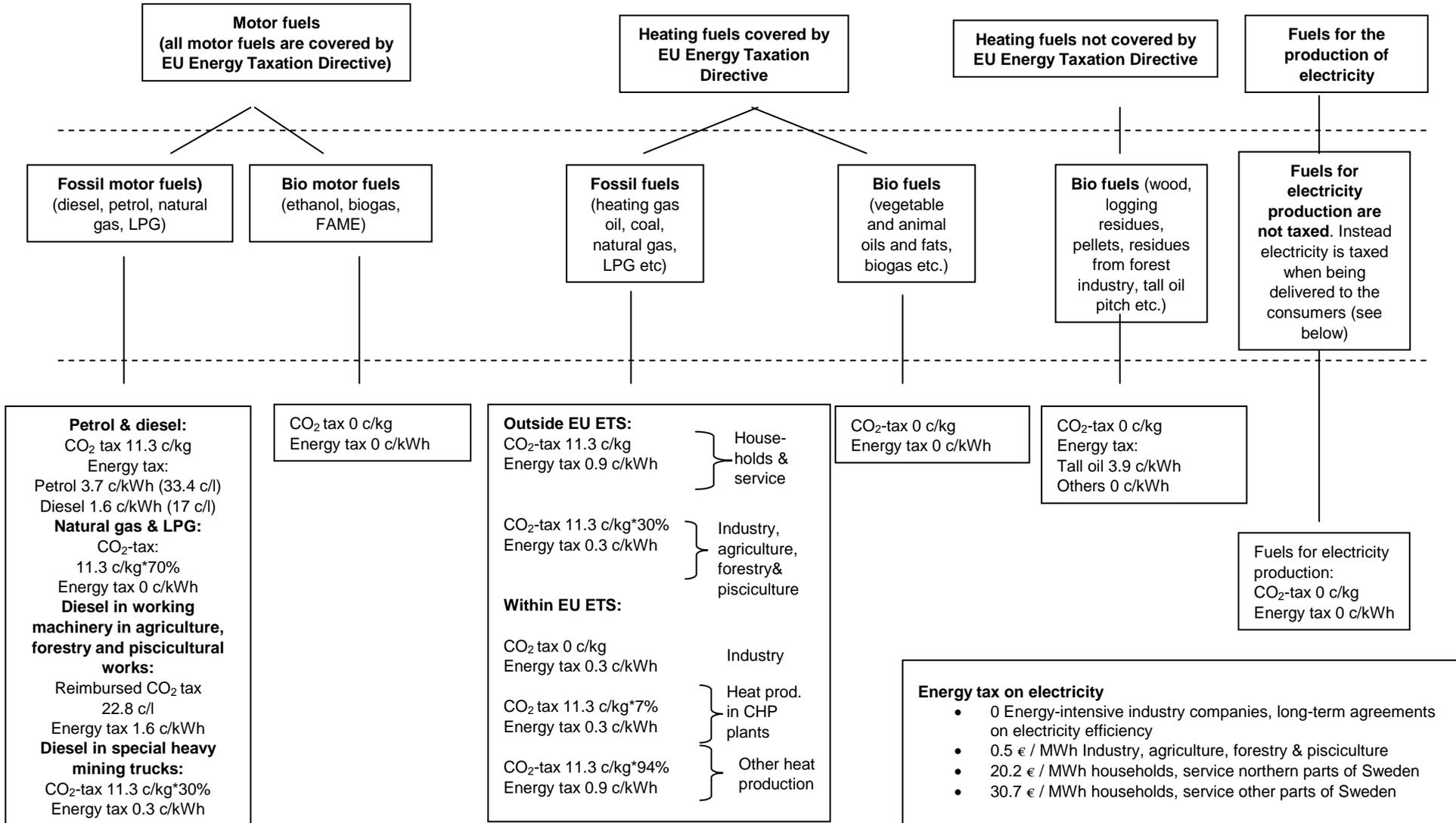
2009 Package – more efficient taxes in the area of climate and energy policy

In October 2009, the Swedish Government proposed a number of tax changes in the climate and energy area (Government Bill 2009/10:41). The principles behind the proposals had been laid down in the Government's Climate Bill earlier that year (Government Bill 2008/09:162) and the proposals were adopted by the Parliament later during the fall and enter into force in steps in 2010, 2011, 2013 and 2015.

Figure 3 gives an overview of the energy and CO₂ taxes, as of 1 January 2011. A couple of the newly introduced measures can be highlighted. The energy tax on heating fuels is strictly based on the energy content of the products. Until the end of 2010 a zero energy tax rate was applied on fuels used for heating purposes by industry, agriculture, forestry and piscicultural works as well as for heat production in combined heat and power plants. An energy tax, which equals the EU minimum tax rate for heating gas oil, is now applied in these sectors, regardless if the consumption takes place in installations within or outside the EU ETS. The reformed energy tax for heating fuels will stimulate the use of renewable energy also within the EU ETS, which can be of large importance for Sweden's possibilities to reach its national 2020 target of 50 % renewable energy.

Sweden took a first step towards abolishing the CO₂ tax within the EU ETS in 2008, by reducing the CO₂ tax for fuels used in such installations. In 2011 the CO₂ tax for industrial installations within the EU ETS was abolished. The CO₂ tax for other heat production installations within the EU ETS is, pending further evaluation, maintained at levels lower than the general CO₂ tax level. As for heating fuels used by industry, agriculture, forestry and piscicultural works as well as for heat production in combined heat and power plants not covered by the EU ETS, the lower level of the CO₂ tax is now raised to 30 % of the general level.

Figure 3 Overview of current CO₂ and energy taxes in Sweden, 1 January 2011



Swedish plans for the future

Step by step measures into force in 2013 and 2015

The long-term aim of the Swedish Government is a sustainable energy supply that makes efficient use of resources and gives rise to zero net emissions of greenhouse gases to the atmosphere by 2050 (Government Bill 2008/09:162). By 2020, greenhouse gas emissions in Sweden, from activities outside the EU ETS, are to be reduced by 40 % (in comparison with 1990). This national target by far exceeds the burden share allocated to Sweden to meet the EU climate target by 2020.

The various tax measures in the 2009 package are estimated to reduce greenhouse gas emissions and contribute to reach set goals for share of renewable energy and energy efficiency. Long-term predictability and an acknowledgement of the difficult economic situation were guiding concerns when deciding on this package. A particular focus was on taking steps towards a more uniform national price on fossil CO₂ by way of reducing existing deviations from the general tax level. By 2015, the effects will be evaluated and additional measures may be introduced if deemed necessary for Sweden to reach the goals set for 2020.

The use of tax instruments is motivated by the fact that this is considered to be the most cost effective way to achieve emission reductions. The tax changes are, however, implemented stepwise so that households and companies have time to adapt. Moreover, so far tax increases for companies and households in the energy and environmental areas have been offset by tax reliefs in other areas, for example labor taxation.

Measures entering into force in 2013 and in 2015 include a further raise of the CO₂ tax on natural gas and LPG as motor fuels (to 80 % of the general CO₂ tax in 2013 and to the full CO₂ tax in 2015). The amount of reimbursement of the CO₂ tax on diesel used in agriculture will be further reduced. The reduced CO₂ tax rate for industry and certain other sectors outside the EU ETS will in 2015 be subject to an

increase to 60 % of the general CO₂ tax. The special provisions, giving a limited number of industrial and horticultural companies an additional tax relief (the so called 0.8 % rule), are phased out. The scheme was made more strict in 2011 and will be fully abolished in 2015.

Swedish taxation policy within the framework of a revised Energy Taxation Directive

In April 2011 the EU Commission presented its long anticipated proposal for a revised Energy Taxation Directive (European Commission 2011). The proposal updates the directive and brings it more closely in line with the EU's energy and climate change objectives. This is necessary in order to give the EU Member States well-functioning and coordinated tools to reach set climate and energy targets in a cost-effective way. Specific minimum levels are introduced, for an energy tax (based on energy content of motor fuels as well as heating fuels) and a CO₂ tax respectively. The CO₂ tax will only be levied on fossil fuels used in sectors outside the EU ETS.

These are logical principles, which already have been the basis for the Swedish Government's national work on developing economic instruments to reach energy and climate policy targets in a cost-effective way. As outlined in this paper, the Swedish experience underlines the effectiveness of a system based on these principles. In some ways, the Commission proposal goes further in a uniform application of a CO₂ tax than Sweden has carried through this far, although the Swedish Government has acknowledged the basic principles in for example Government Bill 2009/10:41. This is the case with a CO₂ tax, in sectors outside the EU ETS, in principle being applied to all uses of fossil fuels giving rise to CO₂ emissions and not only to the fuels when used as motor fuels or heating fuels. The same goes for a complete exemption from CO₂ taxation on fuels used in all installations within the EU ETS.

A major challenge for most EU countries will be to design taxation of motor fuels in a politically feasible way within the framework laid down by the proposal. Still, it needs to be emphasized that in a long-term perspective drastic emission reductions in the transport sector will need to be achieved and economic instruments are key tools for such a transition. The proposal provides a sustainable and neutral way of taxing

biofuels as well as fossil fuels. We believe this will be a necessary way forward in order to avoid distortions between these fuels. Quota systems could be considered if biofuels, regardless of a reformed energy taxation, are not likely to be placed on the market in sufficient quantities to meet set energy policy targets.

To meet the urgent climate challenge, the EU and the rest of the world need efficient tools. Energy taxation – and in particular a CO₂ tax – is central in this work. It is necessary that such a tax system in the long run is coordinated between Member States and with the EU ETS. This will enable us to reshape our economy in a low carbon direction. By adopting the Commission proposal, the EU Member States can build a rational, coordinated and logical basis for their climate and energy policy. This will, among other things, also imply a clear incentive to develop and adopt green technologies.

Concluding remarks

If those who pollute should pay for their impact on the environment, the pricing of CO₂ emissions is essential. The policy instruments should be economically efficient, technology-neutral, preferably internationally coordinated and avoiding too many rules for special cases. In this context CO₂ taxation is of central relevance. A CO₂ tax is easy to administer, while at the same time assures that different fossil fuels are taxed in a neutral way according to actual CO₂ emissions. The extra administrative costs of adding a CO₂ tax to an already existing energy tax are virtually negligible.

The Swedish experience of 20 years of CO₂ taxation can be summarized by:

- Easy to administer.
- Emission reductions combined with economic growth.
- Increased tax levels over time and steps taken towards a more uniform national price on fossil CO₂.

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