SWEDEN: INVENTORY OF ESTIMATED BUDGETARY SUPPORT AND TAX EXPENDITURES FOR FOSSIL-FUELS

Energy resources and market structure

Sweden has minimal fossil-energy resources, but important supplies of renewable energy, mainly in the form of biomass and hydropower. All of the country's oil, gas and coal needs are imported. Nuclear energy also plays a large role, accounting for 30% of the country's total primary energy supply (TPES), followed by biomass from the forest industry (22%). Small amounts of fuel peat are harvested in Sweden, augmented by a roughly equal amount of imported fuel peat, mainly from Belarus. Most of this peat, equal to about 1% of TPES, is used to generate hot water in district-heating plants. Non-fossil energy source together contribute two-thirds of supply — the highest share of any OECD country after Iceland. Electricity generation is almost CO_2-free: depending on hydrological conditions, hydro and nuclear power typically account for at least 90% of total annual generation in roughly equal amounts. On the other hand, energy intensity — measured as the amount of energy consumed per unit of GDP — is very high, because of the large energy requirements of heavy industry, mostly pulp and paper and iron and steel, as well as the cold climate and sparse population.

Sweden takes a free-market approach to energy policy, which puts the emphasis on competition in ensuring efficient energy supply within a policy framework that aims to encourage renewable-energy sources. The only major energy company owned by the Swedish state is Vattenfall, which is one of several major players in the Swedish electricity market. It also has overseas operations, some of which are owned by foreign governments. Most of the small local electricity distribution companies and four gas distributors are owned by municipalities.

The Swedish oil market is privately owned and fully open to competition. A Saudi-owned company, Preem, owns two of the country's five refineries and is the fourth-largest marketer of oil products after QK-Q8, Statoil and Hydro. The other three refineries are also foreign-owned, one by St1 and two jointly by Neste Oil and Petroleos de Venezuela. The natural gas market is dominated by a small number of vertically integrated companies, and most gas is supplied under long-term contracts. Currently two entities are performing the TSO function in Sweden. The state owned utility Svenska Kraftnät (also TSO for the electricity market) is assigned as system balancing administrator for gas. Swedegas AB is the owner and operator of the transmission grid and the only existing storage facility in Sweden. Svenska Kraftnät is responsible for the short-term balancing administration which among others includes nomination, matching and allocation of gas. Both the daily balancing settlement and the final monthly and financial settlement are carried out by Svenska Kraftnät. Swedegas is currently responsible for technical operation and the capacity allocation within the Swedish gas transmission grid as well as daily maintenance and enlargement of the Swedish gas transmission grid. On the wholesale market there are currently two companies operating (DONG Energy AB and E.ON Gashandel Sverige AB) while the retail market is slightly more competitive with five active suppliers (of which E.ON Gashandel Sverige AB, Dong Energy AB and Göteborgs Energi AB have approximately 90% of the market).There are currently five DSO's existing on the Swedish natural gas market. Except E.ON Gas Sverige AB are all the DSO's owned by municipalities.

The Swedish electricity market is fully liberalised and all customers are free to choose their own supplier. Svenska Kraftnät, the TSO, owns the transmission grid and is unbundled from the other parts of the industry; grid access for third parties is guaranteed and a regulator, EMI, oversees market operations. Three companies —

Vattenfall, Fortum (majority-owned by the Finnish government), and E.ON Sverige — generate the overwhelming bulk of power in Sweden, own most of the distribution assets and account for around half of retail sales. More than half of electricity consumers have switched suppliers, a rate well above the average for rest of the European Union.

Sweden is a part of the first free-electricity market in Europe, the Nordic electricity market. More than 70% of energy consumed in the Nordic market is traded through Nord Pool AS, which was established in 2002.

Prices, taxes and support mechanisms

All energy prices are freely determined by the market in Sweden, except for electricity and gas network tariffs. EMI regulates ex-ante the electricity and gas network tariffs by price controls set every four years for electricity. Those controls set the maximum amount of revenue energy-network owners can collect through the charges they levy on users of their networks. Prices are meant to cover the costs to owners of the network for the period in question. The tariffs for gas are subject to ex-ante approval of methodologies in order to ensure the tariffs are objective and non-discriminatory.

Energy is subject to an energy tax, a CO_2 tax and a sulphur tax. There is also a levy on NO_X emissions. Rates of tax vary by fuel and according to whether the fuel is being used for heating or in transport, whether by manufacturing industry, energy industry or households, and, in the case of electricity, what it is being used for and whether it is being used in the north or in the rest of the country. There are also several exemptions. The energy tax is levied on all fuels except peat, natural gas and LPG used as motor fuels, and biofuels. The CO_2 tax is paid on all fuels except bioenergy and peat. However, almost all users of energy peat are obliged to buy emission rights (EU-ETS) for CO_2. In addition, several user groups are wholly or partly exempt from the CO_2 tax (it is charged fully in transport, space heating and heat generation except co-generation). The sulphur tax is paid on bunker fuel, coal, petroleum coke and peat. Most tax revenues come from oil. There is also a tax on nuclear power, the rate of tax being set on the basis of the maximum permissible thermal power rating of each reactor.

In the Budget Bill for 2013 an introduction of an energy tax on biofuels used for low blend purposes is proposed. Moreover, it is proposed to abolish the CO_2 tax for combined heat and power (CHP) generation within EU-ETS (presently 7% of the general level). Also, the CO_2 tax is abolished for fuels used in installations that produce heat in CHP and plants that produce district heating, when it is delivered to industry users within EU-ETS.

Data documentation

General notes

The fiscal year in Sweden coincides with the calendar year.

Producer Support Estimate

No producer support estimates were identified.

Consumer Support Estimate

The Ministry of Finance publishes official tax-expenditure estimates (*Redovisning av skatteutgifter*) as part of its budget documentation every fiscal year (Ministry of Finance, various years). Numerous energy- and CO2-tax exemptions and reductions are listed in its tax-expenditure report.

Calculations of tax-expenditure estimates related to the energy tax are based on the assumption that all the fuels should be subject to the same tax rate per unit of energy content, with two caveats: First, a

higher benchmark rate is applied to electricity, to reflect the fact that one energy unit of electricity is equivalent to more than one energy unit of fuel (due to energy loss in the energy-generation process). Second, the benchmark rate Sweden applies to transport fuels is higher than that applied to heating and processing fuels since the tax revenue collected from the former covers costs associated with road transport, such as wear and tear of roads, noise and traffic accidents, among other societal costs. As for those tax expenditures that relate to the CO_2 tax, no differentiation is made in terms of a benchmark, i.e. the same benchmark rate is applied to every usage of the fuel.

Reduced Energy-Tax Rate on Diesel Used in Transport (data for 1997-)

The energy-tax rate on diesel (SEK 0.157 per kWh in 2012) is lower than the official benchmark for transport fuels, which is the energy-tax rate on gasoline in environmental class 1 (SEK 0.347 per kWh). The parliament decided that this tax expenditure will be reduced over time since the energy-tax rate on diesel will be increased to SEK 0.177 per kWh in 2013.

Source: Ministry of Finance (various years).

Tag: SWE_te_01

Energy-Tax Exemption for Natural Gas and LPG Used in Transport (data for 2007-)

This tax expenditure reflects the fact that both natural gas and LPG used as fuel in transport are exempted from energy-tax payments. The benchmark against which this tax expenditure is calculated is the energy-tax rate on gasoline in environmental class 1.

The annual amounts reported in the tax-expenditure reports are allocated to natural gas only, since the IEA's Energy Balances show that LPG consumption by the road-transport sector in Sweden is negligible.

Source: Ministry of Finance (various years).

Tag: SWE_te_02

Energy-Tax Exemption for Diesel-Powered Trains (data for 1997-)

Diesel used as fuel in diesel-powered trains is exempted from the energy tax. The benchmark against which this tax expenditure is calculated is the energy-tax rate on gasoline in environmental class 1.

Source: Ministry of Finance (various years).

Tag: SWE_te_03

Energy-Tax Exemption for Domestic Shipping (data for 1997-)

Fuel used in commercial domestic shipping is exempted from the energy tax. The benchmark against which this tax expenditure is calculated is the energy-tax rate on gasoline in environmental class 1.

The annual amounts reported in the tax-expenditure reports are allocated to diesel and heavy-fuel oils, on the basis of the IEA's Energy Balances for the domestic navigation sector.

Source: IEA; Ministry of Finance (various years).

Tag: SWE_te_04

Energy-Tax Exemption for Domestic Aviation (data for 2007-)

Fuel used for commercial domestic aviation is exempted from the energy tax. Until 1 July 2008, fuel used for private domestic aviation was also exempted from the energy tax; this is no longer the case. The benchmark against which this tax expenditure is calculated is the energy-tax rate on gasoline in environmental class 1.

We have allocated the annual amounts reported in the tax-expenditure reports to kerosene type jet fuel only, on the basis of the IEA's Energy Balances for the domestic aviation sector. No amounts were allocated to aviation gasoline since its share in fuel consumption by the domestic aviation sector is negligible (below 2%).

Source: Ministry of Finance (various years).

Tag: SWE_te_05

Reduced Energy-Tax Rate for Fossil Fuels Used for Heating (data for 1997-2010)

The benchmark against which this tax expenditure is calculated is the energy-tax rate on heating oil. Energy-tax rates on LPG, natural gas and coal were equalised with the value of the benchmark at the beginning of 2011, which implies that this tax expenditure effectively disappeared from Sweden's tax-expenditure reports.

The annual amounts reported in the tax-expenditure reports are allocated to LPG and natural gas, on the basis of the IEA's Energy Balances for the manufacturing sector.

Source: IEA; Ministry of Finance (various years).

Tag: SWE_te_06

Reduced Energy-Tax Rate for Fuels Used in CHP Plants (data for 1997-)

Until the end of 2010, those CHP plants that are not encompassed by the EU ETS system were granted a full energy-tax rebate for fuels that they use solely for the combined heat and power generation. In 2011, the energy-tax exemption was replaced by a 70% reduction in the standard tax rate on heating fuels.

The annual amounts reported in the tax-expenditure reports are allocated to coal, blast furnace gas, natural gas and heavy fuel oil, on the basis of the IEA's Energy Balances for the combined heat and power generation sector. Peat is not among the allocated fuels since it is not encompassed by energy taxation.

Source: IEA, Ministry of Finance (various years).

Tag: SWE_te_07

Reduced Energy-Tax Rate for District Heating Supplied to Industry (no data available)

Those industrial users that use heat or electricity provided by district heating for manufacturing processes are granted a 70% reduction in the standard rate on heating fuels and a reduced rate of SEK 0.005 per kWh of electricity.

Annual payments for this item have been available since 2004. Since, however, they cannot be isolated into the fuel-related and the electricity-related components, the figures remain unreported.

Source: Ministry of Finance (various years).

Reduced Energy-Tax Rate on Diesel for the Mining Industry (data for 2010-)

Since 2010, the mining industry has been granted an 84% energy-tax reduction on diesel used for fuelling stationary machinery that is used for mining purposes. The parliament of Sweden decided to increase the reduction rate to 86% in 2013.

The benchmark against which this tax expenditure is calculated is the energy-tax rate on diesel.

Source: Ministry of Finance (various years).

Tag: SWE_te_08

Reduced Energy-Tax Rate on Heating Fuels for Industrial Consumers (data for 1997-)

Since 2011, industrial consumers, both within and outside of EU ETS, are granted a 30% reduction in the standard energy-tax rate on heating fuels. This reduction replaced a full energy-tax exemption for fossil fuels used for heating in manufacturing processes.

The benchmark against which this tax expenditure is calculated is the energy-tax rate on heating oil. In 2011, the energy-tax exemption was replaced by a 30% reduction in the standard tax rate on heating fuels.

The annual amounts reported in the tax-expenditure reports are allocated to LPG, natural gas and coal, on the basis of the IEA's Energy Balances for the manufacturing sector.

Source: IEA, Ministry of Finance (various years).

Tag: SWE_te_09

Reduced Energy-Tax Rate on Heating Fuels for Greenhouses and Agriculture (data for 1997-)

Until the end of 2010, greenhouses and the agricultural sector were granted a full energy-tax rebate for fossil fuels used for heating. The benchmark against which this tax expenditure is calculated is the energy-tax rate on heating oil. In 2011, the energy-tax exemption was replaced by a 30% reduction in the standard tax rate on heating fuels.

The annual amounts reported in the tax-expenditure reports are allocated to LPG and natural gas, on the basis of the IEA's Energy Balances for the agricultural sector.

Source: IEA; Ministry of Finance (various years).

Tag: SWE_te_10

Reduced CO_2-Tax Rate for Industrial Consumers outside EU ETS (data for 2000-)

Industries outside the EU ETS are granted a reduction of the CO2-tax rate on all fossil fuels used for heating purposes. The benchmark against which this tax expenditure is calculated is the standard CO2-tax rate of 1.05 SEK per kg of CO2. This reduction has been declining through time — from 79% in 2010 to 70% in 2011 and is planned to be diminished to 40% in 2015.

The annual amounts reported in the tax-expenditure reports are allocated to LPG, natural gas and coal, on the basis of the IEA's Energy Balances for the manufacturing sector.

Source: IEA, Ministry of Finance (various years).

Tag: SWE_te_11

Reduced CO_2-Tax Rate for Natural Gas and LPG Used in Transport (data for 2007-)

Natural gas and LPG used in transport are subject to lower CO2-tax rates. In 2010 these fuels were granted a 41% and 48% CO2-tax rate reduction respectively. In 2011 each of these fuels was granted a 30% CO2-tax reduction. The benchmark against which this tax expenditure is calculated is the standard CO2-tax rate of SEK 1.05 per kg of CO2. This reduction has been declining over time and further reductions are planned: from a 20% reduction in 2013 to a complete phase out of this tax expenditure in 2015.

The annual amounts reported in the tax-expenditure reports are allocated to natural gas only, since the IEA's Energy Balances show that LPG consumption by the road-transport sector in Sweden is negligible.

Source: Ministry of Finance (various years).

Tag: SWE_te_12

Reduced CO_2-Tax Rate for Energy-Intensive Companies (data for 1997-)

Fuels used for heating purposes by energy-intensive companies are granted a 24% CO2-tax reduction for that value of the CO2-tax that exceeds 1.2% of their sales value. This reduction can never imply lower CO2-tax payments than the EU-stipulated minimum. The benchmark against which this tax expenditure is calculated is the standard CO2-tax rate of SEK 1.05 per kg of CO2.

In 2010 the reduction applied to this part of the CO2 tax that exceeded 0.8% of a company's sales value, in 2011 this threshold was raised to 1.2%. The plan is to completely phase out the reduction from 2015 onwards.

The annual amounts reported in the tax-expenditure reports are allocated to coal, gas and diesel products, on the basis of the IEA's Energy Balances for combined chemicals, iron and steel, and other energy-intensive sectors.

Source: IEA, Ministry of Finance (various years).

Tag: SWE_te_13

Specific CO_2-Tax Reduction for Greenhouses and Agriculture (data for 2008-)

Fuels used for heating in the agricultural sector, forestry and aquaculture are granted a 24% CO2-tax reduction for that value of the CO2-tax that exceeds 1.2% of their sales value. This reduction can never imply lower CO2-tax payments than the EU-stipulated minimum. The benchmark against which this tax expenditure is calculated is the standard CO2-tax rate of SEK 1.05 per kg of CO2.

In 2010 the reduction applied to this part of the CO2 tax that exceeded 0.8% of a company's sales value, in 2011 this threshold was raised to 1.2%. The plan is to completely phase out the reduction from 2015 onwards.

The annual amounts reported in the tax-expenditure reports are allocated to diesel, LPG, natural gas and fuel oil, on the basis of the IEA's Energy Balances for the agricultural sector.

Source: IEA, Ministry of Finance (various years).

Tag: SWE_te_14

General CO_2-Tax Reduction for Greenhouses and Agriculture (data for 2000-)

Fossil fuels used for heating in greenhouses and the agricultural sector are subject to a lower CO2-tax rate. In 2010 these sectors were granted a 79% reduction for the CO2-tax rate on all fossil fuels used for heating; in 2011 this reduction was diminished to 70%. The benchmark against which this tax expenditure is calculated is the standard CO2-tax rate of SEK 1.05 per kg of CO2. This reduction has been declining over time and further reductions are planned: industrial consumers will be granted a 40% reduction in 2015.

The annual amounts reported in the tax-expenditure reports are allocated to diesel, LPG, natural gas and fuel oil, on the basis of the IEA's Energy Balances for the agricultural sector.

Source: IEA, Ministry of Finance (various years).

Tag: SWE_te_15

CO_2-Tax Reduction for Diesel Used in Agriculture and Forestry (data for 2005-)

Diesel used as fuel for machinery in agriculture and forestry is subject to a lower CO2-tax rate. The reduction has been decreasing over time — from 77% when the scheme seems to have been implemented, through 79% in 2010, to 70% in 2011.

The benchmark against which this tax expenditure is calculated is the standard CO2-tax rate of SEK 1.05 per kg of CO2. This reduction, corresponding to SEK 2.10 per litre in 2011, has been decreasing over time and further reductions are planned – to SEK 1.70 per litre in 2013 and SEK 0.90 per litre in 2015.

Source: Ministry of Finance (various years).

Tag: SWE_te_16

CO_2-Tax Exemption for Diesel-Powered Trains (data for 1997-)

Diesel used as fuel in diesel-powered trains is fully exempted from the CO2-tax. The benchmark against which this tax expenditure is calculated is the standard CO2-tax rate of SEK 1.05 per kg of CO2.

Source: Ministry of Finance (various years).

Tag: SWE_te_17

CO_2-Tax Exemption for Domestic Aviation (data for 2007-2011)

Fuel used for commercial domestic aviation is fully exempted from the CO2 tax. Until 1 July 2008, fuel used for private domestic aviation was also exempted from the CO2 tax; this is no longer the case. The benchmark against which this tax expenditure is calculated is the standard CO2-tax rate of SEK 1.05 per kg of CO2.

Since from 2012 aviation is covered by EU ETS, this tax expenditure will expire in 2012 accordingly.

The annual amounts reported in the tax-expenditure reports are allocated to kerosene type jet fuel only, on the basis of the IEA's Energy Balances for the domestic aviation sector. No amounts were allocated to aviation gasoline since its share in fuel consumption by the domestic aviation sector is negligible (below 2%).

Source: Ministry of Finance (various years).

Tag: SWE_te_18

CO_2-Tax Exemption for Domestic Shipping (data for 1997-)

Fuel used in commercial domestic shipping is exempted from the CO2 tax. The benchmark against which this tax expenditure is calculated is the standard CO2-tax rate of SEK 1.05 per kg of CO2.

The annual amounts reported in the tax-expenditure reports are allocated to diesel and fuel oils, on the basis of the IEA's Energy Balances for the domestic-navigation sector.

Source: IEA, Ministry of Finance (various years).

Tag: SWE_te_19

Energy-Tax Exemption for Peat Used for Heating (no data available)

Peat used for heating is fully exempted from the energy tax.

While Sweden reports this exemption as a tax expenditure, it cannot be isolated from other fuels (biofuels and biogas) reported under the same item. The annual payments are therefore not included in the Inventory.

Source: Ministry of Finance (various years).

CO_2-Tax Exemption for Peat (data for 2003–2010)

Peat is fully exempted from the CO2 tax. Since the beginning of 2011, Sweden has not treated this exemption as a tax expenditure since almost all peat used in Sweden is now included in EU ETS.

Source: Ministry of Finance (various years).

Tag: SWE_te_20

Reduced CO_2-Tax Rate for Diesel Used by the Mining Industry (data for 2010-)

This tax expenditure was introduced in 2010. Diesel used in motorised vehicles (other than passenger cars, trucks or busses) for mining purposes is granted a 70% reduction of the CO2-tax rate on all fossil fuels used for heating purposes. The benchmark against which this tax expenditure is calculated is the standard CO2-tax rate of SEK 1.05 per kg of CO2. This reduction is planned to be diminished to 40% in 2015.

Source: Ministry of Finance (various years).

Tag: SWE_te_21

Reduced CO_2-Tax Rate for District Heating Supplied to Industry (data for 2000-)

Fuels that are used for producing heat in district heating, which is then used for industrial-production processes, are subject to a lower CO2-tax rate. Until the end of 2010, these fuels were granted a 79% reduction of the CO2-tax rate; in 2011 this reduction was diminished to 70%. The benchmark against which this tax expenditure is calculated is the standard CO2-tax rate of 1.05 SEK per kg of CO2. This reduction has been declining over time and further reductions are planned: industrial consumers will be granted a 40% reduction in 2015.

The tax expenditure comprises only those reductions that were granted to industry consumers outside EU ETS starting from 2010.

We allocate the annual amounts to coal, LPG and natural gas, on the basis of the IEA's Energy Balances for the industrial sector.

Source: IEA; Ministry of Finance (various years).

Tag: SWE_te_22

Temporary Energy-Tax Exemption for Diesel Used in Forestry (data for 2005 and 2006)

This energy-tax exemption was temporarily granted to machinery used in the forests on southern Sweden from 8 January 2005 until the end of 2006. It was introduced to deal with the consequences of a storm that hit the southern part of the country at the beginning of 2005.

The benchmark against which this tax expenditure is calculated is the standard energy-tax rate applied to diesel used in machinery in the forestry sector.

Source: Ministry of Finance (various years).

Tag: SWE_te_23

Temporary CO_2-Tax Exemption for Diesel Used in Forestry (data for 2005 and 2006)

This CO2-tax exemption was temporarily granted to machinery used in the forests on southern Sweden from 8 January 2005 until the end of 2006. It was introduced to deal with the consequences of a storm that hit the southern part of the country at the beginning of 2005.

The benchmark against which this tax expenditure is calculated is the standard CO2-tax rate of SEK 1.05 per kg of CO2.

Source: Ministry of Finance (various years).

Tag: SWE_te_24

CO_2-Tax Exemption for Electricity Production (data for 1997-2007)

Until 2007, fossil fuels that are used for electricity production were exempt from CO2-tax payments. Since CO2 tax is not applied to electricity, this tax expenditure constitutes fossil-fuel support.

The annual amounts reported in the tax-expenditure reports are allocated to all those fossil fuels (except for peat as it is not encompassed by CO2 taxation) that are used as inputs by the electricity-generation sector, on the basis of the IEA's Energy Balances.

Source: IEA; Ministry of Finance (various years).

Tag: SWE_te_25

Reduced CO_2-Tax Rate for Fuels Used in CHP Plants (data for 2004-2009)

Until 2009, the share of fuels used in CHP plants that is used for heat production benefitted from a 79% CO2-tax reduction. The benchmark against which this tax expenditure is calculated is the standard CO2-tax rate of SEK 1.05 per kg of CO2.

We allocate the annual amounts to fossil fuels used in CHP generation, on the basis of the IEA's Energy Balances for the combined heat and power sector. Since CO2 taxation does not apply to peat, no payments are allocated to this particular fossil fuel.

Source: IEA, Ministry of Finance (various years).

Tag: SWE_te_26

CO_2-Tax Deduction for Coal Used in Metallurgical Processes (data for 1997 and 1998)

CO_2-tax deductions are granted to various kinds of coal used in metallurgical processes.

We allocate the annual amounts to various types of coal concerned on the basis of the IEA's Energy Balances for the industries producing iron and steel.

Source: IEA; Ministry of Finance (various years).

Tag: SWE_te_27

Sources

Policies or transfers

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IEA (2011), *Energy Balances of OECD Countries*, International Energy Agency, Paris.