

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

Energy resources and market structure

In 2010, about 55% of Finland's total primary energy supply (TPES) came from fossil fuels, with petroleum accounting for 25%, followed by coal and peat (19%), and natural gas (10%). The share of renewable energy stood at 25% (wood comprised 20% and hydropower 3%). Nuclear energy also plays an important role, accounting for a further 17% of TPES. Other energy sources and imported electricity make up the rest. Around 70% of Finland's energy needs is imported, mostly from neighbouring Russia. Energy intensity and energy consumption per capita in Finland are both very high due to the country's relatively large heavy industry and its proximity to the Arctic Circle.

Finland has no known resources of coal, crude oil or natural gas. It is, however, endowed with very large resources of peat, since about a third of all Finnish surface area is covered with swamps and wetlands. Of its 9.3 million hectares of peat lands, 1.1 million hectares are protected and 0.06 million hectares are currently being harvested for peat. Technically and economically harvestable peat resources have been estimated at about 12 800 TWh (1 100 Mtoe), which is about 400 times more than Finland's total annual primary energy consumption.

Peat provides a significant part of Finland's energy: it covers between 5% and 8% of the country's electricity consumption (4 to 7 TWh per year), depending on the year, and over 20% of its district heat consumption. Peat is currently used in 55 large power plants (most of them CHP plants) and in 120 medium-sized district-heating plants. It is also sometimes used in smaller heating plants. Previous plans of extending the use of peat to the transport sector with two peat-to-diesel plants have been dropped.

Finland's energy market is dominated by a few large state-owned companies, though municipal utilities also play a strong role in the local electricity and district-heating markets. The role of the private sector is thus small compared with most other OECD countries. Vapo Oy, Finland's leader of peat extraction and the world's largest peat supplier, is a company in which the state holds a 50.1% share. The company was initially established in 1940 to provide firewood to state companies and other state organisations, such as the national railway company. Between 1949 and 1984, VAPO was also involved in the distribution of imported fossil fuels. Peat has, however, been the core business of VAPO since the 1980s for both its extraction and use, and the company has no longer been restricted to solely supplying state organisations. In the recent years, however, the share of peat in Vapo's business has been declining due to an increasing production of wood-based fuels: In 2010, peat comprised only 30% of company's turnover.

The Finnish petroleum market is dominated by Neste Oil, which owns Finland's two refineries located in Naantali and Porvoo, and operates the country's leading chain of service stations (in 2010, its market share in retail petroleum sales was 37%). Neste Oil is listed on the NASDAQ OMX Helsinki. The state maintains a controlling interest (50.1% of shares) in the company. Although refined petroleum products are Neste's core business, the company also produces and distributes biofuels, mainly based on palm oil, along with other types of domestic and imported biomass.

The Energy Market Authority (*Energiamarkkinavirasto*) oversees Finland's electricity and natural gas markets. The electricity market is dominated by Fortum, which is the country's largest power distributor and heat producer, and is both the second largest electricity seller and third largest power generator among Nordic countries. Fortum's market share in Finland's electricity market is close to 27%. Fortum Oyj is a publicly listed energy company, in which the state holds 50.8% of shares. Fortum fuels the numerous power plants it owns using coal, nuclear energy, peat, firewood, hydropower and wind energy. Pohjolan Voima Oy (PVO) is the second biggest Finnish energy company, which owns all hydro and thermal power plants (including biofuel-fired power plants). PVO is the founder and main shareholder of the Olkiluoto Nuclear Power Plant operator, Teollisuuden Voima Oy. Finnish pulp and paper manufacturers, UPM Oyj and Stora Enso Oyj are major shareholders of PVO, holding 42.0% and 15.6% of shares respectively. The Finnish transmission grid is owned by Fingrid, another state-owned company. Distribution companies are owned by municipalities or private companies.

Finland's electricity market is fully liberalised and customers are free to choose their supplier. Grid access for small independent electricity producers is in principle guaranteed, but all costs are subject to negotiations between producers and distribution-grid operators. All energy prices in Finland are set by the market. Electricity prices are influenced by the common Nordic electricity market (Nord Pool).

The Finnish gas market is dominated by Gasum (established in 1994), whose shares are 24% owned directly by the state and 31% by Fortum. Gasum owns and operates the 1200-km gas-transmission network, and all its natural gas originates from Russia. Gasum owns 500 km of gas distribution networks, gas-fired power plants, and filling stations for natural-gas vehicles. Although natural gas constitutes the core business, Gasum is also involved in the biogas business. The company started to transmit and distribute biogas for transport uses in its network in October 2011. Gasum is the only supplier of natural gas and biogas to the transmission network. Distribution networks are owned by 23 companies, most of them municipal.

Prices, taxes and support mechanisms

Energy in Finland is subject to energy-taxation rules, a new version of which was implemented on 1 January 2011. In Finland, energy taxes are levied on electricity, coal, natural gas, peat, tall oil¹ and liquid fuels. Currently, energy taxation takes account of the energy content, carbon dioxide emissions and local emissions. It thus comprises both an energy-content component and a CO₂ component.² The energy-content tax, levied on both fossil fuels and biofuels, reflects the volumetric energy content of the fuel, which is based on the calorific values specified in Renewable Energy Sources (RES) Directive (2009/28/EC). A lower tax rate is applied to heating fuels in comparison to transport fuels. As for the transport fuels, the energy-tax rate on diesel, natural gas and electricity is lower than the environmental-tax model on which the environmental taxation in Finland is based presumes. In these cases, an annual propelling-force tax is levied on vehicles in order to achieve the tax burden required by the environmental-tax model. Also, a reduced energy content tax is granted for fuel grades that are better in terms of local emissions than traditional fossil fuels, and this reduction corresponds to the imputed value of the emission benefit in accordance with the principles set out in Directive 2009/33/EC of the European Parliament and of the Council on the promotion of clean and energy-efficient road transport vehicles. The CO₂ tax is based on lifecycle CO₂ emissions relating to the fuel to which it is applied. The CO₂ emissions of each fuel are determined using the fuel classification established by the IEA and the Eurostat. Finland applies different CO₂-tax rates for transport fuels and heating fuels, which currently stand at EUR 50 per tonne and EUR 30 per tonne respectively. The CO₂ tax is levied on both fossil fuels and biofuels.³ Biofuels are classified into three categories, which are based on the

¹ Tall oil is a fuel obtained as a by-product of pulping (mainly coniferous) trees.

² All fuels are also subject to a strategic stockpile fee, which aims at ensuring energy security in Finland.

³ The tax system is fuel-neutral in the sense that it supports those fuels (fossil or bio-derived) that are most environmentally friendly, i.e. it does not promote biofuels *per se*. Consumption of biofuels in the transport sector is encouraged through an obligation of the fuel suppliers to provide a legally

RES Directive division: those that achieve less than 35% CO₂-emission savings relative to equivalent fossil fuels are subject to the full CO₂-tax rate that is levied on fossil fuels; those that achieve between 35% and 60% of CO₂-emission savings are subject to half of the full CO₂-tax rate; second-generation biofuels (their CO₂-emission savings exceed 60%) are not taxed. Also, a flat-rate reduction of 50% applied to all combined heat and power (CHP) plants. The energy taxation does not apply to solid or gaseous biofuels (e.g. wood and biogas). Peat is subject to a specific energy tax that does not follow the current energy-taxation rules, which implies a much smaller tax rate on a per-unit-of-energy basis in comparison to coal or natural gas. The energy tax levied on peat, however, will be increasing gradually until 2015. Peat used in small plants that produce less than 5 000 MWh annually is exempt from the energy tax.⁴ Moreover, to cover the expenses incurred by the state to secure the supply of energy, a strategic stockpile fee is levied on liquid fuels, electricity, coal and natural gas.

Fuels used for electricity production are all exempt from the energy tax. The general tax rate for electricity is EUR 17.03/MWh, while the lower rate for the industry and agricultural sectors is EUR 7.03/MWh. Large scale condensing power generation using peat was supported by a feed-in tariff from 2007 through 2010. This peat feed-in tariff payment was not fixed, but adjusted monthly, based on the market prices for electricity, peat, coal and ETS credits. It was paid directly by the owner of the national transmission grid, Fingrid, which in turn charged all users of the transmission grid. In addition, the Act on Energy Peat Storage provides for the non-commercial long-time (up to three years) stockpiling of harvested peat in order to smooth the impact of annual fluctuations in peat production. Payments are worth EUR 0.03 per MWh per month and are made by the National Emergency Supply Agency.

Data documentation

General notes

The fiscal year in Finland coincides with the calendar year. The Ministry of Finance reviewed the collected estimates and provided calculations of missing estimates where necessary.

Producer Support Estimate

Electricity Production Subsidy for Peat Used in Small CHP Plants (data for 1998-2005)

This measure supporting the production of electricity generated using peat was worth EUR 2.5 per MWh for small and medium-sized combined heat and power (CHP) plants. It was introduced in 1998 and expired at the end of 2005.

Since this measure makes peat extraction more economically viable, we allocate annual payments to the PSE.

Sources: Act on Excise Duty on Electricity and Certain Fuels (1260/1996); Finnish Customs (2011); Ministry of Finance.

Tag: FIN_dt_01

specified share of biofuels in the total fuels that they sell, as stipulated by the Act on Promotion of Biofuels in Transport (446/2007).

⁴ The government's rationale for this exemption is that the administrative burden associated with collecting the tax from small peat plants would be high compared with the revenue collected.

Feed-In Tariff for Peat-Based Condensing Power Production (data for 2007-2010)

This feed-in tariff was introduced in 2007 and supported four peat-fired large power plants having a power production capacity of at least 120 million volt-ampere. The amount of support (up to EUR 4.5 per MWh) was based on prices for electricity, coal, peat and CO₂ emissions permits as set under the EU Emission Trading Scheme. The tariff was financed through a charge levied on all users of Finland's transmission grid by the national transmission-grid operator Fingrid. This charge varied between EUR 0.002 and EUR 0.08 per MWh. This feed-in tariff scheme expired at the end of 2010.

Since this measure makes peat extraction more economically attractive, we allocate annual payments to the PSE.

Sources: Act on Feed-in Tariff for Peat Used in Large Condensing Power Plants (322/2007), Fingrid (2011).

Tag: FIN_dt_02

Consumer Support Estimate

Reduced Energy-Tax Rate on Diesel Used in Transport (data for 2002-)

This measure relates to the reduced energy-tax rate on diesel fuel used in transport. Until 1 January 2011, the benchmark against which this tax expenditure used to be calculated was based on the sole energy content of the fuel. Between 2003 and 2007, the previous benchmark — the energy-tax rate on gasoline — amounted to EUR 66.1 per MWh, while the reduced energy-tax rate for diesel was set at EUR 34.2 per MWh. Between 2008 and 2010, the energy-tax rate on diesel was then EUR 34.1 per MWh lower than the benchmark for transport fuels, which was the new energy-tax rate on gasoline (EUR 70.5 per MWh).

As of 1 January 2011, the benchmark against which this tax expenditure has been calculated is based on energy content, CO₂ emissions, and local emissions. The reduced energy-tax rate has increased from EUR 0.364 per litre to EUR 0.4695 per litre in 2012.

The annual propelling-force tax is levied on all vehicles using fuels that are taxed at a lower energy-tax rate, i.e. diesel fuel, natural gas and electricity. On average, the propelling-force tax for a diesel-driven vehicle amounts to EUR 420 per annum.

Sources: Act on Excise Duty on Liquid Fuels (1472/1994), Energy Taxation in Finland (2012), Statistics Finland (2011, Table 5.1), Ministry of Finance, VATT (2010, 2011).

Tag: FIN_te_01

Reduced Energy-Tax Rate on Natural Gas Used in Transport (no data available)

This measure relates to the reduced energy-tax rate applied to natural gas used in transport. The benchmark against which this tax expenditure used to be calculated was based only on energy content of a fuel: Between 2008 and 2010, the energy-tax rate on natural gas used in transport was EUR 68 per MWh lower than the benchmark for transport fuels, which was the energy-tax rate on gasoline. As of 1 January 2011, the benchmark against which this tax expenditure is calculated is based on energy content, CO₂ emissions and local emissions.

The annual propelling-force tax is levied on all vehicles using fuels that are taxed at a lower energy-tax rate, i.e. diesel fuel, natural gas and electricity.

Annual payments are not calculated as their value is too low (less than EUR 0.5 million per year).

Sources: Act on Excise Duty on Electricity and Certain Fuels (1260/1996), Energy Taxation in Finland (2012), Ministry of Finance; VATT (2011).

Reduced Energy-Tax Rate for Fuels Used in Private Leisure Flights (data for 2007-2010)

This tax expenditure relates to the reduced energy-tax rates on kerosene-type jet fuel and aviation gasoline used in domestic recreational aviation. The measure was introduced in 2008 — prior to that year, all aviation fuels purchased in Finland were exempt from the energy tax. The benchmark against which this tax expenditure was calculated was based on energy content of a fuel: Between 2008 and 2010, the energy tax rates on aviation kerosene (jet fuel) and aviation gasoline were respectively EUR 30.1 per MWh and EUR 20.1 per MWh lower than the benchmark for transport fuels, which is the energy-tax rate on conventional gasoline.

Annual payments are allocated to kerosene-type jet fuel and aviation gasoline by the Ministry of Finance.

This tax expenditure was removed at the end of 2011 as the energy-tax rates on fuels used in domestic recreational aviation were equalised with the benchmark. Fuels used in aviation other than private leisure flights continue to be exempt from both the energy tax and the strategic stockpile fee. These exemptions, however, are not considered to be tax expenditures.

Sources: Act on Excise Duty on Liquid Fuels (1472/1994), Energy Taxation in Finland (2012), Ministry of Finance, VATT (2010, 2011).

Tag: FIN_te_03

Reduced Energy-Tax Rate for Light Fuel Oil Used in Mobile Machinery (data for 2008-)

This measure relates to the reduced energy-tax applied to light fuel oil used in mobile machinery. Until 1 January 2011, the benchmark against which this tax expenditure was calculated was based on energy content of a fuel. Between 2003 and 2007, the energy-tax rate on gasoline amounted to EUR 66.1 per MWh, while the reduced energy-tax rate on light fuel oil amounted to EUR 59 per MWh. Between 2008 and 2010, the energy-tax rate on light fuel oil was EUR 61.8 per MWh lower than the benchmark for transport fuels, which is the energy-tax rate on gasoline (EUR 70.5 per MWh).

As of 1 January 2011, the benchmark against which this tax expenditure has been calculated is based on energy content, CO₂ emissions and local emissions. As a consequence, the reduced energy-tax rate has increased by about 84%.

Sources: Act on Strategic Stockpile Fee (1280/2003), Energy Taxation in Finland (2012), Ministry of Finance, VATT (2010, 2011).

Tag: FIN_te_04

Reduced Energy-Tax Rate for Heavy Fuel Oil Used in Heating (data for 2002-)

This measure relates to the reduced energy-tax rate applied to heavy fuel oil used for heating purposes. The benchmark against which this tax expenditure was calculated used to be based only on energy content of a fuel: Between 2008 and 2010, the energy-tax rate for heavy fuel oil was EUR 2.8 per MWh lower than the benchmark applied to fuels used for heating purposes, which was the energy-tax rate for light fuel oil.

As of 1 January 2011, the benchmark against which this tax expenditure was calculated was based on both the energy content and the CO₂ emissions. This tax expenditure was removed at the end of 2011.

A reduced energy-tax rate on heavy fuel oil still applies to its use in road transport and shipping, but only the estimates pertaining to the latter are available (see “FIN_te_14”).

Sources: Act on Excise Duty on Electricity and Certain Fuels (1260/1996), Energy Taxation in Finland (2012), Ministry of Finance; VATT (2011).

Tag: FIN_te_05

Reduced Energy-Tax Rate for Coal Used in Heating (data for 2002-)

This measure relates to the reduced energy-tax rate applied to consumption of coal. Until 1 January 2011, the benchmark against which this tax expenditure used to be calculated was based only on energy content of a fuel. Between 2008 and 2010, the energy-tax rate for coal was EUR 1.6 per MWh lower than the benchmark applied to fuels used for heating purposes, which was the energy-tax rate for light fuel oil.

As of 1 January 2011, the benchmark against which this tax expenditure was calculated was based on both the energy content and the CO₂ emissions. This tax expenditure was removed at the end of 2011.

Sources: Act on Excise Duty on Electricity and Certain Fuels (1260/1996), Energy Taxation in Finland, Ministry of Finance, VATT (2010, 2011).

Tag: FIN_te_06

Reduced Energy-Tax Rate for Natural Gas Used in Heating (data for 2008-)

This measure relates to the reduced-energy tax rate applied to natural gas used in heating. Until 1 January 2011, the benchmark against which this tax expenditure was calculated was based on energy content of a fuel. Between 2008 and 2010, the energy-tax rate for natural gas was EUR 6.6 per MWh lower than the benchmark applied for heating purposes, which is the energy-tax rate on light fuel oil. As of 1 January 2011, the benchmark against which this tax expenditure is calculated has been based on both the energy content and the CO₂ emissions. The new tax preference will thus be reduced to EUR 4.7 per MWh.

This measure will be entirely phased out by the end of 2015.

Sources: Act on Excise Duty on Electricity and Certain Fuels (1260/1996), Energy Taxation in Finland (2012), Ministry of Finance, VATT (2010, 2011).

Tag: FIN_te_07

Reduced Energy Tax for Heavy and Light Fuel Oils Used in Greenhouses (data for 1998-)

Commercial greenhouses are entitled to energy-tax rebates on using heavy and light fuel oils for heating purposes.

Annual payments are allocated to heavy and light fuel oils by the Ministry of Finance.

Sources: Act on Excise Duty on Liquid Fuels (1472/1994), Energy Taxation in Finland (2012), Finnish Customs (2011), Ministry of Finance.

Tag: FIN_te_08

Energy-Tax Refund for Energy-Intensive Enterprises (data for 1999-)

This measure provides certain energy-intensive industries with an energy-tax refund on their consumption of electricity, coal, natural gas, tall oil, light fuel oil and heavy fuel oil, and biofuel oil.

Since 2012, annual estimates are expected to rise to the level of EUR 200 million due to the structural change in this programme (many more companies are expected to participate).

Annual payments are allocated to coal, natural gas, light fuel oil and heavy fuel oil by the Ministry of Finance. Since 2011 payments are also allocated to peat as it is no longer exempt from energy-tax payments. The share of payments pertaining to light fuel oil has been excluded from reporting as it accounts for only about 0.5% of the total.

Sources: Act on Excise Duty on Electricity and Certain Fuels (1260/1996), Energy Taxation in Finland (2012), Finnish Customs (2011), Ministry of Finance.

Tag: FIN_te_09

Energy-Tax Rebates for Certain Fuels Used in Agriculture (data for 2005-)

This measure provides the agricultural sector with an energy-tax rebate on its consumption of light and heavy fuel oil, and electricity. The measure was introduced in 2006 and is still in operation. Its scope was increased in 2011, when a reduced energy-tax rate was also applied to biofuel oil used for heating.

Annual payments are allocated to light and heavy fuel oils by the Ministry of Finance. The share of payments pertaining to heavy fuel oil has been excluded from reporting as it accounts for less than 0.5% of the total.

Sources: Act on Tax Rebates for Certain Fuels Used in Agriculture (603/2006), Energy Taxation in Finland (2012), Ministry of Finance, VATT (2011).

Tag: FIN_te_10

Reduced Energy-Tax Rate on Peat Used in Heating (data for 2010-)

From 2005 until 2010, peat was exempted from the energy tax that is normally levied on all energy products. As of 1 January 2011, an energy-tax rate on peat amounting to EUR 1.90 per MWh was introduced. The energy-tax rate applied to peat is thus lower than the energy-tax rate applied to light fuel

oil, which is the benchmark applied for heating purposes. This energy-tax rate will be increased in the coming years: to EUR 4.90 per MWh in 2013 and EUR 5.90 per MWh in 2015.

Peat used in small plants in quantities below 5 000 MWh annually continues to be exempted from the energy tax. Estimates in this case are not available.

Sources: Act on Excise Duty on Electricity and Certain Fuels (1260/1996), Energy Taxation in Finland (2012), Ministry of Finance.

Tag: FIN_te_11

Reduced CO₂-Tax Rate for Combined Heat and Power Production (data for 2011-)

From 2011, a 50% CO₂-tax reduction is applied to all light-fuel-oil-, biofuel-oil-, heavy-fuel-oil-, coal- or natural-gas-fired combined heat and power (CHP) production.

Annual payments are allocated to coal, natural gas, light and heavy fuel oils by the Ministry of Finance. The share of payments pertaining to light fuel oil has been excluded from reporting as it accounts for less than 0.5% of the total.

Sources: Act on Excise Duty on Electricity and Certain Fuels (1260/1996), Energy Taxation in Finland (2012), Ministry of Finance, VATT (2011).

Tag: FIN_te_12

Energy-Tax Exemption for LPG (data for 2010-)

The use of LPG is exempted from the energy tax that is normally levied on all other energy products.

Sources: Act on Excise Duty on Electricity and Certain Fuels (1260/1996), Energy Taxation in Finland (2012), Ministry of Finance, VATT (2011).

Tag: FIN_te_13

Strategic-Stockpile-Fee Exemption for Peat (no data available)

Users of peat are exempt from the strategic-stockpile fee payments. Estimates for this measure are unavailable as it is impossible to estimate them.

Sources: Act on Excise Duty on Electricity and Certain Fuels (1260/1996), Energy Taxation in Finland (2012), Ministry of Finance.

Energy-Tax Exemption for Fuels Used in Vessel Traffic (data for 2003-)

The domestic use of fuels in commercial vessels (i.e. other than private leisure boating) is exempt from the energy tax that is normally levied on all energy products.

We allocate the annual amounts reported in the tax-expenditure reports to different fuels on the basis of the IEA's Energy Balances for the domestic navigation and fishing sectors. Only those payments that pertain to light and heavy fuel oils are considered.

Sources: Act on Excise Duty on Liquid Fuels (1472/1994), Energy Taxation in Finland (2012), Finnish Customs (2011).

Tag: FIN_te_14

General Services Support Estimate

Peat-Storage-Support Coverage (data for 2008 and 2009)

In 2008 and 2009 a monthly fee worth EUR 0.03 per MWh was paid to peat producers by the National Emergency Supply Agency to cover the costs of non-commercial stockpiling part of the peat harvested in a given year.

Sources: Act on Peat Storage (321/2007), NESA (2011).

Tag: FIN_dt_03

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