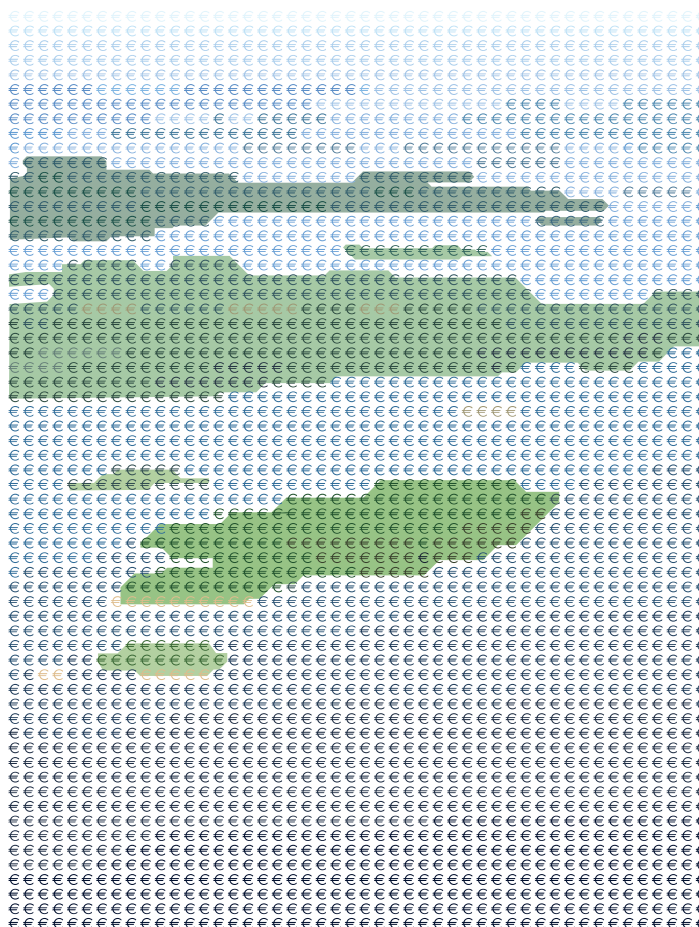
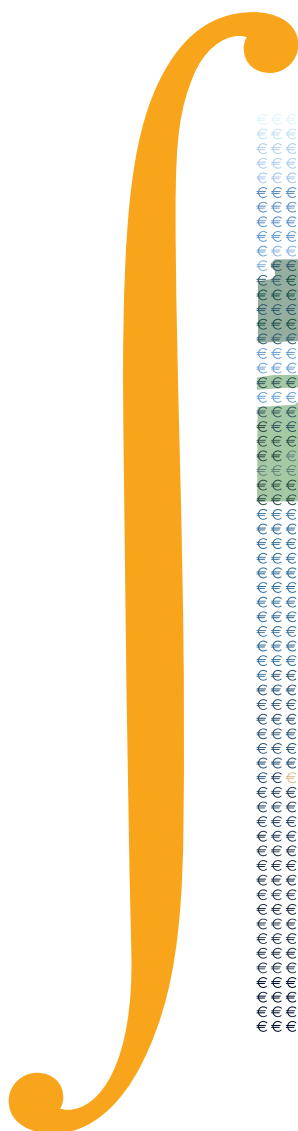




**ENVIRONMENTAL  
POLICY**

Marjukka Hiltunen

# Economic environmental policy instruments in Finland





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# Foreword

An economic environmental policy instrument can be defined in a number of ways. According to Määttä,<sup>1</sup> economic policy instruments are, in a narrow sense, economic instruments aimed at improving the state of the environment or at least distributing the reductions in loads in a more cost-effective way. According to a broader definition, economic policy instruments also include other taxes and subsidies that may have a positive impact on the environment. In the broadest sense, all methods that help to improve the functioning of the markets so that better consideration can be given to the negative external environmental impacts can be considered economic policy instruments. Thus, arrangements such as voluntary agreements should also be considered as economic policy instruments.

The economic policy instruments discussed in this publication are the incentive-based<sup>2</sup> and fiscal<sup>3</sup> environmental taxes, environmental charges<sup>4</sup> and deposits<sup>5</sup> and different types of subsidy and insurance. Finland has adopted a practice in which permit applicants pay most of the administrative expenses charged in connection with the granting of the permits, and this publication does not examine the permit-related charges in any greater detail. Moreover, in a number of sectors Finnish manufacturers have been made responsible for the recovery and recycling of their products, and they manage their obligation by, for example, charging a recycling fee for their products (such as for discarded tyres). Such systems based on producer-liability are not covered by this publication even though some of them have effects similar to those of economic policy instruments.

Of the subsidies with an impact on environmental protection, this publication discusses arrangements that have the improvement of the state of the environment as their primary aim. The publication also covers interest-subsidy loans, State guarantees for environmental investment, the depreciation of purchases related to environmental protection, and environmental insurance.



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# Environmentally based taxes and fees

The role played by environmentally based taxes and fees in the economy can be measured in different ways. According to Statistics Finland, environmentally based *taxes and fees* accounted for 6.6% of the overall tax revenue of central and local government in Finland in 2001. If municipal water and wastewater charges and waste management fees are included, the figure rises to 7.9 per cent.<sup>6</sup>

According to OECD statistics, which only give the percentage of *environmental taxes* (not fees) as a percentage of the total tax revenue, environmental taxes account for almost 7% of the total tax revenue in Finland.<sup>7</sup> Compared with other OECD countries, the environmental tax yield in Finland is slightly above average. However, as the definition of environmental taxes and fees differs from country to country, international comparisons are difficult. OECD countries collect most of their environmental taxes in the form of fuel and motor vehicle taxes.

Environmental *taxes* accounted for 3.4% of the Finnish GDP in 1999.<sup>9</sup>

Energy taxes, which comprise the basic taxes and surtaxes on traffic fuels (petrol and diesel oil) and other energy sources (light and heavy fuel oil, coal, peat, natural gas and electricity), and strategic stockpile fees, account for most of the environmental taxes.

In 2001, energy taxes accounted for 55 per cent of the overall environmental tax revenue. In the same year, about 27 per cent of environmental taxes were vehicle-based taxes (car tax, vehicle tax and motor vehicle tax).<sup>10</sup>

Table I Environmental taxes and fees collected by the State 1999-2003 (EUR million)<sup>12</sup>

	1999	2000	2001	2002*	2003**
Energy taxes	2 651	2 596	2 652	2 665	2 900
Car tax	1028	1059	922	887	900
Vehicle tax	209	220	227	237	247
Motor vehicle tax ('Diesel tax')	185	181	208	209	218
Waste tax	34	33	31	34	47
Surtax on alcohol beverages	12	12	12	12	12
Surtax on soft drinks	1	1	1	1	1
Oil protection charge	6	5	35	5	8
Waste oil charge	3	3	3	3	3
Pesticide charge	2	2	2	2	2
Water protection charge	1	1	0	0	0
<b>Total</b>	<b>4133</b>	<b>4133</b>	<b>3982</b>	<b>4055</b>	<b>4338</b>

\* Budget

\*\* Budget proposal

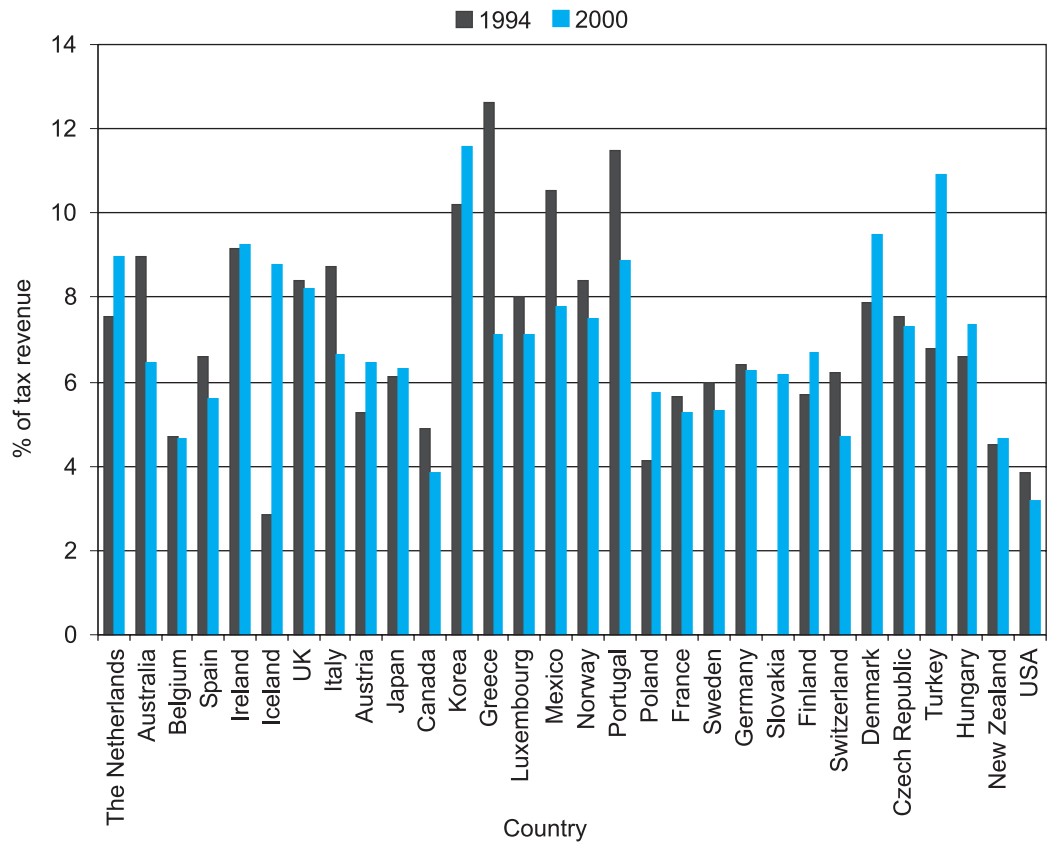


Fig. 1 Environmental taxes as a percentage of overall tax revenue in selected OECD countries<sup>8</sup>

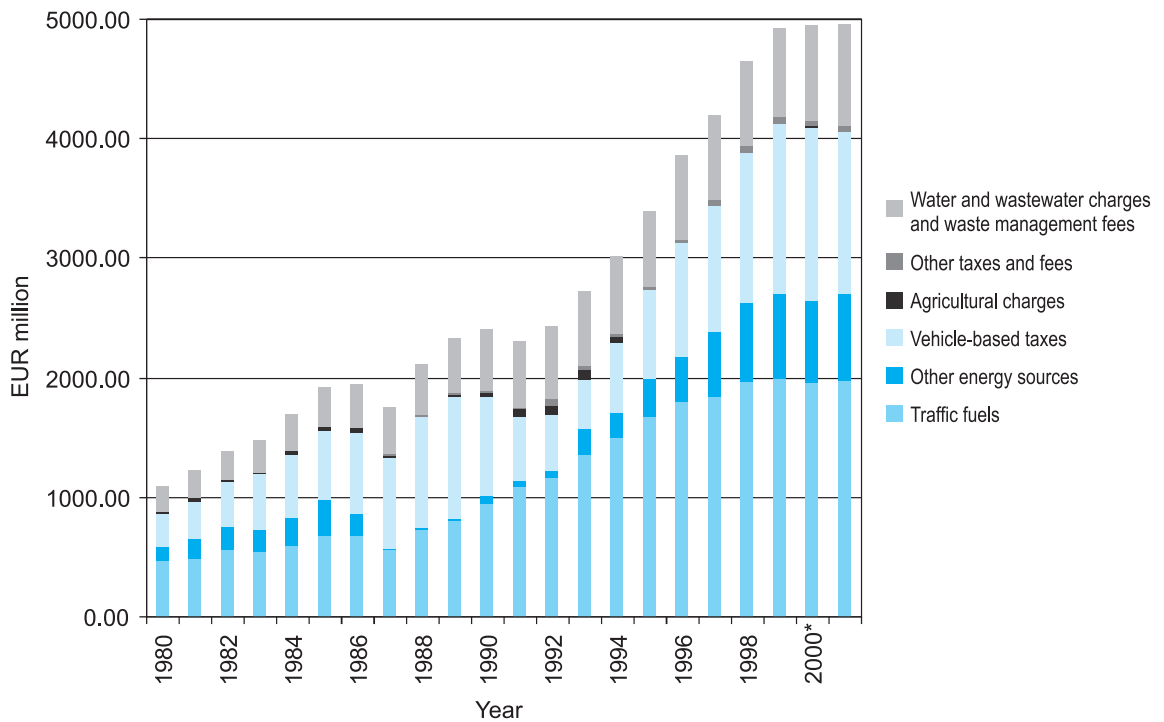


Fig. 2 Amount and percentage of environmental taxes in Finland 1980-2001<sup>11</sup> \* estimate

## Energy

### 2.1 Taxes

In 1990, Finland introduced a carbon dioxide tax,<sup>13</sup> which was initially set at EUR 1.2 for each tonne of carbon dioxide. The surtax on petrol, diesel oil, natural gas and peat was, however, on a different basis. The tax was introduced in order to slow down the growth in energy consumption and to reduce harmful environmental impacts.<sup>14</sup> From the beginning of 1995, the structure of energy taxation was changed so that a tax based on energy content was imposed on all sources of primary energy while at the same time an additional tax based on carbon content was imposed on fossil fuels. The tax based on energy content did not apply to wood, wind energy and waste fuel.<sup>15</sup> The taxes based on energy and carbon content were in the form of a fuel surtax 40% of which came from the energy component and 60% from the carbon dioxide component.<sup>16</sup> A basic tax was also imposed on nuclear power, hydropower and imported electricity.<sup>17</sup>

The tax structure had to be changed substantially in the late 1990s. One reason was the opening of the Nordic electricity market and the development of the electricity exchange. In Finland the tax was directed at the production of primary energy, while in other Nordic countries it was based on consumption. This weakened the competitiveness of Finnish electricity production, and the tax structure was also considered to be in violation of EU regulations. It was, therefore, decided to introduce a tax system in which the tax is levied on consumption and not on the production of electricity. The system, which has been in force since the beginning of 1997, has different tax classes for industry and households, and the tax is the same irrespective of the fuel used. However, there is a separate tax on heat generation, which is based solely on the carbon dioxide content of the fuel. This tax was introduced to compensate for the fact that exempting electricity-generating fuels from the carbon dioxide tax weakened the impact of economic environmental policy instruments.<sup>18</sup>

Table 2 below shows the level of energy taxation in Finland in 2003. The carbon dioxide tax on fuels is based on the carbon dioxide content of the fuel (EUR 18.05/tonne of carbon dioxide). For natural gas, however, the tax is 50 per cent lower, while the surtax on peat is one quarter of the level that it would normally have under the tax code.<sup>19</sup> Table 3 shows excise and value-added taxes and quasi-taxes as percentages of consumer prices of different energy sources at the end of 1999. Table 4 shows how much was collected in the form of energy taxes in Finland in 2001.

Table 2 Energy taxes in Finland, as of January 1, 2003<sup>20</sup>

	Basic tax	Surtax
Motor petrol, cents/litre	53,85	4,23
Diesel oil, cents/litre	26,83	4,76
Light fuel oil, cents/litre	1,93	4,78
Heavy fuel oil, cents/litre	-	5,68
Electricity, cents/kWh		
tax class 1*	-	0,73
tax class 2**	-	0,44
Coal, EUR/tonne	-	43,52
Fuel peat, EUR/MWh	-	1,59
Natural gas, cents/nm <sup>3</sup>	-	1,82
Tall oil, cents/kg	5,68	-

\* Households belonging to tax class 1, agriculture, services and the public sector

\*\* Industries belonging to tax class 2, and professional greenhouse growers

Table 3. Excise and value-added taxes and quasi-taxes as percentages of consumer prices of different energy sources at the end of 1999<sup>21</sup>

Energy source	Taxes/quasi-taxes as percentages of the price
Motor petrol, 95 octane lead-free	69,7
Diesel oil	56,6
Light fuel oil	36,9
Heavy fuel oil	40,2
Coal	60,4
Natural gas	30,0
Household electricity	25,4

Table 4. Total amount of energy taxes collected in Finland in 2001 (EUR million)<sup>22</sup>

Motor petrol	1 337
Diesel oil	663
Light fuel oil	182
Heavy fuel oil	52
Coal	61
Peat	15
Natural gas	11
Electricity	397
Total	2749

## 2.2 Tax subsidies and tax refunds

With the taxation of electricity consumption electricity production based on renewable energy sources was placed in a weaker position as it could no longer enjoy any tax advantages. A number of tax subsidies that have helped to improve the position of renewable energy sources have thus been incorporated into the Finnish tax system.

Electricity producers that generate electricity using wind power, wood fuel or peat in a thermal power plant of less than 40 MVA, recycled fuels, biogases, wood-chips, waste gas resulting from metallurgic processes or reaction heat resulting from chemical processes, or at a small hydroelectric power plant (less than 1 MVA) are

entitled to a tax subsidy of 0.42 cents/kWh. For electricity generated with wood chips, the subsidy is 0.69 cents/kWh, and for electricity produced with recycled fuel 0.25 cents/kWh.<sup>23</sup>

A lower electricity-tax class for industry and a partial refund of the energy taxes to energy-intensive industry are two additional measures aimed at ensuring the competitiveness of Finnish companies. A company in the energy-intensive sector is refunded for electricity and fuel taxes exceeding 3.7% of its value added. A company can apply for an 85% refund for the portion exceeding 3.7% but only sums above EUR 50,000 are paid.<sup>24</sup> A total of about EUR 14.3 million is paid in the form of tax refunds every year, and in 1999 12 companies received them.<sup>25</sup> These refunds accounted for about 8% of all electricity taxes paid by Finnish industry.<sup>26</sup>

Subsidies related to energy taxation must be approved by the European Commission before they can be introduced at national level. The Commission has taken the view that subsidies and tax exemptions should be on a temporary basis and gradually reduced. Subsidies for energy-intensive companies and the electricity tax class 2 will be in force until the end of the 2011, while other subsidies will expire at the end of 2006.<sup>27</sup>

### 2.3 Nuclear waste management fees, strategic stockpile fees and oil protection charges

Producers of nuclear electricity put money aside into the State Nuclear Waste Management Fund, which will be used to finance the decommissioning of Finnish nuclear power plants at the end of their useful life and the final disposal of nuclear waste in bedrock. The Fund is administered by the Ministry of Trade and Industry, and the cost of nuclear waste management has been incorporated into the price of electricity generated by nuclear power.<sup>28</sup> Most of the estimated funding needs have already been met.<sup>29</sup> In 2002, a total of EUR 48 million was collected into the State Nuclear Waste Management Fund.<sup>30</sup>

The Finnish Government sets out overall targets for the security of supply, its development and maintenance are the responsibility of the National Emergency Supply Agency, which comes under the Ministry of Trade and Industry.<sup>31</sup> Strategic stockpile fees are collected into a fund for commodities that are strategically importance in a crisis situation. These include oil products (petrol, light and heavy fuel oil and diesel oil), electricity, natural gas and coal.<sup>32</sup> The level of fees is given in Table 5. A total of about EUR 50 million in strategic stockpile fees was collected in 2002.<sup>33</sup>

The money for the Oil Pollution Compensation Fund is collected by levying an oil protection charge of EUR 0.60 for each full tonne of imported oil and oil transported through Finland. If the oil has been transported on a vessel that does not have a double hull extending over the full length of its cargo hold, the charge is twice as high.<sup>35</sup> In 2002, about EUR 5.6 million in oil protection charges were collected into the Oil Pollution Compensation Fund.<sup>36</sup>

Table 5. Strategic stockpile fees as of January 1, 2003<sup>34</sup>

Motor petrol, lead-free, cents/litre	0,68
Diesel oil, cents/litre	0,35
Light fuel oil, cents/litre	0,35
Heavy fuel oil, cents/kg	0,28
Coal, EUR/tonne	1,18
Natural gas, cents/nm <sup>3</sup>	0,084
Electricity, cents/kWh	0,013

## 2.4 Other subsidies

In addition to the tax subsidies referred to above, the Government can also grant companies, corporations and municipalities assistance for investment projects and surveys that further energy conservation, make energy production and use more efficient, promote the production and use of renewable energy, reduce the harmful environmental impacts of energy production and use, and help to secure and diversify the energy supply. The assistance can be between 25 and 40%, depending on the nature of the undertaking. The assistance is granted by the Ministry of Trade and Industry and regional Employment and Economic Development Centres.

Table 6. Assistance for energy conservation and renewable energy sources 1995-2002 (EUR million)<sup>38</sup>

	1999	2000	2001	2002*	2003**
Promoting energy conservation	3	3	3	3	3
Investment aid for renewable energy	20	20	17	25	25

\*budget

\*\*budget proposal

## Motor vehicles

### 3.1 Taxes

Finland has three different taxes levied on motor vehicles: a car tax payable on the purchase of the car, an annual vehicle tax payable by the person owning or possessing the vehicle, and an annual motor vehicle tax levied on vehicles other than those that are petrol driven ('diesel tax').

The car tax is levied on private cars, vans and other cars weighing less than 1,875 kg, and motorcycles. The tax is payable before the vehicle is registered or taken into use in Finland. The tax on a private car is 28 per cent of its taxation value less EUR 650, if the vehicle is not diesel-driven, and 28 per cent less EUR 450, if the vehicle is diesel-driven. The tax on motorcycles depends on their displacement. For vehicles manufactured before 2003 and taxed as second-hand vehicles the tax is the tax proportion of the taxation value that was included in the general retail sale value of similar vehicles when they were new.<sup>39</sup> The total car tax revenue in 2002 was slightly over EUR 1 billion.<sup>40</sup>

The vehicle tax, introduced in 1994, is levied annually on private cars and vans and special vehicles with a maximum weight of 3,500 kg. It amounts to 35 cents/day, or EUR 127.75/year for vehicles registered after January 1, 1994 and 26 cents/day or EUR 94.90/year for vehicles registered before that date.<sup>41</sup> The total vehicle tax revenue in 2002 was EUR 233 million.<sup>42</sup>

The motor vehicle tax is levied annually on vehicles other than those that are petrol driven. Its purpose is to compensate for the fact that petrol has a higher excise tax than other fuels. The tax is determined on the basis of the vehicle weight so that for private cars it is EUR 25.20/100 kg, and for vans EUR 4.56/100 kg. For lorries and similar heavy vehicles the tax also depends on the number of axles and the bogie structure and varies between EUR 4.56 and 10.56/100 kg.<sup>43</sup> A total of about EUR 218 million in motor vehicle taxes was collected in 2002.<sup>44</sup>

### 3.2 Tax exemptions

Lorries and buses using liquid or natural gas and meeting the emission requirements of the best available technology were exempted from the motor vehicle tax from the beginning of 1999.<sup>45</sup>

# 4

## Waste and packaging

### 4.1 Taxes and fees

The waste tax levied by the Finnish Government, which at the moment is EUR 23 for one tonne of waste, will be increased to EUR 30 for one tonne of waste as of January 1, 2005. The tax is levied on waste that has been taken to public landfills and landfills similar to them. In order to encourage waste recovery, no waste tax is levied on recyclable and compostable waste, and private landfills and landfills maintained by industry are also exempt from it.<sup>46</sup> The Government collected a total of about EUR 32 million in waste tax in 2002.<sup>47</sup>

Municipal waste management fees are user charges that should be determined on the basis of the full-cost principle, taking into account both day-to-day expenses and investment costs. Under Finnish law, the fees are obligatory and should at least cover the costs arising from the commissioning, use, decommissioning and after-care of the processing facilities.<sup>48</sup> In practice, the full-cost principle has not become reality in all municipalities and some landfills are still subsidized with tax revenue.<sup>49</sup>

Under Finnish law, municipal waste management fees should not only be on a full-cost basis but also help to reduce the amount and harmfulness of waste and encourage waste recovery.<sup>50</sup> Therefore, many municipalities charge less for sorted and recyclable waste than for mixed waste that cannot be recovered. According to a survey, municipal waste fees have helped to increase waste recovery but have failed to reduce the amount of waste.<sup>51</sup>

Table 7. Municipal waste fees 2000-2002 (excl. VAT)<sup>52</sup>

Type of waste	2000 Average, EUR/tonne	2001 Average, EUR/tonne	2002 Average, EUR/tonne
Municipal waste Y1	49	50	57
Municipal waste Y2	48	51	59
Municipal waste Y3	45	51	60
Municipal waste Y4	51	51	59
Biowaste	26	28	36
Special waste	68	73	88
Septic tank sludge		35	37

Y1 Municipal waste transported in a refuse collection vehicle with a press or in a waste container

Y2 Municipal waste carried in a skip container used as waste collection container

Y3 Municipal waste transported in a manner other than Y1 or Y2

Y4 Industrial and construction waste considered as municipal waste and transported in a manner other than Y1 or Y2.

In Finland, the price of lubrication oil includes a waste oil charge of 4.2 cents/kg. The money collected in this way is used to cover the costs of waste oil management and the regional hazardous waste reception centres. As of January 1, 1997, it has been possible to transfer part of the money to the Oil Pollution Compensation Fund and use it for remediating areas polluted by oil.<sup>53</sup> In 2002, a total of EUR 3.6 million was collected as waste oil charges.<sup>54</sup>



A packaging tax is levied on the packaging of alcoholic beverages and soft drinks. The purpose of the tax is to reduce the use of disposable packaging and the amount of waste and to prevent the accumulation of litter. The tax amounts to 67 cents/litre. If the producer or importer has a system under which the packaging of alcoholic beverages and soft drinks can be returned against a deposit and the packaging can be refilled, the tax need not be paid. If the packaging can be returned against a deposit and it is used as a raw material, the tax is 16 cents/litre.<sup>55</sup> The industry is responsible for operating the deposit bottle and can system. In 1998, about 90% of the 1.2 billion glass bottles used in Finland were refillable.<sup>56</sup>

## **4.2 Grants, loans and export guarantees**

Under a Government decision of December 2, 1996, grants can be given for projects promoting environmental protection. In waste management, priority is given to projects that help to reduce the amount and harmfulness of waste, promote waste recovery, remediate polluted land areas and old landfills and encourage the construction of pilot facilities for recycling and other types of waste management. Grants amount to 30-50% of the costs, depending on the nature of the project.<sup>57</sup>

Funds allocated to the National Technology Agency of Finland can be used as grants and loans for promoting new waste management technology and product development.<sup>58</sup> The Finnish Guarantee Board can grant State guarantees as collateral for loans granted for fund waste recovery investment. In such guarantees, priority is given to the effectiveness of environmental protection measures (For more information about State guarantees, see chapter 8).<sup>59</sup>

# 5

## Water

Finnish municipalities collect water charges from water users. The charges cover the operating and investment costs of water supply management. As water is not, generally speaking, a scarce resource in Finland and, compared with other countries, the available resources are not used very intensively, water charges do not cover the costs arising from water use.<sup>60</sup>

Table 8. Municipal water charges 1996-2002<sup>61</sup>

	1996	1997	1998	1999	2000	2001*	2002*
Water charge, waterworks, EUR/m <sup>3</sup>	0,96	0,81	0,79	0,77	0,77	0,86	0,89

\*Preliminary figures

The figures are averages of the data from all water and wastewater works in Finland.

Municipal wastewater charges are user charges determined on the full-cost basis and with consideration for operating and investment costs.

Table 9. Municipal wastewater charges 1996-2002<sup>62</sup>

	1996	1997	1998	1999	2000	2001*	2002*
User charge, wastewater works, EUR/m <sup>3</sup>	1,30	1,31	1,32	1,35	1,36	1,36	1,41

\*Preliminary figures

The figures are averages of the data from all water and wastewater works in Finland.

Industry and fish farms have been paying water protection charges under the old Water Act. The revenue has been used to cover the cost of research on water protection.<sup>63</sup> Under the new Environmental Protection Act, it is no longer possible to impose water protection charges. However, as a number of industrial plants are still covered by old wastewater permits, the Government will receive water protection charges until all permits are renewed in 2005-2006.

## Fees related to fishing and hunting

# 6

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Angling and ice fishing are free in Finland but other forms of fishing and crayfishing are subject to charges and permits. Anybody catching fish or crayfish must pay a fishery fee of EUR 15/year to the State. Those fishing with lures must also pay a lure-fishing fee of EUR 27 that allows lure fishing in a specific province.<sup>64</sup> In 2002, the Government received a total of EUR 4.7 million in the form of fishery fees and EUR 2.1 million in the form of lure-fishing fees.<sup>65</sup>

Hunters must pay the Government an annual game management fee of EUR 24. In addition, a hunting licence fee of EUR 100 is payable on each adult elk killed. Lower fees apply for calves and other deer.<sup>66</sup> The revenue is used for developing game management and hunting.<sup>67</sup> In 2002, the Government collected a total of about EUR 7 million in the form of game management fees and EUR 6 million in the form of hunting licence fees.<sup>68</sup>

# 7

## Other fees and charges

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In Finland, the pesticide charge is of a purely administrative nature, and its purpose is to cover the cost of registering new pesticides. The charge amounts to EUR 840/substance to be registered. In addition, the company must pay 3.5% of the VAT-free net sales price of the pesticide sold, delivered in another manner or used during the previous calendar year.<sup>69</sup>

## Other subsidies

Previous chapters have dealt with subsidies relating to energy and waste. This chapter deals with other forms of subsidy. Quite a lot of the subsidies have both positive and negative impacts on the environment, but classifying them on environmental grounds is always a matter of definition, and definitions vary from sector to sector. The transport sector is a good example: the subsidy given to public transport is not classified as an environmental subsidy but as a subsidy granted for social reasons. This section deals mainly with subsidies that are defined primarily as environmental subsidies in the sector in question.

The State spends roughly EUR 700 to 800 million on the environment each year (Table 10).<sup>71</sup>

Table 10. State expenditure on the environment (EUR million)<sup>72</sup>

	1999	2000	2001	2002*	2003**
Environmental administration	86	92	98	102	105
Central government	39	40	41	42	44
Regional government	47	52	57	60	61
Development cooperation	54	49	93	..	..
Neighbouring area cooperation	10	10	10	13	13
Nordic Environment Finance Corporation	1	1	1	1	1
Research and development	144	157	146	136	138
Environmental protection and management	19	20	13	13	13
Use and management of natural resources	30	29	27	27	27
Universities and institutions of higher education	42	44	52	55	56
Development of environmental technology	49	59	48	35	35
Other environmental research	5	6	6	6	7
Aid for environmental organizations	1	1	1	1	1
Environmental protection	54	38	37	41	49
Protection of air and waste management	12	10	10	12	8
Protection of water	6	4	4	6	9
Environmental management and cleaning	36	24	23	23	32
Nature conservation	78	79	58	58	46
Promotion of energy conservation	3	3	3	3	3
Investment in renewable energy	20	20	17	25	25
Environmental protection in the transport sector	20	20	22	22	20
Railways	17	17	17	17	40
Dung yard investment	4	1	5	3	2
Environmental aid for agriculture	270	276	282	298	306
General environment protection schemes	233	276	248	..	..
Supplementary environment protection schemes	35	25	32	..	..
Other	2	1	2	..	..
Environmental aid for forestry	4	4	4	4	4
<b>Total</b>	<b>766</b>	<b>765</b>	<b>794</b>	<b>725</b>	<b>753</b>

= information missing

\*Budget

\*\* Budget proposal

A decision by the Government in 1996 empowers the State to grant aid for the development and testing of activities that promote environmental protection and for investment and remediation projects. In addition to the previously mentioned projects on waste management, recycling, and the remediation of polluted land areas (cf. 'Waste and packaging'), aid can be used to finance projects that will reduce the amount or the detrimental effects of emissions into the air or water, promote the use of environmentally friendly products, develop new environmental technology, improve the treatment of emissions, or promote prevention of noise, supervision of chemicals or other environmental protection. The maximum amount of aid is 50% for a development or testing project, and 30% for an investment and remediation project. Grants are made by the regional environment centres and the Ministry of the Environment.<sup>73</sup> Grants of between EUR 4 and 6 million have been made annually.<sup>74</sup>

The largest form of environmentally based aid is granted under environmental aid for agriculture, some EUR 270 to 280 million every year (Table 11). The aid can be used for financing general or supplementary environment protection schemes on farms. General protection schemes include environmental planning and the monitoring of cultivation, various measures for the basic fertilizing of arable plants and plant protection, building banks and protective zones, maintaining the bio-diversity and landscape, and measures relating to livestock farms. Supplementary schemes cover precision fertilization, winter green cover and reduced spring plough and no-till technique and various additional measures relating to bio-diversity, domestic animals and horticulture.<sup>75</sup> Agricultural aid also includes assistance granted for dung-yard investment, the aim of which is to improve the level of dung yard stocks and prevent emissions into the environment.<sup>76</sup>

Table 11. Environmental aid for agriculture 1999-2001 (EUR million)<sup>77</sup>

	1999	2000	2001
General agricultural environment protection schemes	233	250	248
Supplementary protection schemes	35	26	32
Organic production	19	16	16
Protective zones	1	1	2
Handling runoffs	10	4	6
Improving use of dung	0	1	2
Landscape management and biodiversity	4	3	6
Indigenous breeds	1	0	0
Training and advice	2	1	2
<b>Total</b>	<b>270</b>	<b>276</b>	<b>282</b>

The Act on the Funding of Sustainable Forestry came into effect at the beginning of 1997. Under it, the State can use direct aid or loans to finance measures intended to protect the sustainability of wood production, maintain the biological diversity of the forests, and carry out projects for managing the forest nature and other supportive measures. Financing can be obtained by private, or in some instances, other landowners. The maximum amount of direct aid is 70% of the expenditure.<sup>78</sup>

In Finland the State participates in putting water supply management into good shape through several types of financing schemes that are the responsibility of three ministries: agriculture and forestry, the environment and labour. Water works and wastewater works and various water companies can obtain assistance, interest subsidies and employment-based assistance from the State. At the moment State aid accounts for just a little of the investment in water supply management, in percentage terms only few per cent, but at its highest it has been just over ten per

cent. Since 1990 it has been possible to grant water supply management assistance to a property used for permanent residence and situated in a sparsely populated area. The maximum assistance is 30% of the approved expenditure.<sup>79</sup>

In the transport sector aid is given to public and light transport, preserving the landscape and important natural areas when roads are being built, protecting groundwater areas and the soil, noise prevention, the use of by-products and waste materials in land and water construction, etc.<sup>80</sup>

Regional aid granted from EU structural funds may have objectives that support environmental protection even though regional and social policy are their main objectives.

The State's special financing company Finnvera can grant State guarantees as collateral for credit given for the financing of corporate investment in the protection of water and the atmosphere and in the recovery of waste. State guarantees and export guarantees can also be granted for financing investment abroad that will bring a considerable improvement to the state of the Finnish environment. A guarantee can be used for compulsory and voluntary investment in environmental protection. An environmental guarantee can be given to all companies engaged in industrial or comparable production activity. The lender can be a Finnish or foreign bank, insurance company or other financial institution. A guarantee can be given for the whole loan, or Finnvera and the financier can agree to share the risk attached to the loan.<sup>81</sup>

An environmental loan granted by Finnvera is meant for voluntary environmental investment by SMEs. The loan is conditional on the project being based on the best available technology and the outcome being major positive impacts on the environment. Finnvera finances projects in which the positive environmental impacts are associated with raw materials or other tangible production input, the manufacture and energy consumption of a product, a reduction in emissions, the usage properties of products, the withdrawal of a product from use or an improvement in the work environment (e.g. noise, dust and particle emissions). The amount of the loan is 50-75% of the expenditure approved as eligible costs. Environmental loans are special loans the interest on which is much lower than for Finnvera's normal investment loans.<sup>82</sup> Loans totalling EUR 20 million are granted annually.<sup>83</sup>

According to Section 36 of the Act on the Taxation of Business Profits, certain procurements relating to environmental protection can be depreciated for taxation purposes more quickly than usual. The Act applies to the procurement of structures, equipment, machines and other goods to prevent the pollution of waterways and the atmosphere. The maximum annual depreciation rate is 25%.<sup>84</sup>

# 9

## Environmental insurance

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At the beginning of 1999 the Act on Environmental Damage Insurance came into effect.<sup>85</sup> On the basis of the Act compensation for environmental damage is granted in a case where the operator causing the damage is unknown or is found to be insolvent. The aim of environmental damage insurance is to ensure that compensation is awarded for the losses and for the prevention and remediation costs of the party that has suffered the damage. The compensation system is financed by insurance premiums. According to the Act, the premiums are obligatory for private corporations whose operations involve a material risk of environmental damage or whose operations cause harm to the environment in general. This includes organizations whose activities require an environmental permit or a permit that the Safety Technology Authority grants for handling or storing a dangerous chemical. All compensation coming under the Act on Environmental Damage Insurance is handled by the Environmental Insurance Centre.<sup>86</sup>



# Impacts of economic policy instruments

# 10

The aim of environmental and energy taxes is to have an impact on the amount of a particular environmental hazard so that emissions or the consumption of natural resources is reduced. Therefore, one of the most important criteria in assessing the impact of the taxes is their effectiveness in terms of environmental protection i.e. how successful they have been in reducing environmental loading. Environmental taxes affect not only the environment but also prices, employment, innovation, company prices, income distribution and administrative expenses.<sup>87</sup> Below are research data about the impacts of some of the most important economic policy instruments being used in Finland.

The impacts of economic policy instruments have been assessed in Finland mainly on the basis of theoretical economic models or interviews at companies before the implementation of a certain tax or measure. The assessments have concentrated principally on energy and climate policy, and the emphasis has been on evaluating the reduction in emissions and the overall economic impacts. However, research on the impacts of economic policy instruments that is based on empirical research data and done after the introduction of a certain instrument is sparse in Finland,<sup>88</sup> even though the rapid changes in energy policy in the 1990s would have made this kind of research possible (e.g. the introduction a carbon dioxide tax and its partial abolition).<sup>89</sup> Because of the paucity or lack of Finnish empirical research data, the following examines both Finnish and foreign research into the impacts of economic policy instruments.

## 10.1 Energy taxes

Energy taxes are an important form of taxation both in terms of revenue and their possible environmental effects. They also have potential impacts on income distribution and macroeconomic factors such as employment. For this reason there is a great deal of international and some Finnish research data about the effects of energy taxes.

### *International studies*

The impacts of energy taxes on the behaviour of companies and households are much more limited in the short term than in the long term, because in the long term economic players can invest and divert a production structure or form of living towards energy saving. OECD studies have shown that price elasticity in the demand for aggregate energy has been quite small in the short term, between -0.13 and -0.26.<sup>90</sup> This means that big changes in the level of taxation do not change the behaviour of households and companies in the short term. In the long term the demand for aggregate energy is considered to be slightly more elastic (according to OECD studies between -0.37 and -0.46).<sup>91</sup> Several studies show that the demand for electricity reacts more to price changes than the demand for other forms of energy.<sup>92</sup> The price elasticity of traffic fuels is quite small in the short term, some estimates putting the figure at between -0.15 and -0.38, whereas in the long term it has

been estimated to be much greater.<sup>93</sup> It has also been seen that consumer demand for traffic fuels is also closely linked with income level i.e. the income elasticity of demand is big for traffic fuels. A higher income level raises the number of cars and their size, and thus increases the demand for fuels.

It has been all but impossible to establish the harmful aggregate economic and competitive effects of energy taxes in retrospective empirical assessments, even though advance assessments of taxes have often shown big influences with regard to these variables. The reason is probably not only the still relatively low level of taxes but also the fact that in all countries industry, which uses a great deal of energy, has received so many tax deductions and refunds that it has not been possible for competitiveness to be affected. Conversely, the effectiveness of economic policy instruments has been reduced.<sup>94</sup>

Some of the research data on the income-distribution impacts of energy taxes are contradictory. Some studies show that the income distribution impacts are regressive,<sup>95</sup> even if the regressiveness has been quite small in most instances. Results of empiric research show that energy taxation has been regressive in countries such as Denmark and the United Kingdom, whereas in Germany and Italy the effects have been progressive.<sup>96</sup> In practice, the regressiveness of a tax depends to a considerable extent not only on the structure of the economy and taxation but also on how the tax revenue is used. Different forms of energy taxes differ in terms of regressiveness: fuel taxes on transport are often directed less to lower-income groups in relative terms than, say, energy taxes on dwelling.

The revenue from energy taxes is generally high and some of the taxes are relatively simple to administer (e.g. fuel taxes), so the administrative expenses are not usually high in relation to the revenue received. In Denmark it has been estimated that the administrative costs of the carbon dioxide tax are 1 to 2% of the revenue received from the companies on whom tax is imposed.<sup>97</sup>

### *Finnish studies*

A retrospective assessment made by the Economic Council in 2000 showed that Finland's CO<sub>2</sub> emissions would have been 4 million tonnes i.e. 7% higher in 1998 had the energy taxes been kept at the 1990 level. It was estimated that 50 per cent of this reduction (2 million tonnes) resulted from changes in the end use of the energy i.e. from the reduced consumption of traffic fuels and restructuring by industry and the associated lowering in demand. The effect of both factors was put at about 1 million tonnes. The other 50 per cent of the reduction was estimated to have come from converting to fuels with less carbon dioxide in the production of electricity and heating.<sup>98</sup>

Honkatukia<sup>99</sup> has estimated by means of a general equilibrium model in his advance assessment that a doubling of the surtax on fuel tax would reduce carbon dioxide emissions by 4% by 2010 compared with the baseline scenario. If the surtax on the electricity tax were to be raised to a level corresponding to the fuel tax, emissions would fall by slightly more than 5%. The main negative effects at the industrial sector level would be seen in the form of a reduction in exports and production by energy-intensive sectors. The negative impacts could be alleviated to some extent by refunding the increased tax proceeds through reduced income taxes or social security payments.

Riihelä<sup>100</sup> has estimated the price elasticities of certain goods on the basis of statistics on consumer behaviour by households 1966-1985. The price elasticity for energy reached in the study was -0.36. In an earlier study<sup>101</sup> the price elasticity for the energy consumed in dwelling was -0.17.

Riihelä's study also assessed the income-distribution effects of increasing the taxation on energy. The effect was perceived to be regressive.<sup>102</sup> Honkatukia's advance assessment came up with similar results.<sup>103</sup> The study showed that increasing the carbon dioxide tax by FIM 100 per tonne of carbon dioxide would fall most heavily in relative terms on low-income households. For the lowest-income class an increase in taxation would raise expenses by about two per cent in relation to disposable income, whereas for the upper income brackets the growth in expenses would be about one per cent of disposable income. The reason for this is that small-income households spend more of their income on consumption that includes carbon dioxide. One result of the study was that raising the level of taxation on carbon dioxide would increase regional income differences in such a way that sparsely populated areas would suffer more in relative terms. An advance assessment of the economic impacts carried out in conjunction with the preparation of the national climate programme did not give such clear indications about regressive effects; income-distribution effects were thought to depend to a considerable extent on the type of residence of a household, the form of heating and the ownership of a car.<sup>104</sup>

## **10.2 Taxation of vehicles**

According to a study carried out by the EU Commission, the price elasticity in the demand for private vehicles is  $-0.1$ . In the long term, too, the price elasticity in relation to the number of kilometres driven is quite limited, between  $-0.1$  and  $-0.4$ . All in all, the price elasticities in owning and using a car have been found to be quite small.<sup>105</sup>

In Sweden and Germany, however, reforms to car taxation have had an effect on the proportion of low-emission cars out of the total motor vehicle population. For example, in Sweden making the registration fees for cars dependent on emissions increased the proportion of the two lowest-emission car categories out of the total registrations from 16 to 75 per cent. The change is thought to have come principally from the information effects of the tax and not the changes in the prices of the cars.<sup>106</sup> On the other hand, some studies have results showing that information about the environmental characteristics of cars do not have significant effects on people's buying decisions.<sup>107</sup>

A study carried out in California in the United States shows that changing car registration fees from the present system, in which the tax depends on the car's value, into one where they are dependent on the car's emission would have regressive income-distribution effects.<sup>108</sup> Studies have shown, however, that the car tax in Denmark is progressive and was originally justified as being a luxury tax.<sup>109</sup> Of course, the tax structure has a considerable impact on what its income-distribution effects are.

## **10.3 Waste taxes**

A survey that evaluated the policy instruments for Finland's waste policy showed that the waste tax has helped to increase the recovery of municipal waste, even though it has not affected total waste volumes. At the same time the sorting of construction waste has clearly increased since the waste tax was introduced.<sup>110</sup> The waste tax has also achieved positive results in Denmark: it is thought to have reduced the amount of waste taken to municipal landfills by 26% during the period 1987-1996 and the amount of waste taken to private landfills by 39% during the period 1990-1996. Construction waste is estimated to have fallen by 63%, household waste by 16% and commercial and industrial waste by 8% from 1987 to 1996.

The authors of the study did point out, however, that other policy instruments in the waste policy could have had a positive effect as well. The environmental impacts of waste taxes area also dependent on their structure. In the United Kingdom, for example, the amount of household waste taken to municipal landfills has increased in spite of the waste tax, because the tax does not affect households directly, and so there are no incentives for them to reduce the amount of waste.<sup>111</sup>

## ***10.4 Environmentally based subsidies***

A study carried out by Alanen et al.<sup>112</sup> shows that the proportion of environmental subsidies granted by the State of Finland in relation to industrial subsidies is only 1 to 2%, and the grants cannot be looked on as significant factors in guiding production, product development and consumption.

Allocating environmentally based subsidies so that incentives are created for cost-efficient and effective investment in the environment can be difficult. In order to be able to allocate subsidies correctly, management information about environment-friendly production methods should be updated constantly. Otherwise there is a risk that the subsidies will in fact put a brake on technological development, not further it. Another problem with subsidies is how it will be possible to ensure the implementation of the 'polluter pays' principle and at the same time support investment in the environment by companies.<sup>113</sup>

Little research has been done in Finland into the incentive effects of subsidies relating to environmental protection. Studies on environmental assistance for agriculture have shown that washing nutrients into the waterways is dropping less than expected.<sup>114</sup> A report by the State Audit Office has assessed that there have been deficiencies and unclear points in the implementation of grants to promote environmental protection, which has increased the risk of decisions about assistance that are inappropriate and contrary to the rules. It has not been possible to assess the effectiveness of projects, because there has been no national data system that is suited to depicting the results.<sup>115</sup>



## Discussion

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The primary criterion in deciding the level of environmental taxes in the Finnish tax system has not generally been the estimated effect of the taxes on activities harmful to the environment but the certain amount of tax revenue accumulating to the State. In this sense environmental taxes in Finland have not been incentive-based in terms of the primary objective. This does not mean that the taxes do not have positive effects on the incentives for companies and consumers in terms of the environment.

Taxes on liquid fuels in Finland are quite high compared with other OECD countries, which reduces the incentive to purchase and run a car. In the future, however, using tax increases on liquid fuels as an environmental policy instrument will be difficult, because the starting level of the tax is high and there will be regional and income-distribution policy problems with the increases. Moreover, issues relating to prices of liquid fuels are politically sensitive, as was shown by the demonstrations over the rise in world market prices for fuels in various parts of Europe in the autumn of 2000.

The incentive effect of energy taxation on Finnish industry is reduced not only by their low level compared with the rest of western Europe,<sup>116</sup> but also by the fact that, once they exceed a certain limit denominated in euro, companies that use a great deal of energy are refunded the energy taxes they have paid. In practice this means that if companies' energy consumption exceeds a certain amount, their incentives to lower it are reduced, even though it might be possible to find ways of saving energy. This so-called 'tax cutter' has resulted in a situation where raising energy taxes would mainly have an impact on operators other than the most energy-intensive industry, which has exceeded or is very near the tax-refund limit. The lowest limit is such that tax refunds for energy-intensive industry are applicable only to the fairly big companies, which can be considered a problem in terms of fairness. Industry's electricity taxation class, which is lower than that of households and services, also reduces the incentive for industry to save energy.

Another problem with the incentive effects of energy taxes is that the electricity tax is not directly dependent on the size of the environmental harm caused by the activity that is being taxed. Before the tax reform of 1997 energy taxes focused directly on the carbon dioxide in the energy and the energy content, so that a higher tax had to be paid for energy produced with sources that contained more carbon dioxide. This gave producers and consumers the right price signals. In 1997 the taxation was changed: now electricity consumption was to be taxed, not production. The present electricity tax is the same for all forms of energy production regardless of how much carbon dioxide the energy source contains, except for subsidies. Thus at the moment there is little in the taxation of electricity that would encourage the choosing of forms of energy that contain less carbon dioxide.

The high tax on motor vehicles, especially the car tax but also the annual vehicle tax, in itself lowers the incentive to purchase a car, but the taxes involved in purchasing a car do not include features that lead to better solutions for the environment. The national climate strategy plans to change the annual vehicle tax so that it would be dependent on fuel consumption instead of the car's year of registration. The high car tax has caused the motor vehicle population in Finland to be old compared with the rest of Europe.

Of the economic policy instruments for waste, the packaging tax in particular has been effective, since almost all the packaging used for soft drinks in Finland is recycled. One problem in terms of the incentive effects of the waste tax has been its low level - it forms such a small part of the expenses of the parties paying it that it has no marked incentive effect. After the increases that came into effect at the beginning of 2003, the tax level has, however, gone up considerably. Under present legislation, however, waste tax is not levied at all on landfills maintained by industry, so it is not possible to affect the biggest volumes of waste generated by industry. Furthermore it has been shown that in its present form the tax distorts the competitive position of public waste management compared with that in the private sector.

In many instances a problem with economic environmental policy instruments and more generally with policies that further sustainable development is that they endeavour to promote many objectives at the same time. Problems arise when the objectives are contradictory. This is the general situation when the aim is at the same time to increase the incentive effect of economic policy instruments and, on the other hand, to show concern for companies' international competitiveness. Finland is a small, open economy in which industry has traditionally been very energy-intensive – even if the situation has changed somewhat with the coming of Nokia and other information and communications technology companies. Particularly when energy taxes have been increased, the competitiveness of Finnish companies has been considered so important that the tax burden has been directed towards households and the service industry, while attempts have been made to protect industry's competitiveness with different aid schemes and a lower price for electricity. As a result, the incentives created for industry by energy taxation remain limited, and the economic policy instruments are not effective.

In addition to competitiveness objectives, regional and income-distribution targets are often in conflict with the effective application of energy and environmental taxes. A typical example is the deduction for travelling expenses, under which expenses for long journeys to work can be deducted for tax purposes. This right is accelerating the fragmentation of the urban structure and increasing traffic, which is adding not only to health hazards but also acidification, the disappearance of biodiversity and the greenhouse gas phenomenon. The necessity to treat this right as a tax deduction, however, is justified on employment and regional policy grounds.

To sum up, there are many economic policy instruments being used in the environmental policy in Finland, but their effectiveness is being lessened by the low level of taxation, weak linkage between the taxes and the environmental hazards that are to be reduced, the diverse and often contradictory objectives of subsidy and tax policies, and the various exemptions granted for reasons of competitiveness. The challenge in developing economic policy instruments is to make them more incentive-based and to increase the precision with which they are allocated without making the system excessively complicated and difficult to implement.

## Notes

<sup>1</sup> Määttä 1999, p.24

<sup>2</sup> The aim of incentive-based environmental tax is primarily to affect the behaviour of polluters so that they reduce the amount of pollution. The level of tax should therefore be set so that environmental policy aims can be met. (Määttä 1999, p.59)

<sup>3</sup> The primary aim of fiscal environmental taxes is to bring in tax revenue for the Government (Määttä 1999, p.111). Fiscal taxes include fuel taxes and vehicle taxes.

<sup>4</sup> Environmental charges are used to pay for costs caused by certain activities, or to fund environmental protection. Environmental charges comprise wastewater charges, waste management fees, waste oil charges and oil protection charges.

<sup>5</sup> A deposit is a fee that is included in the price of the product to be bought, which the purchaser gets back on returning the used product or package.

<sup>6</sup> Statistics Finland, <http://www.tilastokeskus.fi/tk/yr/yeypverot.html> September 7, 2001. When defining environmental taxes it is assumed that the tax must be aimed at a measured physical variable that is considered to have a detrimental effect on the environment.

<sup>7</sup> OECD, <http://www.oecd.org/env/tax-database>, February 14, 2003

<sup>8</sup> OECD, <http://www.oecd.org/env/tax-database>, February 14, 2003

<sup>9</sup> Statistics Finland 2002, p.8

<sup>10</sup> Statistics Finland, <http://www.tilastokeskus.fi/tk/yr/yeypverot.html>, February 14, 2003

<sup>11</sup> Statistics Finland, <http://www.tilastokeskus.fi/tk/yr/yeypverot2.html>, February 14, 2003

<sup>12</sup> Statistics Finland 2002

<sup>13</sup> Temporary Act Amending the Act on Fuel Tax (1119/1989)

<sup>14</sup> Government proposal (89/1993)

<sup>15</sup> Government proposal (237/1994)

<sup>16</sup> Government proposal (225/1996)

<sup>17</sup> The Act on Excise Duty of Certain Energy Sources (1473/1994); Act on Excise Duty on Liquid Fuels (1472/1994)

<sup>18</sup> Government proposal (225/1996). The Act on Excise Duty on Electricity and Certain Fuels (1260/1996)

<sup>19</sup> Government proposal (130/2002); Act Amending the Act on Excise Duty on Electricity and Certain Fuels (1168/2002)

<sup>20</sup> Act Amending the Act on Excise Duty on Electricity and Certain Fuels (1168/2002); Act Amending the Act on Excise Duty on Liquid Fuels (1169/2002)

<sup>21</sup> Statistics Finland 2000, p.119

<sup>22</sup> Statistics Finland 2002

<sup>23</sup> Act on Excise Duty on Electricity and Certain Fuels (1260/1996); Act Amending the Act Excise Duty on Electricity and Certain Fuels (1168/2002)

<sup>24</sup> Ibid.

<sup>25</sup> Petri Malinen, Ministry of Finance, written communication October 5, 2001

<sup>26</sup> According to Statistics Finland, the industrial consumption of electricity in 1999 was 42,183 GWh (Statistics Finland 2000, p.81), from which it is possible to calculate the amount of industrial electricity tax as FIM 1,055 million.

<sup>27</sup> Petri Malinen, Ministry of Finance, written communication August 25, 2003

<sup>28</sup> Decree on the State Nuclear Waste Management Fund (162/1988)

<sup>29</sup> Economic Council of Finland 2000, p.45

<sup>30</sup> Report on the state of Government Finances 2002

<sup>31</sup> Security of Supply Act (1390/1992)

<sup>32</sup> Ministry of Finance, <http://www.vn.fi/vm/verotus/tullit/tulliverotus.htm>, strategic stockpile fee, July 4, 2001

<sup>33</sup> Report on the state of Government Finances 2002

<sup>34</sup> Act Amending the Act on Excise Duty on Electricity and Certain Fuels (1168/2002); Act Amending the Act on Excise Duty on Liquid Fuels (1169/2002)

<sup>35</sup> Act on the Oil Pollution Compensation Fund (379/1974); Act Temporarily Amending sections 2 and 3 of the Act on the Oil Pollution Compensation Fund (1012/2002)

- <sup>36</sup> Report on the state of Government Finances 2002
- <sup>37</sup> Government Decree on the General Conditions of Granting Energy Aid (625/2002)
- <sup>38</sup> Statistics Finland 2002, p.10
- <sup>39</sup> Car Tax Act (1482/1994). Act Amending the Car Tax Act (266/2003)
- <sup>40</sup> Report on the state of Government Finances 2002
- <sup>41</sup> Act on Vehicle Tax (1111/1996)
- <sup>42</sup> Report on the state of Government Finances 2002
- <sup>43</sup> Act on Tax on Specific Motor Vehicles (722/1966)
- <sup>44</sup> Report on the state of Government Finances 2002
- <sup>45</sup> Act Amending the Act on Tax on Specific Motor Vehicles (1161/1998)
- <sup>46</sup> Waste Tax Act (495/1996); Act Amending section 4 of the Waste Tax Act (1066/2002)
- <sup>47</sup> Report on the state of Government Finances 2002
- <sup>48</sup> Waste Act (1072/1993)
- <sup>49</sup> Kautto et al. 2000, p.47
- <sup>50</sup> Waste Act (1072/1993)
- <sup>51</sup> Kautto et al. 2000, p.51
- <sup>52</sup> The Association of Finnish Local and Regional Authorities, <http://www.kuntaliitto.fi/yhdysk/kotijate.htm>, August 20, 2003
- <sup>53</sup> Act on Waste Oil Charge (894/1986); Act Amending section 4 of the Act on Waste Oil Charge (924/2001)
- <sup>54</sup> Report on the state of Government Finances 2002
- <sup>55</sup> Act on Excise Duty on Alcohol and Alcoholic Beverages (1471/1994); Act on Excise Duty on Sweets and Soft Drinks (1474/1994); Act Amending the Act on Excise Duty on Soft Drinks (920/2001). Act Amending the Act on Excise Duty on Alcohol and Alcoholic Beverages (921/2001)
- <sup>56</sup> The Association of Finnish Local and Regional Authorities, <http://www.kuntaliitto.fi/yhdysk/01ys00.htm>, October 20, 2001
- <sup>57</sup> Government Decision on the General Terms Applying to Grants For the Promotion of Environmental Protection (894/1996)
- <sup>58</sup> Ministry of the Environment, 1998, p.96
- <sup>59</sup> Act Amending the Act on State Guarantees to the Industry for Investments in Environmental Protection (636/1991)
- <sup>60</sup> Economic Council of Finland 2000, p.44
- <sup>61</sup> Finnish Environment Institute, <http://www.ymparisto.fi/default.asp?node=4824&lan=fi> (June 30, 2004).
- <sup>62</sup> Finnish Environment Institute, <http://www.ymparisto.fi/default.asp?node=4824&lan=fi> (June 30, 2004).
- <sup>63</sup> Water Act (264/1961)
- <sup>64</sup> Ministry of Agriculture and Forestry, <http://www.mmm.fi/kalastus/luvat/>, August 20, 2003
- <sup>65</sup> Report on the state of Government Finances 2002
- <sup>66</sup> Government Decree on Game Management Fee and Hunting Licence Fee (823/2001)
- <sup>67</sup> Act on Game Management Fee and Hunting Licence Fee (616/1993)
- <sup>68</sup> Report on the state of Government Finances 2002
- <sup>69</sup> Act Amending Section 7 of the Pesticides Act (1031/1997)
- <sup>70</sup> Risto Saarinen, Ministry of Transport and Communications, oral communication, July 4, 2001
- <sup>71</sup> Economic Council of Finland 2000, p.46
- <sup>72</sup> Statistics Finland 2002
- <sup>73</sup> Government Decision on the General Terms Applying to Grants For the Promotion of Environmental Protection (894/1996)
- <sup>74</sup> State Audit Office, 2002
- <sup>75</sup> Government Decision on Agri-environmental Aid (760/1995)
- <sup>76</sup> Ministry of Agriculture and Forestry 2000
- <sup>77</sup> Statistics Finland 2002
- <sup>78</sup> Act on the Funding of Sustainable Forestry (1094/1996)
- <sup>79</sup> Finnish Environment Institute, <http://www.ymparisto.fi/default.asp?node=569&lan=fi#a2>, (June 30, 2004); Act on Assistance for the Community Water Supply Measures (56/1980)
- <sup>80</sup> Ministry of Transport and Communications 1999
- <sup>81</sup> Finnvera, <http://www.finnvera.fi>, July 5, 2001



- <sup>82</sup> Finnvera, <http://www.finnvera.fi>, July 5, 2001
- <sup>83</sup> Jari Pirinen, Finnvera oral communication, Finnvera, July 25, 2001
- <sup>84</sup> Act on the Taxation of Business Income (846/1980)
- <sup>85</sup> Act on Environmental Damage Insurance (81/1998)
- <sup>86</sup> Environmental Insurance Centre, <http://www.vakes.fi/yvk/>, July 5, 2001
- <sup>87</sup> In this context the fiscal impacts of the taxes are not considered as they have been dealt with earlier.
- <sup>88</sup> Internationally, too, the number of ex post evaluations in environmental policy is insufficient, which is highlighted, for example, in OECD reports.
- <sup>89</sup> E.g. Andersen et al. 2001
- <sup>90</sup> Price elasticity tells how much a rise in the price of a commodity will reduce its demand. For example, price elasticity of -0.13 means that a 1% rise in the price of a commodity would reduce demand of the product by 0.13%.
- <sup>91</sup> OECD 2001, p.100
- <sup>92</sup> OECD 2000, p.12
- <sup>93</sup> Ibid., p.14
- <sup>94</sup> E.g. Ecotec 2001; OECD 2001
- <sup>95</sup> Regressiveness means that the measure worsens the position of low-paid workers proportionally more than the position of those on a large salary.
- <sup>96</sup> OECD 2001, p.87
- <sup>97</sup> OECD 2001, p.92
- <sup>98</sup> Economic Council of Finland 2000
- <sup>99</sup> Economic Council of Finland 2000, appendix 1
- <sup>100</sup> Riihelä 1996, p.48
- <sup>101</sup> Riihelä & Sullström 1993
- <sup>102</sup> Riihelä 1996, p.50
- <sup>103</sup> Economic Council of Finland 2000, appendix 2
- <sup>104</sup> Kemppe etc. 2001, p.51
- <sup>105</sup> OECD 2001, p.102
- <sup>106</sup> Ibid., p.104
- <sup>107</sup> Helsingin Sanomat, June 5, 2002
- <sup>108</sup> OECD 2001, p.88
- <sup>109</sup> Määttä 1999, p.142
- <sup>110</sup> Yli-Kauppila et al. 2000, pp.78-79
- <sup>111</sup> OECD 2001, pp.107-108
- <sup>112</sup> Alanen et al., 1995, pp.201-203
- <sup>113</sup> OECD 2001, p.45
- <sup>114</sup> Palva etc. 2001, <http://www.ymparisto.fi/download.asp?contentid=18807&lan=fi>, (June 30, 2004)
- <sup>115</sup> State Audit Office 2002
- <sup>116</sup> Economic Council of Finland 2000, p.7

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# Documentation page

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Abstract	<p>The report provides an overview of economic environmental policy instruments in Finland. The instruments include incentive based and fiscal environmental taxes, environmental charges and deposits as well as subsidies and insurances. Systems based on producer responsibilities have not been examined although their effects are similar to those of economic policy instruments. The overview shows that the use of economic policy instruments in Finland differs to some extent from the average use in OECD countries. For example taxes of fuels and motor vehicles are high in comparison, whereas the energy taxes of industries are relatively low. The main challenge in developing economic environmental policy instruments is to increase the positive incentives and to improve the environmental focus without making the systems inflexible and costly.</p>		
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Julkaisun osat/ muut saman projektin tuottamat julkaisut	Julkaisu on saatavana myös internetistä <a href="http://www.environment.fi/publications">www.environment.fi/publications</a>		
Tiivistelmä	<p>Julkaisu on katsaus Suomessa käytettyihin taloudellisiin ohjauskeinoihin, joilla tarkoitetaan kannustintyyppisiä ja fiskaalisia ympäristöveroja, ympäristö- ja panttimaksuja sekä erilaisia tukimuotoja ja vakuutuksia. Tuottajan vastuuseen perustuvia järjestelmiä ei käsitellä, vaikka niillä on osin samanlaisia vaikutuksia kuin taloudellisilla ohjauskeinoilla.</p> <p>Yhteenveto taloudellisista ohjauskeinoista osoittaa, että Suomessa käytettyjen taloudellisten ohjauskeinojen käyttö ja taso poikkeaa OECD-maiden keskimääräisestä mm. siinä, että polttonesteisiin ja moottoriajoneuvoihin kohdistuvat verot ovat verrattain korkeita, mutta teollisuuden energiaverotus verrattain alhainen.</p> <p>Taloudellisten ohjauskeinojen kehittämisen keskeisenä haasteena on ympäristöllisen kannustavuuden ja kohdentumisen parantaminen ilman että järjestelmistä tulee jäykkiä ja raskaita.</p>		
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Författare	Marjukka Hiltunen		
Publikationens titel	Miljöpolitikens ekonomiska styrmedel i Finland		
Publikationens delar/ andra publikationer inom samma projekt	Publikationen finns tillgänglig också på internet <a href="http://www.environment.fi/publications">www.environment.fi/publications</a>		
Sammandrag	<p>Rapporten ger en översikt av miljöekonomiska styrmedel i Finland. I dessa ingår miljöskatter som motiverats med miljöhänsyn eller införts av fiskala skäl, miljöavgifter och pantavgifter samt stöd och försäkringar. Översikten visar att användningen av ekonomiska styrmedel skiljer sig i vissa avseenden från den genomsnittliga användningen i OECD länderna. Till exempel är beskattningen av bilar och bränslen högre, medan industrins energiskatter är lägre än genomsnittet i OECD. Den huvudsakliga utmaningen för utvecklandet av miljöpolitiska ekonomiska styrmedel är att öka de positiva incitiven och förbättra fokuseringen på miljöeffekter utan att göra instrumenten styva och tungrodda.</p>		
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Publikationsserie och nummer	Miljö i Finland 676en		
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