2.2 *Water pricing*

The syndicates set the selling price for the communes (Box 2.1). Depending on the commune, the tariff structure may be based on volumetric rates or on increasing-block or decreasing-block rates, and it usually contains a fixed element. This *diversity of pricing structures is often geared to social considerations*. In communes where

Box 2.1 **The role of the inter-communal syndicates in water pricing**

The *communes* are legally required to provide for the collection, removal and treatment of urban waste water and the management of rainwater run-off in urban areas. They are not allowed to subcontract these services to specialised firms. The drinking water management system leaves the communes with the choice of relying on their own water supply sources (this is the case for 25 of the 116 communes in Luxembourg), of relying, through the communal syndicates, on water from the Esch-sur-Sûre Syndicate (SEBES), or of having a mixed arrangement. Four inter-communal syndicates* and Luxembourg City are members of SEBES and deliver drinking water abstracted from the Esch-sur-Sûre reservoir. For sewage, there are 11 syndicates, each covering several communes. Some communes manage their sewer networks and treatment plants on their own.

In the management of drinking water, it should be possible to *increase co-operation among the syndicates* and thereby achieve synergies while keeping water prices at an advantageous level (Syvicol, 2008). In comparison with neighbouring countries, Luxembourg has a fairly high number of sewage treatment syndicates, which suggests there might be potential economies of scale in this sector as well. A reduction in the number of communes (to 70 or 80) and the creation of urban communities as part of the government's proposed "territorial reform" would facilitate such a shift of governance in the area of water services. There is a proposal (Commission of the Chamber of Deputies concerning territorial reform) to consider integrating certain aspects of sewage management at the national level (sewage sludge, self-monitoring laboratory, public submission of purchasing), through a mixed government-municipal syndicate in which all the country's communes would be represented. Experience in other OECD countries suggests that *making more room for private initiative* would help move the tariff structure toward full cost recovery for water services.

* The syndicates for the southern region, the eastern region, the central region, and the Ardennes.

prices rise by block, the first block is much more important for large families than for single persons. In communes that apply a volumetric rate, the rate is lower for large families than for single persons. But there have been no studies of the degree of cross-subsidy between well-off families and those on modest incomes (OECD, 2003).

The Water Act calls for *standardising pricing principles* as of 1 January 2010, at which time "users will pay the service costs related to water use, including costs for the environment and the resource, taking into account the user pays and polluter pays principles". Apart from water supply and sanitation service charges, which go to the service providers (syndicates), the law sets an abstraction tax and a pollution tax, whose proceeds are earmarked for the Water Management Fund ("water pays for water"), in violation of the budgetary principle that revenues should not be pre-allocated.[21] *Charges and taxes will have to be applied in the same way to households, businesses*[22] *and the agricultural sector.*

Water charges

The *drinking water charge* comprises a fixed portion (proportionate to the pipe diameter at the meter) and a variable portion, which depends on consumption. Similarly, the *sewage charge* includes a fixed portion (proportionate to the number of "average population equivalent") and a variable portion (proportionate to the volume of water drawn by the user from the public system). The inclusion of a fixed element in the price reduces the impact of the price signal on consumption. Moreover, some facilities receive government assistance (subsidy) for the first investment through the Water Management Fund, which allows them to charge lower rates to communes and beneficiary commune syndicates. This assistance does not however contribute to a price reduction for the user, as the communes are obliged to pass on the full cost of the investment.

The *capital and operating cost recovery rate* is around 80% for water supply and 50% for sewage treatment.[23] The legal obligation to recover 100% of costs by 2010 will not be respected without major price adjustments. Some communes are planning to double the price of water, while others are opposed to any increase. The government intends to offer financial compensation to communes in the north, where water service costs are higher because population density is lower. The details of such an equalisation mechanism will be established by the budgetary law.

A draft law on *social assistance* has been introduced to ensure basic necessities to people in need: these include medical care, housing, food, clothing, mobility, drinking water, and domestic power supply. This assistance would be provided through a subsidy, as a supplement to the social measures and allowances provided by other laws and regulations. The draft law is intended not to exempt poor families from

paying their water bill (which would encourage wastage) but rather to help them pay it.[24] The Water Act also allows the communes to subsidise the poorest households through a cost-of-living allowance for drinking water.

Taxes

Beginning in 2010, anyone who draws surface water or groundwater will have to pay an *abstraction tax*, based on the volume of water drawn (measured by a metering device installed by the user). The rate is set at 0.10 EUR/m^3. In addition to the public operators, which deliver 44 million m^3 of water annually (70% for the public network, 30% for industry),[25] the agri-food industry abstracts 4 million m^3 of underground water of drinking water quality, but not all abstractions have a metering device (OECD, 2008b).

The discharge of waste water into surface or underground waters is subject to a *pollution tax*. The tax is proportionate to the units of pollutant load (*unité de charge polluante,* UCP) in the water discharged. It is set at 1 euro per UCP. It must be paid when any of the following thresholds is exceeded: 250 kg/year for chemical oxygen demand (COD); 125 kg/year for nitrogen (N); 15 kg/year for phosphorus (P); or 5.2 kg/year for suspended particulate matter (SPM).[26] The volume of water discharged is equal to the volume of water drawn in the public distribution network. The pollutant load contained in 150 litres of waste water that an inhabitant is assumed to produce each day (one "population equivalent") is calculated by a formula.[27] A 10 to 20% reduction in the tax is offered to communes that have installed rainwater treatment and management facilities in their network. For industry, the number of UCPs considered for calculating the tax is based on the authorised pollutant load as a proxy. If that load is exceeded, however, the tax may be increased.[28] It can also be reduced upon a simple declaration if the pollutant load is at least 20% less than what would result from the discharge authorisation.

Water Management Fund

The Water Management Fund was created in 1999 to finance sewage treatment.[29] Between 2000 and 2007, the Fund spent approximately EUR 200 million on sanitation projects (Table 2.5).

The Fund is financed by budgetary allocations. A budgetary grant of EUR 15 million has been allocated to the Fund annually since 2000. In addition, a further EUR 213 million in supplementary grants was allocated to the Fund between 2000 and 2007. The *deterioration of the country's economic situation* resulted in an absence of supplementary budgetary allocations in 2008 and 2009. Nevertheless, subsidies allocated to communes and commune syndicates are rising

Table 2.5 **Water Management Fund**, 2000-09

(EUR million)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009[a]
Budget allocation to	45	55	45	45	15	15	28	85	15	18[b]
normal	15	15	15	15	15	15	15	15	15	18
supplementary	30	40	30	30	0	0	13	70	0	0
Expenditure	20	25	20	20	20	15	15	26	65	70
Balance as of 31 December	25	55	80	105	100	100	113	172	122	70

a) Preliminary data.
Source: AGE.

significantly (EUR 65 million in 2008, EUR 70 million expected in 2009), as the AGE has access to the balance available in the Fund. It is expected that allocation of the abstraction and pollution taxes to the Fund will bring revenues up to around EUR 10 million per year as of 2011.[30] The Fund is considering resorting to loans from the European Investment Bank, if need be, to avoid slowing the development of sanitation and waste water treatment infrastructures in the coming years.

The Fund can cover up to *90% of the commune's capital costs for sewerage and sewage treatment*. The Water Act expands the scope of the Fund. It authorises coverage of: up to 50% for measures to protect water resources intended for human consumption (with the exception of agricultural activity); up to 50% of the cost of flood risk abatement;[31] and up to 100% of watercourse rehabilitation costs.[32] The law also allows the Fund to cover up to 100% of expenditure on projects recognised as being of national interest and intended, among other things, to safeguard the quality of surface and groundwater or to protect available water resources over the long term. The Fund should distribute its revenues on the basis of a cost-benefit analysis of the projects selected.

Box 2.2 **Key elements of Luxembourg's agricultural policy**

Since 2005, there has been a steady increase in *government support* and in the proportion it represents in net farm income (Figure 2.6). Council Regulation (EC) No. 1290/2005 of 21 June 2005 on Financing of the Common Agricultural Policy (adopted under Luxembourg's presidency) created two European agricultural funds: the European Agricultural Guarantee Fund (EAGF), to finance market intervention and other measures, and the European Agricultural Fund for Rural Development (EAFRD), to finance rural development in areas that are home to more than 55% of the country's population and cover more than 90% of the Grand Duchy's territory. The regulation came into force on 1 January 2007.*

The bulk of the EAGF budget goes to financing the "*single payment*", a decoupled payment (not directly linked to output) that was introduced in 2005. The payment is awarded based on the eligible area in 2005 and comprises a regional component and an individual component ("top-up"). Previous payments were replaced in their entirety by the single payment (total decoupling); the single payment involves budgetary outlays of EUR 37 million a year (since 2007).

The EAFRD is more modestly funded, at EUR 13 million a year over the period 2007-13. It is supplemented by a national budget envelope of EUR 40 million a year to cover the expenditure of the 2007-13 Rural Development Programme (PDR). Agri-environmental payments account for around 30% of the overall PDR budget envelope, or EUR 15 million a year (national budget plus European co-financing). The most important agri-environmental measure is the "*premium for the upkeep of the landscape and the contryside*", designed to maintain agricultural activity on lands suitable for farming, vineyards and horticulture, using forms of exploitation that are adapted to the natural setting and landscape, and respectful of the environment. This premium was introduced in 1997 in the context of Regulation (EC) 2078/1992. The Regulation of 17 October 2008 establishes the terms of payment and control over the new premium programme.

Applicants for the landscape and countryside maintenance premium undertake to respect certain conditions for five years after the first payment. Since 2007, these *conditions* have been mandatory. Organic fertiliser use in water protection zones must be kept to a maximum of 130 kg N/ha instead of the 170 kg N/ha allowed by the Nitrates Directive (1991/676/EC). A buffer strip of at least three metres must be established for agricultural activities along watercourses. In addition, the creation and maintenance of permanent grassland and pastureland permanently vegetated is encouraged to minimise the use of pesticides and fertilisers.

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* Consistent with EC Regulation 1782/2003.

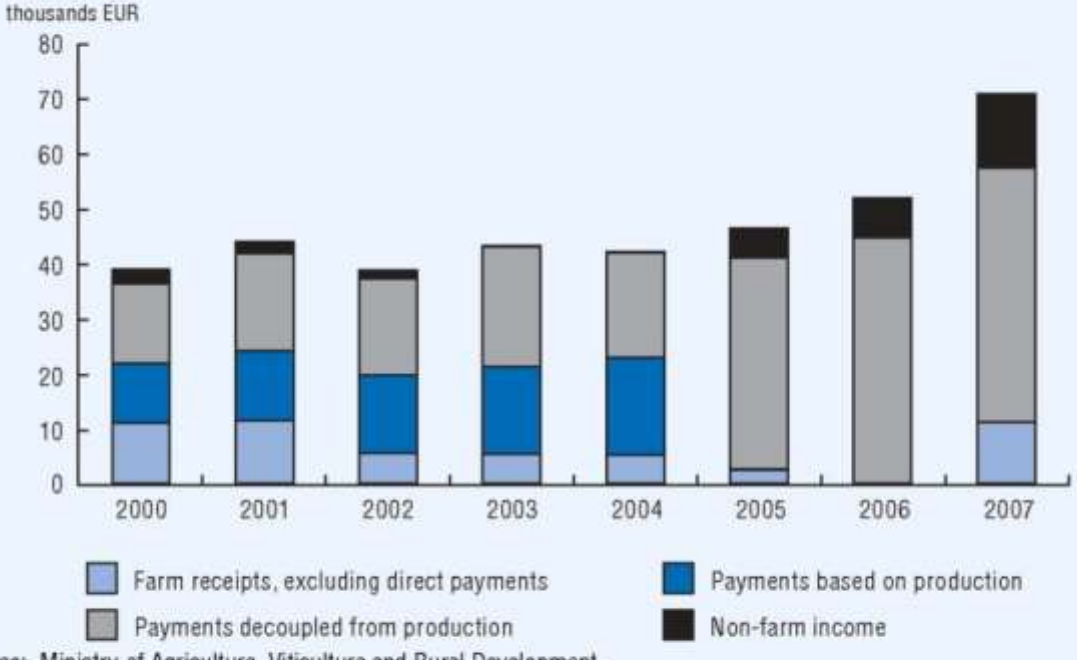
Source: Ministry of Agriculture, Viticulture and Rural Development (2007).

Table 2.6 **Rural Development Programme,** 2007-13[a]
(EUR million)

Measures	Public expenditure		
	Total	*of which:* commitments 2000-06	*of which:* European co-financing (EAFRD)[b]
Axis 1: increasing the competitiveness	128	25	25
of which: modernising farms	98	25	..
of which: improving the economic value of forests	4	–	..
Axis 2: Enhancing the environment and the countryside	212	8	54
of which: compensatory payments	104	–	..
of which: agri-environmental payments	107	8	24
of which: sylvi-environmental payments	0.6	–	0.2
Axis 3: improving the quality of life in rural areas	15	2	6
of which: basic services for the rural economy	6	1	..
Axis 4: local development strategies	13	–	5
Total	368	35	90

a) Expenditure cover the period 2007-13, or 7 years.
b) European Agricultural Fund for Rural Development.
Source: Ministry of Agriculture, Viticulture and Rural Development (2007).

Figure 2.6 **Trends in farm income components,** 2000-07



Source: Ministry of Agriculture, Viticulture and Rural Development.

6. Financing and Coherent Management

6.1 Expenditure and costs

There is no available overview of public or private expenditure and revenues associated with waste management. The current PGGD does not include a financial aspect, or any cost-benefit analysis of the measures proposed and the targets set.

6.2 Funding for municipal waste management

The funding of municipal waste management is based on a combination of *local council taxes*[16] *and government subsidies*. The Ministry of the Environment reimburses up to 25% of the capital cost of inter-communal facilities for household and similar waste disposal, up to 40% of the capital costs of communal and inter-communal PDRs, up to 60% of the capital costs of composting or bio-methane projects for organic waste and sewage sludge, and up to 100% of the costs of handling problem household waste through the SDK programme. In 2008, 68% of spending by the *Environmental Protection Fund* (EUR 9 million) went to waste prevention and management.

Little progress has been made since 2000 in terms of applying the polluter pays principle (PPP) to municipal waste management and *harmonising the local council*

tax rates. Fifteen communes[17] (home to around a third of the country's population) are applying a harmonised and differentiated tax that respects the PPP: it involves weighing and identifying dustbins at collection time and is combined with an effective system of separate collection for recyclable items. The system includes a flat-rate tax, a charge for the collection of residual waste,[18] and differentiated charges for separate collection (geared to weight and the type of material). In these communes, residual waste volumes for disposal have been reduced by 50% in two years, and specific waste volumes are 30% lower than in the other communes.[19]

The planned extension of this system to cover the entire national territory has however been held back by communal autonomy. Most of the communes are still calculating their charges without any regard to the real costs, often taking as their basis the size of the dustbin. Moreover, the *calculation base and the level of communal taxes* still vary between syndicates and even between communes within the same syndicate (Table 3.4). There are also persistent differences in the charges for collecting *organic waste* and specific types of waste such as bulky items or used tires (Table 3.5). With respect to *bulky waste*, more than half of the communes base their charges on actual quantities removed. Other communes apply no charges or set them without regard to actual quantities and management costs (Ministry of the Environment, 2009; OECD, 2007).

Table 3.4 **Municipal taxes on residual household waste**, 2006

Base of calculation	Number of communes	% of national resident population	Generation[a] of residual household waste (kg/cap.)
1. Household size	3	*2.7*	257
2. Dustbin size	91	*66.0*	245
3. Dustbin size and household size	2	*1.7*	162
4. Flat tax for small dustbins, number of emptyings for bins > 660 l	0	*0.0*	
5. Number of emptyings with minimum of mandatory emptyings	0	*0.0*	
6. Weight of rubbish and number of emptyings	8	*6.3*	161
7. Bin size and number of emptyings	12	*22.3*	195
8. Number of emptyings	0	*0.0*	

a) Annual average.
Source: Environment Administration.

Table 3.5 **Other municipal waste taxes**, 2006

Bulky waste Method of taxation	Number of communes	Items subject to specific taxes	Number of communes
PPP not respected		Glass	4
No tax	41	Paper	12
Acceptance refused	0	Paper/cardboard	0
Annual tax	4	Organic kitchen waste	15
Access tax	1	Green waste	3
Miscellaneous	4	Metals	13
Total	50	Construction waste	9
		Wood	1
PPP respected			
Tax geared to volume	50		
Tax geared to loading time	1		
Tax geared to weight (per kg)	8		
Tax per bag collected	2		
Collection via PDR	5		
Total	66		

Source: Environment Administration.

3.3 National Plan for Nature Conservation

These legislative amendments also allowed the government to develop and adopt the National Plan for Nature Conservation (PNPN) covering the period 2007-11, and to implement its first phase. The plan is intended to *i) halt the loss of biodiversity* by 2010, in particular by maintaining and restoring threatened species and habitats of

national or community interest; and *ii) preserve and re-establish ecosystem services and processes* at the landscape and national scales. These two goals are broken down into seven objectives and 41 actions to be achieved or undertaken by 2007-11. The seven objectives are:

1. to reinforce concrete efforts for nature conservation;
2. to integrate nature conservation into other sectors of activity;
3. to designate and manage protected areas of national and community interest;
4. to update legal and regulatory planning instruments;
5. to conduct scientific monitoring of the state of nature and the effectiveness of conservation policy;
6. to promote scientific research in biodiversity and nature conservation;
7. to encourage awareness and education about conservation, and to enhance co-ordination among stakeholders (Box 4.2).

Implementing the PNPN is an *ambitious* undertaking, given the degradation of Luxembourg's natural environment, the pressures on its fauna and flora, and the short time horizon for implementing concrete actions. It will also be difficult to measure results, as many activities have not been given quantifiable elements (Box 4.3). The costs of implementing the PNPN were estimated at EUR 8 million for 2007, rising to EUR 12 million in 2011.

3.4 Funding frameworks

The *Environmental Protection Fund* (financed by annual budget allocations) provides assistance to the communes and to officially recognised conservation organisations for: *i)* planning, studies and land acquisitions for establishing the network of protected areas (up to 75% of costs); and *ii)* planning, studies and land acquisition for ensuring the ecological coherence of the protected areas network through the maintenance and development of landscape elements of importance for wildlife and vegetation.

The MAVDR finances "*agri-environmental contracts*" that *i)* promote farming methods compatible with the requirements of conservation and maintenance of natural spaces (target: 16 000 ha for 2010) and *ii)* protect threatened indigenous animal and plant species of agricultural areas (target: 4 000 ha for 2010). The MAVDR also sponsors programmes to protect forest biodiversity and to improve the natural environment. These programmes now cover some 3 100 ha, a figure well below the established target. The PNPN calls for a gradual increase in lands under biodiversity contract to 5 000 ha by 2011. The scale of financial assistance offered by

the MAVDR is becoming less attractive with rising land prices, and other available subsidies have been too low from the outset and have almost never been requested (PNPN, 2007). The assistance provisions are now being updated.

A *Game Fund*, financed primarily from a surcharge on hunting permits, is intended to increase game stocks but has paid out nothing for several years. A *Special Hunting Fund*, also financed through a surcharge on hunting permits, is intended to compensate for harvests damaged by game. Its annual outlays are around EUR 300 000. A *Fishing Fund*, financed by a tax on fishing permits, is devoted to restocking and upgrading fish habitat.

Compensation programmes for biotopes destroyed by public works (such as road construction) exist but are rarely used. When they were introduced in 2004, they were intended to discourage certain practices by imposing a tax, the proceeds of which would be earmarked for projects for natural habitat conservation and restoration.

The major *Community financial instruments* (such as the European Fund for Regional Development [EFRD], the European Agricultural Fund for Rural Development [EAFRD], and the LIFE+ programme) are available, and are supporting several projects.

In each year between 1990 and 2006, the state acquired on average 32 ha of lands of conservation significance, for an average annual outlay of EUR 342 000. These *land purchases* have been supported by the "Help for Nature" (*Hëllef fird'Natur*) Foundation and by certain communes.

Box 5.3 **The 2008-09 economic context: crisis and support efforts**

Luxembourg has been feeling the impact of the international economic and financial crisis since 2008, and economic growth is likely to remain sluggish in 2010. Unemployment is forecast to rise from 4.9% in 2008 to 7% in 2010.

In March 2009, the government adopted a plan to counter the effects of the economic and financial crisis and to ready the country for eventual recovery. In concert with labour and management, and after consultation with the Chamber of Deputies, it announced a series of measures. The cost of these measures is estimated at EUR 665 million, or 1.8% of GDP. When added to the initial support measures taken in December 2008, the *total stimulus package represents EUR 1.23 billion or 3.4% of GDP*.

Priority will go to:

- *Bolstering household purchasing power* through tax measures such as direct tax cuts (EUR 342 million) and tax credits (EUR 98 million).
- *Support for business activities*, by lowering the corporate income tax rate (EUR 85 million), eliminating the corporate registration fee (EUR 100 million), making additional public investments (EUR 70 million), offering direct subsidies and loan guarantees (EUR 15-30 million), and simplifying administrative procedures relating to municipal planning, urban development, classified installations and conservation of nature.
- *Employment support*, with extension of the partial unemployment system (the state will take over the employer share of unemployment benefits and will make the reference period more flexible, and it will raise the compensation rate for employees) (EUR 10.7 million per month).

– *Preparation for the post-crisis* era (EUR 134 million), with support for public enterprises in developing telecommunications infrastructure and networks and data storage capacities (LuxConnect, Postes et Télécommunications) and expanding the R&D grants system (LuxInnovation).

Environmental measures focus primarily on:

– Extending the scope of application of the EUR 750 subsidy (EUR 4.5 million) for purchases of low-emission vehicles (<120 g of CO_2/km for corporate purchases, <160 g of CO_2/km for persons who are disabled or who have a disabled person in their care).
– Introduction of a "scrapping premium" (EUR 2 500 for 120 g CO_2/km, EUR 1 500 between 121 and 150 g CO_2/km) to encourage the replacement of older passenger cars by low-emission vehicles (EUR 10 million).
– Subsidies to promote energy-saving home refrigerators (EUR 2 million).
– New grants and an increase in existing subsidies to promote renewable energy in buildings (EUR 44.8 million for 2008-12).

3. Sustainable Development in Practice: Market-Based Integration

To date, Luxembourg has made little use of the *tax system* to achieve environmental objectives. Taxation is generally rather low, and is used to generate revenues and to influence certain relative prices in order to produce economic benefits.

As a transit country that receives more than 125 000 cross-border workers every year, Luxembourg imposes low taxes on road fuels, and this encourages "fuel tourism". The revenues from these taxes (as a percentage of GDP and as a share of total tax revenues) are among the highest in the European Union (EC, 2008). The *revenues from environmentally related tax* grew by 28% over the period 2000-08 (Table 5.2). The "green tax reform" recommended in the previous OECD report (OECD, 2000) has not been implemented but some progress has been made.

Table 5.2 **Revenues from "environmentally related taxes"**, 1995-2008

(% of GDP)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Energy[a]	2.8	2.8	2.8	2.8	2.7	2.7	2.7	2.6	2.7	2.9	2.8	2.5	2.4	2.5
Transport[b]	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
Total	3.0	2.9	3.0	2.9	2.8	2.8	2.8	2.8	2.8	3.0	3.0	2.6	2.6	2.7

a) Road fuels primarily.
b) Vehicle taxes.
Source: OECD/EEA Database on Economic Instruments for Environment, 2009.

3.1 Energy taxes

The government collects taxes on energy and fuels (Table 5.3). There is no tax on coal and coke. Pure biofuels, such as ethanol and biodiesel, whose blending obligation is 2%, are exempt from taxation. Most energy products are subject to VAT

Table 5.3 **Energy taxes and excise duties**, 2008

(EUR)

	Total	UEBL[a]	Independent[b]		VAT (%)
Petrol (1 000 l)					
Leaded	516.66	245.41	113.08	Excise	*15*
			138.17	Social contrib.	
			20.00	Climate contrib.	
Unleaded > 10 mg/kg sulphur	464.58	245.41	61.00	Excise	*15*
			138.17	Social contrib.	
			20.00	Climate contrib.	
Unleaded ≤ 10 mg/kg sulphur	462.10	245.41	58.51	Other	*15*
			138.17	Social contrib.	
			20.00	Climate contrib.	
Kerosene (1 000 l)					
Fuel	302.00	295.00	7.01		*15*
Industrial/commercial use	21.00	18.60	2.41		*15*
Heating	10.00	0	10.00		*12*
Diesel (1 000 l) *used as a fuel*					
Containing > 10 mg/kg sulphur	305.35	198.31	50.84	Excise	*15*
			31.20	Social contrib.	
			25.00	Climate contrib.	
Containing ≤ 10 mg/kg sulphur	302.00	197.45	47.48	Excise	*15*
			31.20	Social contrib.	
			25.00	Climate contrib.	
Industrial/commercial use	21.00	18.60	2.41		*15*
Heating	10.00	0	10.00		*12*
Agriculture, horticulture and other uses	0	0	0		*15*
Biofuels *pure*	0	0	0		
Used as fuel (1 000 l):					
Petrol containing < 50 mg/kg of sulphur and vol. biofuels ≥ 2.93%	45.61	0	45.61		
Diesel containing < 50 mg/kg of sulphur and vol. biofuels ≥ 2.71%	42.34		42.34		
Heavy fuel oil (1 000 kg)	15.00	13.00	2.00		*15*
LPG/methane (1 000 kg)					
Fuel	101.64	0	101.64		*6*
Industrial/commercial use	37.18	37.18	0		*6*
Heating	10.00	0	10.00		*6*
Coal and coke	0	0	0		*12*

Natural gas				
Fuel	0	0	0	6
Combustible/MWh *cons/yr ≤ 550 MWh*	1.08	0	1.08	6
cons/yr > 550 MWh	0.54	0	0.54	6
cons/yr > 4 100 MWh	0.05	0	0.05	6
Cogeneration	0	0	0	6
Electricity				
Consumption/year in MWh ≤ 25 MWh	1.00	0	1.00	6
> 25 MWh	0.50	0	0.50	6
Metallurgical/mineralogical processes	0.10	0	0.10	6

a) Set by the Belgium-Luxembourg Economic Union.
b) Set by Luxembourg.
Source: Ministry of Finance.

at the 15% rate, but kerosene and heating oil are taxed at a reduced rate of 12%. The VAT rate on electricity and natural gas is 6%. *Energy taxation levels* are among the lowest in OECD Europe for all product and consumer categories (IEA, 2009).

Since January 2007, excise taxes on *road fuels* have been gradually raised to finance measures to offset greenhouse gas emissions. A "*climate contribution*" was instituted in 2007, amounting to EUR 20/1 000 litres for petrol and EUR 12.5/1 000 litres for diesel. The latter was increased to EUR 25 in 2008. This tax contributed EUR 36.4 million to the 2007 budget, and EUR 63 million to the 2008 budget (or 0.55% of budgetary revenues). The amount expected for 2009 is EUR 58 million. The revenues from the climate contribution are paid in to the Kyoto Mechanisms Financing Fund created in 2004 to help finance the Kyoto flexibility mechanisms and domestic measures to reduce greenhouse gas emissions.

3.2 Transport taxes

The average cylinder capacity and power of passenger cars in Luxembourg are higher than the EU average (Statec, 2008). The *annual road tax*, which was calculated on the basis of engine size, has been completely overhauled and is now calculated as a function of CO_2 emissions. The new system applies to vehicles registered after 1 January 2001. Older vehicles are still taxed in light of their engine

power. The amount of the tax depends on the quantity of CO_2 emitted as well as on the type of fuel used. The multiplier is 0.9 for diesel and 0.6 for petrol. The tax is increased by a multiplier, which is set at unity if emissions are 130 g per km and decreases or rises by 0.1 for every 10 g consumed below or above 130 g per km. The lower limit is 0.5, or the equivalent of less than 90 g per km. A discount is allowed for diesel-powered vehicles equipped with a filter.[4] The tax contributed EUR 61.5 million to the 2007 budget, and EUR 74 million to the 2008 budget (or 0.64 of budgetary revenues). The anticipated amount for 2009 is EUR 70 million. Prior to the reform, the annual road tax raised EUR 32 million. Since 2007, 40% of the revenues of this tax have been allocated to the Kyoto Mechanisms Financing Fund.

Concerning *financial assistance for less-polluting vehicles*, the government has offered a special grant of EUR 750 since 2007 to private purchasers of vehicles emitting less than 120 g of CO_2 per km (equivalent to 5 litres of petrol for 100 km or 4.5 litres of diesel for 100 km). For hybrid vehicles or those that run on natural gas the limit is 160 g of CO_2 per km. This grant is now available to corporate buyers as well. These provisions have also included a scrapping bonus since January 2009: set at EUR 1 500 or EUR 2 500 (including the EUR 750) depending on the level of emissions of the vehicle purchased, it applies to vehicles more than 10 years old. The proportion of newly registered vehicles emitting less than 120 g of CO_2 per km rose from 1.7% in 2001 to 10.1% in 2006 and 17.9% in 2008. A grant of EUR 2 500 per vehicle was paid between 2007 and 2009 to businesses for low-emission heavy utility vehicles and buses (Euro V standard).

5.5 Economic instruments

The polluter pays principle

Waste water treatment investments are eligible for significant subsidies, but these are virtually non-existent for drinking water. Water rates are set by the communes and they vary between EUR 2.5 and 2.9 per m^3 (drinking water and waste water). Estimates suggest that the cost recovery rate is around 50% for waste water and 80% for drinking water. The *principle of cost recovery* for services (enshrined in the Water Act of 2008) will entail an average nationwide water cost of around EUR 4.5/m^3 (2.2 EUR/m^3 for drinking water and 2.3 EUR/m^3 for waste water). The price of water billed to the consumer would thus be multiplied by a factor of 2.5 to 9, depending on the commune in question (Chapter 2).

Although it has made some progress, Luxembourg is some way from applying the polluter pays principle fully in the area of *municipal waste*. The use of economic instruments for achieving the reduction-at-source and recovery objectives is limited essentially to specific flows (packaging waste, WEEE, scrapped vehicles). Municipal taxes for household and similar waste management fulfil their incentive role only partially. The harmonised and differentiated taxation model has not yet been extended nationwide because of municipal autonomy in this area. Only a third of residents are paying waste management charges proportionate to the actual volume of waste generated and the cost of facilities. Most communes continue to set their taxes without regard to real costs, and the level of taxes still varies between communes (Chapter 3).

Financial assistance

Since 2001, grand ducal decrees have instituted a system of *assistance to households* to encourage more rational use of energy and increased resort to renewable energy sources. At the beginning of 2008, EUR 133 million had been allocated under this system (primarily for photovoltaic installations and condensing boilers). Through the Environment Protection Fund, the government also provides *financial assistance to communes, intercommunal syndicates, and public establishments* for installing photovoltaic cells, chip-fired heating, heating networks based on cogeneration plants, and low-energy buildings.

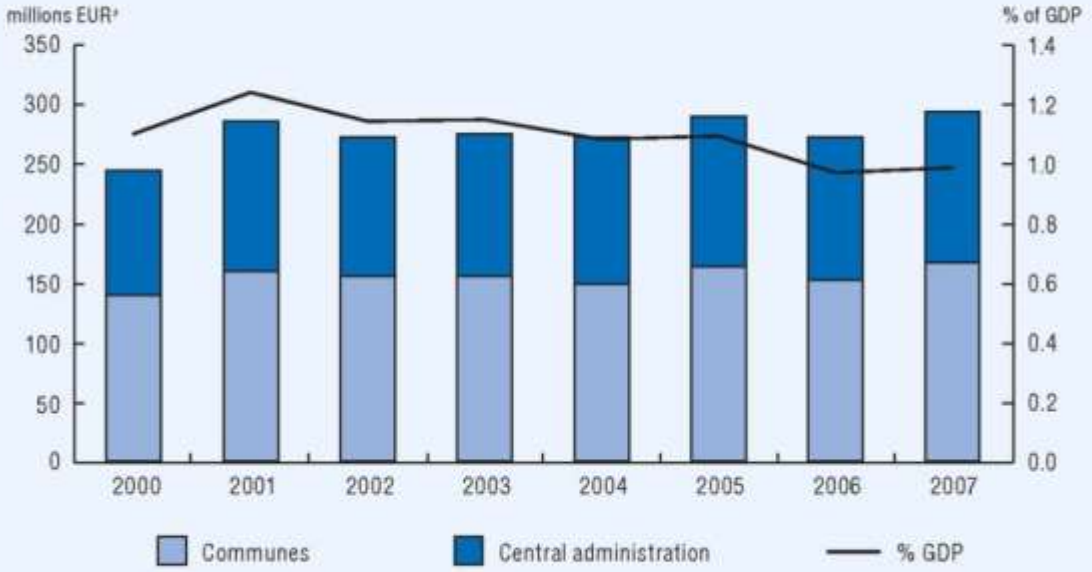
Assistance for businesses is handled largely by the Ministry for Economic Affairs and Foreign Trade on the bases of Community rules. For example, the Law of 22 February 2004 instituted a system of business subsidies for protecting the environment, making rational use of energy, and producing energy from renewable sources. The maximum assistance amounts to 30% for environmental protection investments and 40% for investments in rational energy use and electricity generation from renewable sources. Small- and medium-sized enterprises (SMEs, with fewer than 250 employees) are eligible for a 10% bonus. In 2007, investment subsidies under this law totalled EUR 13 million.

5.8 *Expenditure on environmental protection*

Public expenditure on environmental protection (including investment and current expenditure on pollution abatement and control and nature protection) are estimated at around EUR 360 million for 2007, or 1% of GDP (Figure 5.3). A significant portion consists of expenditure on waste water and household waste management, for which responsibility falls to the local authorities. There is no information available on private expenditure (by businesses or households).

Beyond the regular budget, some environmental outlays are financed through special *funds of the central government*. Some of these funds come under the

Figure 5.3 **Public expenditure on the environment,** 2000-07



a) At constant 2000 prices.
Source: Eurostat.

Ministry of the Environment (Environmental Protection Fund, Kyoto Mechanisms Fund, Game Fund and Special Hunting Fund). Others fall under the Ministry of the Interior and Territorial Planning, through the Water Management Administration (Water Management Fund, Special Fishing Fund, Special Transboundary Waters Fund).

In 2008, 68% of outlays from the *Environmental Protection Fund* went to waste prevention and management, 25% to combating air pollution, noise and climate change and promoting rational energy use and new and renewable energies, and 8% to the conservation of nature and natural resources. Total spending by the Fund amounted to EUR 13 million in 2008. The Fund's resources come exclusively from the regular budget, topped up in some years by supplementary appropriations. Spending by the *Water Management Fund* for water conservation and treatment amounted to EUR 65 million in 2008. In addition to budgetary allocations, this Fund will begin in 2010 to receive the proceeds of water abstraction and pollution taxes and charges (Water Conservation and Management Act, 2008). The Kyoto Fund (EUR 6 million in 2008) is financed primarily by an excise duty on road fuels (the "Kyoto cent") and by a portion of the annual road tax.

5. Employment and the Environment

The unemployment rate in Luxembourg, at 4.9% in 2008, is well below the rates of neighbouring countries and the OECD Europe average (7.9%). It has been creeping up steadily since 2000, however, and is likely to reach 7% in 2010. During the review period, domestic employment rose by 3% annually, thanks largely to the *employment of cross-border workers* whose numbers have been growing by more than 6% a year. The great majority of jobs are concentrated in services, especially financial services.

According to existing estimates, *pollution management* (covering air, waste water and waste) was directly responsible for about 1.3% of jobs in 2004 – up by more than 20% over 1999 – a performance comparable to that of neighbouring countries (Ernst and Young, 2006). "Eco-business" turnover was estimated at around 1.2% of GDP. Waste management accounted for 26% of that total, waste water treatment 28%, and water supply 20%. The Luxembourg Trades Chamber recently estimated the *market for renewable energy sources and energy efficiency* at some EUR 200 million a year (or 6% of the construction market), accounting for around 2 300 jobs (0.7% of domestic employment). Luxembourg's economic diversification effort could benefit from an analysis of the employment impact of its environmental policy.

1. Official Development Assistance (ODA)

1.1 Luxembourg sets the example

During its presidency of the European Union in the first half of 2005, Luxembourg helped *move forward the European and international agenda* for development co-operation: in June 2005, the European Council committed member states of the European Union and the Commission to make progressive increases in their ODA, individually and collectively, in order to achieve the target of 0.7% of GNI by 2015. Luxembourg had already set an example by reaching this objective in 2000.

In 2008, Luxembourg's ODA was among the *most generous in the DAC* on a per capita basis (EUR 575). Luxembourg's ODA rose steadily over the review period, increasing by 6.7% a year by volume, demonstrating the Grand Duchy's determination to achieve the UN target of 0.7% of GNI, and its own goal of 1%.[1] After a 16% jump in 2007, Luxembourg's development co-operation budget edged up by 2% in volume to EUR 278 million in 2008, or 0.92% of GNI (Figure 7.1).

The *Ministry of Foreign Affairs* managed 85% of the development co-operation budget in 2007. The remaining 15% represented contributions from the Ministry of Finance and Luxembourg's share in the European Union budget for development co-operation. Luxembourg provides its ODA exclusively in the form of grants, and the aid is completely untied. Of the total, 69% went to bilateral co-operation in 2008, and 31% to multilateral and non-governmental organisations. The share of aid channelled through NGOs in 2008 represented 12% of the total.

More than half of the country's bilateral aid goes to the least developed countries. The Grand Duchy's core partners (Mali, Cape Verde, Senegal, Viet Nam, Burkina Faso, Nicaragua, Laos, Niger, El Salvador and Namibia) have seen an increase in their shares, reflecting a strict policy of *geographic concentration of aid*. A large portion – 47% in 2007 – of bilateral assistance goes to *infrastructure and social services*: health (15%), education (11%), population policy (7%), governance and civil society (6%). The DAC average in this area has been 41%. Luxembourg's

multilateral aid goes primarily to United Nations agencies, the European Commission, and the multilateral development banks.

1.2 ODA and environment

The 1996 Development Co-operation Act called for environmental co-operation to promote sustainable economic and social development. The Luxembourg Co-operation Strategy (2006) stresses sustainable development in its social, economic and environmental aspects, and also emphasises the Millennium Development Goals.

Around 8% of the country's total bilateral aid goes to environmental protection, water and sanitation, a share comparable to that at the beginning of the decade. The "cross-cutting" themes of co-operation include gender equality, capacity building and good governance, and *environmental issues*. These are taken into account in the various projects financed by the Ministry of Foreign Affairs, but they are not highlighted in the strategic policy papers and are not well reported in ODA statistics. In Burkina Faso, for example, Luxembourg is financing a natural resource management project (2006 to 2011) for nearly EUR 6 million.

As a signatory to the Hyogo Framework for Action (adopted at the 2005 United Nations World Conference on Disaster Reduction), Luxembourg is committed to helping protect people from future disasters and to analyzing and reducing risk factors, especially in developing countries. Since 2006, Luxembourg has invested at least 5% of its humanitarian budget in *disaster prevention*. In 2008, the Minister for Co-operation and Humanitarian Action announced an increase in Luxembourg's support for efforts in coming years to adapt to climate change, and declared that each new project would be vetted in advance for its climate impact. That approach is consistent with the 2006 OECD Declaration and the principles approved in 2009 (OECD, 2009).

2. Trade and Environment

2.1 Multinational business guidelines

Luxembourg has signed the OECD Guidelines for Multinational Enterprises, which set out voluntary standards and principles for *responsible business conduct* relating in particular to the environment. It has a tripartite contact point responsible for overseeing the guidelines: this falls under the Ministry for Economic Affairs and involves the Ministry of Finance, the Ministry of Labour and Employment, three business federations and two trade union federations. In 2006, one Luxembourg firm in three (primarily in manufacturing) had conducted an environmental impact

assessment and had been awarded environmental certification (Ceps/Instead, 2008). Socially responsible investment (SRI) surged in 2007 and 2008, and in 2008 there were around 200 SRI funds in the country (Etika, 2009).

As a member of the OECD Working Party on Export Credits and Credit Guarantees (ECG), Luxembourg follows the revised Recommendation on Common Approaches on the Environment and Officially Supported *Export Credits*. The environmental guidelines were introduced in Luxembourg in 2002. The *Office du Ducroire* is the official export credit guarantee agency. It assesses the potential environmental impact of projects proposed for export credits with a repayment term of two years or more. Projects with an impact deemed considerable and irreversible (category A) require an environmental impact assessment if their amount exceeds EUR 10 million, or if they are located in a sensitive area. The list of environmentally sensitive projects is published at the agency's website. A transaction involving delivery of blast furnace equipment in Korea was accepted in 2008. A project to expand a steel mill in India is now under examination.

2.2 *Trade in hazardous substances*

Hazardous waste

Luxembourg has had a procedure in place for monitoring waste transfers since 1982. Consistent with European legislation,[2] it enforces the Basel Convention on the *Control of Transboundary Movements of Hazardous Waste* (to which it has been a party since 1994) and its 1995 amendment, as well as OECD Council Decision [C(2001)107/Final] concerning control of transboundary movements of waste destined for recovery operations. In 2007, a Luxembourg regulation established a prior notification system for waste transfers within the country, identical to the European system (Chapter 3).

In 2006, *hazardous waste* generated in Luxembourg came primarily from the construction industry (44%), steelmaking (22%), and the services sector (20%). Given the confines of its territory, Luxembourg co-operates with its neighbours in managing waste. Germany is the primary destination (81%) for *waste exports subject to notification* (329 000 tonnes in 2008), most of which is for recovery (59%). Contaminated earth from a rail-twinning project on the Luxembourg-Pétange line produced a recent jump in exports. The Environment Administration works with the Customs and Excise Administration to detect illegal waste transfers. Up to a dozen roadside inspections are conducted annually along the borders of Luxembourg, on motorways or in the interior (often in co-operation with Germany, France and the

Walloon region). In 2008, written warnings were issued to 24 firms found to be non-compliant during these inspections.

Chemicals

Luxembourg participates in the work of the European Chemicals Agency concerning the registration, evaluation, authorisation and restriction of chemicals (*REACH*). Regulation EC/1907/2006, in force since 2007, makes industry responsible for managing the risks that chemicals may pose for health and the environment. All manufacturers and importers are required to identify and manage the risks associated with the substances they produce and place on the market. Any firm that makes or imports more than one tonne per year must prove that it has respected these provisions by submitting a registration to the Agency.

The government has designated the Minister of the Environment as the co-ordinator and the Environment Administration as the competent national authority. A Chemicals Unit was created within the Environment Administration in 2008. The Environmental Technologies Resource Centre has set up a REACH Helpdesk and a website, and has advised companies on how to comply with the pre-registrations required by the regulation. As of December 2008, more than 65 000 enterprises in Europe had submitted some 2.75 million pre-registrations to the European Chemicals Agency, concerning around 150 000 substances. In Luxembourg, 121 legal entities were registered and had deposited 4 430 pre-registrations. Some major chemical firms based in Luxembourg are aware of the comparative advantage associated with these environmental advances in the context of world trade.

Persistent organic pollutants (POPs)

In 2000, the Grand Duchy ratified the 1998 *Aarhus Protocol* to the Convention on Long-Range Transboundary Air Pollution and in 2003, it ratified the 2001 *Stockholm Convention* on Persistent Organic Pollutants. The Stockholm Convention seeks to minimise and eliminate the production, use and release of 21 chemicals.[3] It distinguishes between "intentional" products (pesticides and PCBs) and "unintentional" products (dioxins, furans, PCBs and HCBs). There is no intentional production of POPs in Luxembourg. National and European regulations (EC/850/2004) prohibit the production, marketing and use of substances covered by the Convention.

With respect to *unintentional products*, now that the sintering plant has been shut down and updated smokestack scrubbing devices installed at the waste incinerator, the principal sources of emissions are the three electric-arc steel mills. These facilities are subject to regular inspection under the Classified Installations Act and to

supplemental measurements by the Environment Administration. Since 2001, the limit values for emissions of dioxins, furans and PAHs have been exceeded several times. A bio-monitoring network has been in place around major industrial sites since 1995. For dioxins, furans and PCBs: *i)* the sanitary action threshold applicable to washed vegetables for human consumption (beyond which consumption is not recommended) has not been exceeded since 2003, while *ii)* the sanitary prevention threshold has been exceeded each year at Schifflange and on several occasions at Esch/Alzette. The maximum content for plant products destined for animal feed is also regularly exceeded at Schifflange. Areas close to the three steel mills are exposed to lead emissions as well.

Luxembourg has prepared a *National Plan for Implementing the Stockholm Convention*, which was approved by Cabinet in July 2008. The measures outlined relate to unintentional releases and include: *i)* monitoring of trends and use of best available techniques, analysis of pollution levels as a prerequisite for any new industrial installation; *ii)* regular POPs emissions inspections at electric-arc steel mills, examination of impacts and diffuse emission reductions, more regular quality controls over scrap metal and secondary fuels; *iii)* preparation of regulations governing soil protection and emissions from wood combustion; *iv)* reassessment of the bio-monitoring network near the steel mills; *v)* evaluation and management of public health risks; and *vi)* establishment of a national co-ordinating committee with representatives of the national environment and health authorities, local authorities, industry and ecological associations.

In 2002, Luxembourg ratified the 1998 Rotterdam Convention making the *export of certain chemicals* (including eight POPs covered by the Stockholm Convention) subject to the prior informed consent of the importing country. Luxembourg carries out the Convention requirements, in accordance with national and European regulations (Regulations EC/304/2003 and EC/689/2008).

Protection of the ozone layer

Luxembourg has ratified all the amendments to the 1987 Montreal Protocol. European Regulation EC/2037/2000 imposes a schedule for eliminating all ozone-depleting substances (ODS) that is in fact stricter than the Protocol itself. The Environment Administration and *SuperDrecksKëscht®* have taken steps to *recover substances* still present in Luxembourg and *dispose of them in an environmentally responsible manner*. CFCs in the insulating foam of discarded refrigerators have been recovered since 1991 (17 000 fridges were collected in 2008 *versus* 7 000 in 1991). Fire protection systems and fire extinguishers containing halons were to be decommissioned before the end of 2003. Inspections are conducted since then to monitor strict enforcement of the regulation. Sizeable quantities in old systems

(containing tonnes of halons) were still held in stock in 2007. The Grand Ducal Regulation of 18 April 2004 concerning CFC, HCFC and HFC emissions implements the European regulation on control of leakage from refrigeration and air-conditioning equipment. When it comes to *monitoring illegal trade in ODS*, the Environment Administration conducts joint inspections with the Customs and Excise Administration at Luxembourg Airport. No suspect substances have been detected.

2.3 *Trade in endangered species*

Luxembourg is a party to the *Washington Convention* on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The fines imposed for breaches of this Convention would be more effective if they were reinforced and increased. More generally, Luxembourg has a positive record in meeting its international commitments (often of longstanding) for the conservation of nature and biodiversity (Chapter 4).

Table 7.2 **Actual and projected revenues and expenditure of the Kyoto Mechanisms Fund**, 2008-12

(EUR 1 000)

	2008 Actual	2009 Budget	2010 Projected	2011 Forecast	2012 Forecast
I. Receipts, disbursements and cash position					
Holdings on 1 January	101 725	199 129	241 374	212 546	170 105
Budgetary allocations	10 500	11 000	11 000	11 000	11 000
Fuel tax ("climate contribution")	63 335	58 375	58 000	58 000	58 000
Vehicle tax	29 491	28 000	27 200	26 400	26 000
Grants	5	–	–	–	–
Total outlays	5 927	55 130	125 028	137 841	140 026
Holdings on 31 December	199 129	241 374	212 546	170 105	125 079
II. Spending programme					
Emission rights purchases[a]	–	2 000	25 000	25 000	25 000
CDM[b] projects	2 011	24 885	46 278	58 041	56 566
JI[c] Projects	–	–	15 000	20 000	20 000
Multilateral funds	2 044	7 821	8 300	8 100	6 860
National measures	1 521	18 545	28 750	25 000	30 000
Miscellaneous	351	1 879	1 700	1 700	1 600
Total outlays	5 927	55 130	125 028	137 841	140 026

a) 50% international, 50% European.
b) CDM = Clean Development Mechanism.
c) JI = Joint Implementation.
Source: Draft 2010 budget.