4. The WFD Economic Analysis

The Water Framework Directive (WFD) requires EU countries to take account of the principle of *cost recovery* of the costs of all urban and agricultural water services in the pricing of water services, including financial, resource and environmental costs and subsidies. Consequently, Greece has carried out calculations of the degree of cost recovery in each basin district, on the basis of guidance issued by the European Commission; the methodology adopted is very similar to that of some other EU countries.

The calculations carried out by the CWA show *considerable variation in the degree of cost recovery among basins* in terms of both domestic water services and irrigation (Table 3.5).[21] The national average rate of cost recovery amounts to 55%; the rate for domestic water supply and wastewater treatment services is 59.5% and that for irrigation water supply amounts to 36.5%. For domestic water services, the calculations according to this methodology show that, compared to the financial costs (for capital, operation and maintenance), the resource and environmental costs are almost negligible on a national scale. For irrigation, on the other hand, resource and environmental cost account for 19.6% and 6.6%, respectively. Financial costs represent 16% of total costs, and agricultural subsidies, at 59%, account for the largest part.

Some MBs have faced *financial difficulties* and a shortage of adequately trained staff. The management plans of a number of protected areas are still under preparation. The management of protected areas and the implementation of the Natura 2000 network have been generally financed on a project-basis. MBs have rarely adopted self-financing instruments (*e.g.* entrance fees and merchandising); they have mainly relied on EU funds, also to cover their operational costs (which are excluded from the State budget). The Operational Programme for Environment and Sustainable Development 2007-13 and the Regional Operational Programmes allocate EUR 225 million (EU funds and national co-financing) to support the existing MBs, as well as the ones that will be established. Expenditure for about EUR 50 million were financed through the Environment Programme 2000-06; since 2000, the EU financial instrument LIFE has co-financed 19 projects totalling EUR 28 million.[8] Limited national funding (EUR 7.5 million in 2000-06) was granted through the YPEHODE Special Fund for the Implementation of City Master Plans and Town Plans (ETERPS or "Green Fund") (Chapter 5). The available resources appear inadequate when compared to the Government's estimated financial requirement of EUR 238 million per year (EC, 2004a).

Greece has *no stand-alone sustainable agriculture strategy*; the integration of nature conservation objectives follows the rules and instruments set under the EU Common Agricultural Policy. Under the "cross-compliance" mechanism, farmers benefitting from direct payments are required to keep their lands in Good Agricultural and Environmental Condition (GAEC) and to meet the environmental Statutory Management Requirements (SMRs) stemming from the EU legislation. GEAC and SMRs are adapted to national and local specificities, as detailed in the National Rural Development Programme (NRDP) 2007-13; Greece has defined few and rather general SMRs pursuant to the Birds and Habitats Directives, reflecting a weak level of protection (Farmer *et al.*, 2007). Soil management is a priority of Greek agricultural policy, as reflected in the Code of Good Farming Practice defined in the NRDP 2007-13.[11]

In the 2000-06 period, the NRDP allocated about 6.5% of overall public funds (EUR 400 million, 75% of which funded by the EU) to *Agri-Environmental Measures* (AEM).[12] These measures are contract-based compensation payments for the voluntary application of environment-friendly methods (beyond those set out in the Code of Good Farming Practice) for a minimum of five years. More than half of the funding of agri-environmental measures was allocated to promote organic farming and 40% to the reduction of water pollution of agricultural origin, including in the wetlands (*e.g.* the lakes Pamvotis, Doirani, Volvi and Koronia) (Chapter 3). The remaining 10% was almost completely earmarked for biodiversity conservation, including conservation of native crop varieties and livestock breeds,[13] farmland habitats important for wildlife (*e.g.* hedgerows) and Natura 2000 areas (OECD, 2008). For the period 2007-13, more than one third of NRDP 2007-13 public funds (EUR 1.7 billion, including EU support from 50% to 85% depending on the region) is earmarked for improving the environment and the countryside (second thematic axis), with the following objectives: *i)* conservation of biodiversity and soil quality; *ii)* development of agricultural and forestry sustainable practices; *iii)* protection of traditional rural landscapes; *iv)* rational management of water.[14] Greece is *lagging behind other EU countries in implementing AEMs*. Despite the growing number of contracts, these cover only 8.7% of the utilised agricultural areas, compared with an EU average of 23%. The main characteristics of Greek agriculture (the small size of holdings, land parcelling, vulnerable marketing structures, low skill and education

levels and an ageing population) slow down the implementation of innovative programmes, such as those related to nature and landscape conservation. Many farmers remain largely uninformed about the environmental impacts of their agricultural practices and valuable natural features of their farmlands. On the contrary, partly owing to the 2000-06 NRDP financial support, *organically cultivated crop areas* increased markedly (at a 7.3% annual average rate between 2003 and 2006), reaching 7.6% of utilised agricultural area (about 300 000 ha), the third highest share in OECD-Europe (EC, 2008b). The monitoring and evaluation of agricultural support need to be strengthened, to understand better the effectiveness of AEMs and the agriculture impacts on biodiversity.

1.3 Sustainable development in practice: institutional integration

Investment programming: environmental concerns in regional and rural development programmes

Greece has been a major beneficiary of *EU funding* (Box 5.1). In the *programming period 2000-06*, net EU transfers represented annually 2.4% of GDP on average (Table 5.2); transfers from Structural and Cohesion Funds amounted to about 48% of total public capital expenditure in Greece (EC, 2007).[3] Nevertheless EU transfers have led the public administration to focus on investment programming, and the Greek economy to benefit from large investments in public infrastructure. This applies particularly to environmental investments, for which Greece has benefited from Cohesion and Structural Funds, rural development aid, and the LIFE programme. Environmental objectives have been largely integrated into development programmes promoting economic and social cohesion. Indeed, EU funds represent the main financial source for public investment expenditure in environmental sectors in all Greek regions (GHK, 2006).

In 2000-06, EU funds of about EUR 2.7 billion (EUR 1.6 billion from Cohesion Fund and EUR 1.1 billion from Structural Funds) were allocated to *environmental infrastructure and nature protection* (EUR 3.6 billion including national co-financing).[4] This financial allocation corresponded to about 10% of the total EU support available for Greece and averaged 0.23% of GDP (or 0.3% of GDP if national co-financing is included) (Table 5.3). The water sector received over 65% of these funds, followed by waste management (25%); nature conservation received a minor share (6%). When considering an extended definition of environment-related expenditure,[5] the overall planned budget for *environment-related investments* increases to EUR 9.9 billion (including 30% co-financing from Greece), representing 25% of the overall planned budget for all types of investments supported by the EU and an annual average of 0.8% of GDP.

Table 5.2 **EU transfers**

	Agricultural aid[a]	Structural and Cohesion Funds	Other expenditure[b]	Gross EU transfers (A + B + C)			Contribution to EU budget	Net EU transfers (A + B + C – D)		
				Total	Per capita	Per GDP		Total	Per capita	Per GDP
	(A)	(B)	(C)				(D)			
	(EUR million)	(EUR million)	(EUR million)	(EUR million)	(EUR)	(%)	(EUR million)	(EUR million)	(EUR)	(%)
	2004									
Spain	6 345	9 627	384	16 357	383	*1.9*	7 429	8 928	209	*1.1*
Greece	2 780	2 843	185	5 808	525	*3.1*	1 546	4 262	385	*2.3*
Portugal	828	3 472	115	4 414	420	*3.1*	1 211	3 204	305	*2.2*
Ireland	1 846	839	130	2 815	696	*1.9*	1 122	1 693	418	*1.1*
	2007									
Spain	6 973	5 430	393	12 796	285	*1.2*	8 548	4 248	95	*0.4*
Greece	3 644	4 591	194	8 429	755	*3.7*	2 790	5 639	505	*2.5*
Portugal	1 300	2 456	149	3 904	368	*2.4*	1 323	2 581	243	*1.6*
Ireland	1 763	264	140	2 167	499	*1.2*	1 368	798	184	*0.4*

a) 2007: "Preservation and management of natural resources" in the 2007-13 financial framework.
b) 2004: internal policies, administration; 2007: competitiveness for growth and employment, citizenship, freedom, security and justice, administration.
Source: European Commission.

Table 5.3 **EU funds for regional and rural development in Greece,**[a] 2000-06 and 2007-13

Intervention categories[d]	2000-06[b]			2007-13[c]		
	Planned EU contribution	Annual average	Share	Planned EU contribution	Annual average	Share
	(EUR million)	(EUR million)	(%)	(EUR million)	(EUR million)	(%)
Environmental protection and risk prevention[e], including:	2 752	393.2	*10.0*	2 663	380.4	*11.0*
Air quality	12	1.6		24	3.4	
Household and industrial waste	683	97.5		432	61.7	
Drinking water[e]	997	142.5		456	65.1	
Wastewater treatment	820	117.2		942	134.6	
Rehabilitation of contaminated land	55	7.8		26	3.8	
Nature protection	160	22.8		180	25.7	
Risk prevention (natural and technological risks)				479	68.4	
Agriculture, forestry and rural development, including:	3 868	552.6	*14.1*	3 707	529.6	*15.4*
Agricultural water resources management	436	62.3		1 297	185.2	
Agri-environmental measures and others	449	64.1				
Fisheries	312	44.6	*1.1*	208	29.7	*0.9*
Energy infrastructures, including:	182	26.0	*0.7*	625	89.3	*2.6*
Renewable sources of energy	14	2.0		293	41.8	
Energy efficiency, cogeneration, management	43	6.1		71	10.2	
Transport infrastructure, including:	8 317	1 188.2	*30.3*	6 058	865.4	*25.1*
Railways	2 136	305.1		811	115.8	
Urban transport	608	86.9		921	131.6	
Telecommunications infrastructure and information society	1 437	205.2	*5.2*	1 608	229.7	*6.7*
Urban and rural regeneration	466	66.5	*1.7*	479	68.4	*2.0*
Cultural heritage	789	112.7	*2.9*	483	69.1	*2.0*
Tourism, including:	601	85.9	*2.2*	172	24.6	*0.7*
Natural assets and heritage				53	7.6	
Research and development, innovation and entrepreneurship, including:	1 938	276.9	*7.1*	1 872	267.4	*7.8*
Environment-friendly technologies and products	287	41.0		41	5.9	

Intervention categories[d]	2000-06[b]			2007-13[c]		
	Planned EU contribution	Annual average	Share	Planned EU contribution	Annual average	Share
	(EUR million)	(EUR million)	(%)	(EUR million)	(EUR million)	(%)
Human resources, social inclusion, labour market policy	4 690	670.0	*17.1*	4 236	605.2	*17.6*
Social infrastructure	1 282	183.1	*4.7*	1 405	200.7	*5.8*
Technical assistance, institutional capacity building and other	819	117.0	*3.0*	610	87.2	*2.5*
Total	27 454	3 922.1	*100.0*	24 125	3 446.5	*100.0*

a) Current prices (based on EU indexing rules for Structural Funds); excluding national contribution.
b) Community Support Framework (EUR 23 billion from European Regional Development Fund (ERDF), European Social Fund (ESF), European Agricultural Guidance and Guarantee Fund (EAGGF), Financial Instrument for Fisheries Guidance); Rural Development Plans (EUR 1.2 billion from EAGGF), excluding agricultural direct aid; Cohesion Fund (CF) for infrastructure projects on transport and environment (EUR 3.3 billion); LIFE-programme for environment and nature projects (EUR 37.4 million).
c) National Strategic Reference Framework (EUR 20.4 billion from ERDF, ESF, and CF); National Rural Development Plan (EUR 3.7 billion from the European Agriculture Rural Development Fund); National Fishery Programme (EUR 208 million from the European Fishery Fund).
d) Based on Structural Funds classification.
e) It differs from the official Classification of Environmental Protection Activities (CEPA).
f) Including some mixed water supply and wastewater treatment projects.
Source: OECD, Environment Directorate's calculations based on European Commission data.

In 2000-06, nearly two-thirds of the Structural Funds earmarked for environmental infrastructure and nature protection (EUR 1.1 billion of EU contribution) were allocated at regional level, through the 13 Regional Operational Programmes. One third was allocated to the *National Operational Programme Environment*, managed by YPEHODE, to implement environmental projects of national or interregional importance (Table 5.4). In the same period, through the *LIFE programme*, EU spent about EUR 37.5 million to finance 50 projects in Greece (total project cost of about EUR 71 million, including Greek co-financing), nearly half of which for nature and biodiversity conservation projects.

Implementation of environmental projects receiving EU assistance has been relatively slow, especially in the water sector, as shown by a *low absorption capacity rate*: by end 2005, less than 50% of Structural Funds for 2000-06 had been spent or

Table 5.4 **National Operational Environment Programme,**[a] 2000-06

(EUR million)

	Planned total budget	Actual expenditure[b]	(%) spent[c]
	522.6	353.6	*68*
Priority 1: Aquatic environment	17.0	11.2	*66*
1.1 Water quality monitoring	7.8	3.6	*47*
1.2 Actions and interventions on water provision and wastewater	9.1	7.5	*83*
Priority 2: Solid waste	18.4	7.0	*38*
2.1 Non hazardous solid waste management	10.9	5.3	*49*
2.2 Hazardous solid waste management	7.4	1.6	*22*
Priority 3: Civil protection, protection of landscapes and marine environment	16.5	16.2	*99*
3.1 Civil protection	5.6	5.8	*104*
3.2 Landscape protection and restoration	6.8	6.5	*96*
3.3 Abatement of marine pollution	4.0	3.8	*96*
Priority 4: Atmospheric environment	15.3	11.0	*72*
4.1 Reduction of air pollution	12.5	8.7	*70*
4.2 Reduction of noise pollution	2.7	2.2	*83*
Priority 5: Environmental institutions and public awareness	14.8	6.4	*44*
5.1 Environmental Institutions	8.3	5.4	*65*
5.2 Environmental Public awareness	6.4	1.0	*16*
Priority 6: Infrastructure on water resources management, soil protection and implementation of european legislation – protection of natural disasters	190.1	107.2	*56*
6.1 Protection and improvement of soil and water resources	24.0	9.6	*40*
6.2 Infrastructure on water resources management, implementation of European legislation – natural disasters	166.1	97.6	*59*
Priority 7: Physical and town planning – restoration of sites	75.2	60.9	*81*
7.1 Physical and town planning	15.1	10.3	*68*
7.2 Innovative and strategic restorations on urban environment	60.1	50.6	*84*
Priority 8: Biotopes – ecotopes	165.0	130.0	*79*
8.1 Protection and management of biotopes/ecotopes, species protection, protected areas	49.9	26.1	*52*
8.2 Karla lake re-creation	115.1	103.9	*90*
Priority 9: Environmental actions with the participation of the private sector	0	0	*0*
Priority 10: Technical assistance	10.0	3.1	*31*

a) Part of structural funds for the environment *per se*, managed directly by YPEHODE. Another part of structural funds are managed by regional administration.
b) At end 2007, the 2000-06 planned budget can be spent until end 2008.
c) Actual expenditure as % of planned total budget.
Source: YPEHODE.

legally committed. Funds are expected to be fully spent by the first trimester of 2009.[6] Nonetheless, environmental investments have contributed significantly to improving the quality of life and in developing infrastructure in Greek regions.

For the *programming period 2007-13*, estimates indicate investment needs for the water and waste sectors of EUR 1.8 billion and EUR 1 billion, respectively (GHK, 2006). The planned allocations are broadly in line with these financial requirements (Table 5.3). Compared to the previous programming period, the 2007-13 share of total EU transfers for environmental infrastructure and nature protection slightly increases (11%). The water sector (especially wastewater treatment) remains the highest investment priority, and absorbs 53% of the EU contribution to environmental infrastructure expenditure (EUR 2.6 billion). Compared to the previous period, more attention is given to prevention of natural and industrial risks, whereas a lower share of funds is earmarked for waste management (16%). The *overall planned budget for environment-related investments* (in broad terms including those in the agriculture, energy and transport sectors) exceeds EUR 6 billion, representing 26% of the total available EU contribution.

YPEHODE is managing the implementation of the *National Operational Programme "Environment and Sustainable Development"*, with a total public budget of EUR 2.25 billion (of which 80% from Structural and Cohesion Funds) for the period 2007-13. The programme focuses on: integrated solid waste management, rational use of water resources, modern wastewater facilities, protection of natural resources and the efficient tackling of environmental risks (*e.g.* desertification, droughts, fires, floods, and marine pollution). It will contribute to economic growth through a more efficient use of resources, such as re-use, recycling and recovery of waste. The programme will also support interventions which, in addition to investments in energy and transport, will contribute to combating climate change.

Strategic Environmental Assessment (SEA)

Greece has numerous national programmes (including investment programmes), plans and strategies (Table 5.5). In line with EU Directive 2001/42/EC, the government has introduced in 2006 the necessary provisions for the environmental assessment of the effects of *certain sectoral plans and programmes*, on a national, regional and local level. Sectors concerned are: agriculture, forestry, fisheries, energy, industry, transport, tourism, water and waste management, urban or physical planning or land use.

The SEA procedures for *national and regional plans and programmes* are managed and coordinated at the central level: all the relevant sectoral ministerial services are involved in these procedures. YPEHODE retains general supervision

responsibilities. The SEA procedures for *prefectural and local plans, policies and programmes* are managed and coordinated by regional environmental services. Public participation is part of the process. Although SEA is recent, there are currently an increasing number of applications for SEA.

Even before SEA became mandatory, it was carried out in some form for the Athens Olympic Games Master Plan, and for Specific Framework Plans (*e.g.* coastal zones and islands; mountain areas). It is now required specifically for Areas for Integrated Tourism Development and for 2007-13 EU funded investment programmes. The SEA procedure requires a qualitative and quantitative assessment of the environmental impacts of plans and programmes, including cumulative impacts, as well as the examination of the alternatives. Clarity and information are needed to better understand and *effectively implement* this recent SEA process.

Table 5.5 **Selected national programmes, plans and strategies**

Energy 2001 – National Action Plan for Energy Conservation in the Built Environment	YPEHODE
National Climate Change Programme (1995, 2002, 2007)	YPEHODE
Establishment of Emissions Trading Scheme in Greece (2004)	YPEHODE
National Allocation Plan for Emissions Trading (2004-06, 2008)	YPEHODE
National Plan for Spatial Planning and Sustainable Development 2008	YPEHODE
National Action Plan for Cities and Housing (1996-2000)	YPEHODE
National Operational Programme Environment 2000-06	YPEHODE
Regional Operational Programme 1994-99 and 2000-06	Ministry of Interior
National Plan for Solid Waste Management (2000-06)	YPEHODE
National Operational Programme for Environment and Sustainable Development (2007-13)	YPEHODE
National Biodiversity Conservation Strategy and Action Plan[a]	YPEHODE
National Action Plan to Combat Desertification 2001	Ministry of Rural Development and Food
National Strategy for Sustainable Development 2002	YPEHODE
National Energy Efficiency Action Plan 2007	YPEHODE
National Hazardous Waste Management Plan 2007	YPEHODE
National Rural Development Plan 2000-06	Ministry of Rural Development and Food
National Rural Development Programme 2007-13	Ministry of Rural Development and Food
National Operational Programme "Competitiveness" 2000-06	Ministry of Development

a) Under preparation.
Source: OECD, Environment Directorate.

1.4 Sustainable development in practice: market-based integration

The use of *economic instruments* (*e.g.* taxes, charges, trading mechanisms), both for direct environment purpose and for the integration of environmental concerns into sectoral policies, is often perceived as not realistic in Greece, because of national economic and social circumstances. Nevertheless, a number of economic instruments have been used over the years in Greece (OECD, 2000), and the polluter-pays-principle (PPP) and the potential of economic instruments are well recognised in official documents. Greece has adopted related OECD Council recommendations and EU orientations. The 2002 NSSD states that "one of the main reasons for environmental degradation is *unsuccessful pricing*, which, in many cases, sends wrong signals to the market and does not incorporate the environmental cost". The NSSD aims at "getting the prices right" and at achieving a "long-term change in consumption and production patterns, by introducing adequate economic instruments". The Operational Programme "Competitiveness" 2000-06 of the Ministry of Development (part of the 3rd Community Support Framework) calls for "the identification of environmental costs and their internalisation in products market prices", and "the pilot introduction of new economic instruments (*e.g.* green taxation, voluntary agreements, systems for pollution cost accounting and emission trading)". Overall, there is a need to better align measures in use with such statements.

Environment-related taxes

In 2006, *environment-related taxes* amounted to 1.9% of GDP, a figure among the lowest in OECD-Europe, and which recently has decreased significantly (3.6% in 1995); the share of total tax revenue has also decreased (to 6.1% from 12.7%, Table 5.6). This decrease was driven by shrinking revenues from *energy taxation*, while *transport taxation* has been slightly increasing. Taxes on pollution are used to a limited extent.

Table 5.6 **Environment-related taxes**, 1995-2006

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Total (EUR million)	3 202	3 580	3 796	3 766	3 506	3 694	3 576	3 532	3 715	3 870	3 917	4 065
Share of GDP (%)	*4.7*	*5.0*	*4.7*	*3.6*	*3.1*	*3.0*	*2.4*	*2.3*	*2.2*	*2.1*	*2.0*	*1.9*
Share of tax revenue (%)	*12.7*	*12.8*	*11.7*	*10.0*	*8.4*	*8.0*	*7.5*	*6.7*	*6.6*	*6.7*	*6.3*	*6.1*

Source: OECD/EEA database on economic instruments for environment, 2009.

Energy taxes

The EC Directive on the *taxation of energy products and electricity* has been transposed. The National Customs Code uses *exemption* options provided in this directive: electricity and natural gas are exempt from excise tax until 2010 and 2014 respectively, and benefit from a lower VAT rate (9% instead of 19%); biodiesel tax exemptions have recently been reduced;[8] diesel used for space heating benefits from a tax reduction during the heating season (October to April).

Hard coal, lignite and coke were subject to an *excise duty* rate of EUR 0.3/ gigajoule from January 2007; these products are relieved from excise duty for: *i)* use for mineralogical processing; *ii)* generation of electric power; and *iii)* for chemical reduction, electrolytic and metallurgical processing: electricity from lignite, the major domestic energy source and one of the major sources of pollution, is therefore exempted. According to the 2006 renewables law, local authorities collect a 3% duty on renewable energy pre-tax revenues (Table 5.7); revenues are earmarked for local development works. Household *electricity prices* (in terms of purchasing power parities) are significantly lower (26%) than the OECD-Europe average, but close to the OECD average; industry prices (at current exchange rates) are also significantly lower than the OECD-Europe average (37%) (Figure 5.3).

Energy pricing and taxation are often used to contribute to *social objectives*, such as rural development and reduction of social exclusion. For example: a tax relief on heating fuels applies during the heating season.[9] The cost for the "public service obligation" in electricity delivered to users is about EUR 200 million per year (or EUR 4 per MWh of electricity delivered) (IEA, 2006). These practices may discourage energy efficiency efforts and contribute to distort the energy market. Other instruments could be considered for achieving social objectives, while the price signal can focus on economic and environmental objectives (OECD, 2006).

Diesel fuel tax concession to farmers was about EUR 11 million in 2006 (OECD, 2007). Greece is supporting the production and use of bioenergy: support of 40% for the capital costs for bio-diesel plants, exemption from excise duties for biodiesel production quotas in 2005 (51 million litres), 2006 (91 million litres) and 2007 (114 million litres). In line with European Union objectives, Greece has set a target of 5.75% of automotive fuels to be produced by biofuels by 2010.

Transport taxes

In 2007, *road fuel prices* were lower in Greece than in a number of other OECD-Europe countries. However, expressed in purchasing power parities, these prices were just below the OECD-Europe average. The share of taxes in total price has steadily decreased over the review period. VAT and excise duties together represent 49% of the gasoline price and 32% of the diesel price, the lowest rates in OECD Europe (Figure 5.4).

According to Law 2960/2001, motor vehicles for private use imported to Greece (*i.e.* to be registered and to circulate with Greek plates) are subject to a *registration tax*, to be paid on the wholesale price (net of deductions for second-hand cars) and the insurance and transportation costs. The tax rate depends on anti-pollution technology (according to EU Directive 98/69/EC) and increases with cylinder capacity. Tax rates range from 5% to 50% (for Euro 4 vehicles and later standards), from 14% to 142% (for Euro 3 vehicles) and from 24% to 334% (for vehicles under older directives). Motor vehicles of conventional technology are subject to rates from 37% to 346%. Hybrid cars complying

with provisions for anti-pollution technology, and electric cars are not subject to the registration tax. Motorcycles and heavy good vehicles are also subject to the registration tax depending on cylinder capacity. A 30% surcharge applies to heavy good vehicles without anti-pollution devices. The structure of the registration tax has been changed several times over the past decades to encourage environmentally sustainable consumption, leading to successful results in the renewal of the vehicle fleet.[10]

Owners of motor vehicles and motorcycles using public roads are subject to an *annual road tax*, paid in November and December for the following year. A vignette is posted on cars. Tax rates, tax bases and reliefs are determined by the Ministry of Finance. Motor vehicles are categorised into vehicles for private and for public use, and within each category into passenger cars, lorries, buses, trailers and other vehicles. The tax base is cylinder capacity for private cars (Table 5.8), gross weight for lorries and number of passenger seats for buses. The annual road tax for 2008 applicable to lorries for private use ranges from EUR 51 to 1 027 and for buses for private use from EUR 146 to 352; whereas in the category for public use the tax for lorries ranges from EUR 88 to 1 000, for buses from EUR 146 to 410, and for taxis is EUR 197. Starting from 2009, all rates were increased by 20%. Electric and hybrid vehicles are exempt from the road tax, as well as new motorcycles which are registered in replacement of those of old technology.

Revenues from the registration tax and the road tax are generating each year comparable and sizable amounts (close to EUR 1 billion each in 2007 and 2008) (Table 5.9). As from 2008, the revenues of the road tax are allocated to municipalities (90%) and prefectures (10%), whereas 40% was previously allocated to the State budget. A "*Green Fund*" has been established within YPEHODE, called ETERPS (Special Fund for the Implementation of City Master Plans and Town Plans). It benefits by EUR 0.01 per litre from the petroleum product tax.

Strengthening the link of transport taxes to environmental performance of vehicles should be considered, with a revenue neutral restructuring and a *more explicit environmental fiscal base*. As proposed by the European Commission,[11] CO_2 emissions would be a simple base, more efficient than the cubic capacity or power of the engine. The balance between the taxation of the vehicle (which is relatively high) and the taxation of the use of the vehicle (which is relatively low) should also be reconsidered.

2.4 Economic instruments

Water

Households and industries pay an increasing share of the costs of the treatment and distribution of water, and cost recovery is achieved in Greater Athens (Chapter 2

and Table 3.5). Concerning agriculture, which represents about 85% of water abstraction, highly subsidised *water prices and irrigation infrastructure investments* do not induce farmers to conserve water and do not value this scarce resource appropriately. Some regions (*e.g.* Crete) experience major water losses from irrigation systems and increasing competition for scarce water resources between farming and tourism. Despite the use of more efficient water application technologies (*e.g.* drip irrigation), irrigation water application rates per hectare have been rising. This might be explained not only by water losses from irrigation infrastructure, but also by technical inefficiency in the use of drip irrigation (Karagiannis *et al.*, 2003).

The 2000 OECD Environmental Performance Review of Greece recommend to "*raise tariffs for water services* to better cover their costs, with appropriate attention to income disparities"; this recommendation has been progressively implemented for households and industries, but not for agriculture (Table 3.1). Greece should take steps to progressively increase water prices to cover costs by 2010, as required by the EU Water Framework Directive. There is scope for moving away from a water policy based on public financing (including European transfers) to a policy based on the polluter-pays-principle and the user-pays-principle.

Implementing these principles requires recognition of the economic, social and environmental dimensions of water. *Social measures* are needed to address individual, territorial and sectoral disparities, and to ensure that low-income households have sufficient access to water. Such measures could include direct income benefits or cross-subsidies within the tariff structure to support the poorest citizens. Agri-environmental measures are needed that recognise the ecological services supplied by *water ecosystems* (OECD, 2006).

Air and climate

While several economic instruments apply to the energy and transport sectors, with significant effects on air quality, no specific economic instruments are devoted directly to air management (*e.g.* pollution charges, emissions trading with the exception of GHG emissions). Licensing regulations and financial support remain the main drivers for improving air emissions from stationary sources (*e.g.* thermal power plants, refineries, industrial plants). The Greek authorities should consider *introducing economic instruments*, as other countries have done, *e.g.* for SO_2 or NO_x emissions from power plants, or for lignite extraction and combustion.

Greece participates in the *EU emission trading scheme (ETS) for CO_2*, which has been operational since 2005. The National Allocation Plans 2005-07 and 2008-12 cover about 140 installations (including power plants); overall, about 165 operators have participated in the market. Despite the relatively low CO_2 allowance price, the

EU ETS has stimulated some Greek operators (*e.g.* the Public Power Corporation) to undertake investment programmes to reduce emissions (Chapters 2 and 8).

Nature and natural resources

Access fees to national parks and protected areas are not widely used in the country. They might be seen as a natural extension to access fees to historical and archaeological sites, a tradition widespread in Greece (*e.g.* Acropolis, Delos, Olympia). While the introduction of access fees may find some social opposition (locally and nationally), it may be justified by its environmental benefits, particularly when resources are earmarked for nature protection, green jobs and economic development.

At local level, a special duty regarding extraction of materials from *quarries* has been introduced in 1993 (Law 2115). It is levied by municipalities on quarry operators, and amounts to 5% of the value of the material produced in the quarries, weighted when loaded on lorries. Revenues are used to finance environmental measures or activities that serve social and environmental purposes (Karageorgou, 2003; 2008). A performance bond for quarry operators has also been established to guarantee the reclamation of the land at the end of the quarry exploitation. Such levy on the extraction of materials from quarries, possibly extended to riverbeds and mines, and accompanied by appropriate monitoring, should induce a wiser use of natural resources and encourage the recycling of construction materials.[13]

Tourism-related economic instruments

Due to the *concentration of tourism demand over time* (mainly summer) *and space* (mainly islands and coastal areas), population can increase two to ten times in such periods and places. The provision of basic environmental services (*e.g.* water supply, wastewater treatment, waste collection) and energy supply is a particular challenge.

Based on marginal cost pricing and related peak load pricing, higher prices for water, waste and energy services in *major touristic areas* (*e.g.* islands) during summer periods, would be environmentally and economically justifiable. In practice, the pricing mechanism could take the form of a multi-hour/multi-seasonal charging system, or of an access fees (*e.g.* to an island for non-residents, *ad valorem* tax for nights in tourism facilities). In areas of intense touristic activity and high natural value, the joint use of regulatory instruments (*e.g.* building eco-design, building permits) and economic instruments (*e.g.* construction licensing taxes varying with the distance from the island shores) may lead to both improved environmental protection and increased funding to reduce environmental damage from tourism.

Environmental subsidies

Already in the 1980s, 50% of the purchase price of solar heaters was tax deductible. This incentive had led Greece to rank among the top three countries in the use of solar heaters in Europe. While this measure was abolished in the late 1980s, during the review period, *tax rebates* for the installation of energy efficient equipment in buildings and factories have been provided. For example, since January 2005 20% of the cost for households to convert heating facilities from oil to natural gas or to install natural gas, solar and photovoltaic systems, is deducted from the taxpayer's total income (up to an amount of EUR 700). Based on cost-benefit analysis and internalisation of environmental damages, these incentive measures might be made more cost effective. Economic analysis should also be used to compare such actions on the energy mix with actions concerning energy efficiency gains.

To promote *renewable energy sources (RES)*, a wide range of instruments have been adopted (Table 2.4). Direct subsidies for RES plants, feed-in tariffs and tariff incentives have contributed to the acceleration of investments (Box 2.1). The feed-in tariff scheme was modified in 2006, introducing a differentiated tariff depending on energy source and location of the plant, to better support underexploited sources (*e.g.* photovoltaic and off-shore wind farms) and installation of RES plants in islands (Chapter 2). These support schemes may lead to over-subsidisation and cost-benefit analyses would help to evaluate overall impacts.

Substantial grants are given under the "development laws" for *environmental investment by private enterprises*, mostly ranging between 20 and 50% of the investment cost, peaking sometimes at 75%, according to the region of the country where the investment takes place. This applies for instance to filters, water and effluent treatment plants. The Ministry of Economy and Finance is responsible for these mechanisms as part of its duties concerning EU Structural and Cohesion Funds (Box 5.3).

2.5 Environmental expenditure

There is no recent overall survey on environmental expenditure in Greece. However, estimates can be derived from general government accounts, EC sources and business statistics. *Public pollution abatement and control (PAC) expenditure* (including waste, sewerage and wastewater treatment, air) reported in the general government accounts amounted to 0.6% of GDP in 2006 (Table 5.11). This expenditure increased by about 40% between 2000 and 2006, and at a rapid pace in the latest years with the implementation of EU co-financed projects. Municipalities, responsible for waste management, sewerage and wastewater treatment, carry out

about 80% of public environmental expenditure. *Public environmental expenditure* (including PAC, water supply and nature protection) amounted to about 0.8% of GDP in 2006.

EU funding, mainly through the Structural Funds and the Cohesion Fund, has been an important financial source of public environmental expenditure (Table 5.3). Over the programming period 2000-06, the total planned budget for *environmental expenditure*[14] exceeded EUR 3.4 billion (excluding national matching funds), representing 12.5% of the total EU funds available for the period (including the Structural Funds allocated to the Third Community Support Framework, the Cohesion Fund, and the funds allocated through the Rural Development Plan 2000-06). This averages to 0.28% of GDP annually. When considering an extended definition of environment-related expenditure (including renewable energy, energy efficiency, sustainable transport, environment-friendly technology, agri-environmental support), the EU contribution to *environment-related investments* is about EUR 6.7 billion, representing an annual average of 0.56% of GDP (EUR 9.9 billion and 0.8% of GDP if national matching funds are included). For the programming period 2007-13, over EUR 6 billion of EU funding has been assigned programmatically for environment-related actions (in broad terms) in the National Strategic Reference Framework and the National Rural Development Programme, representing 26% of the total available EU contribution (excluding national co-financing).

Overall, *total* (*i.e.* government and business) *PAC expenditure* is estimated to be about *0.7% of GDP*, and *total environmental expenditure less than 1% of GDP*. This is a limited effort compared to other OECD countries in a comparable development stage, despite considerable EU support. It is suggested that Greece increases significantly its environmental financial effort: *i)* looking beyond 2013 and possible decreases in EU support; and *ii)* moving to fuller implementation of the polluter-pays- and user-pays-principles, thereby decreasing public support from national and EU sources.

Table 5.11 **Public environmental expenditure,**[a] 2000-06

(EUR million)

	2000	2001	2002	2003	2004	2005	2006
Total public PAC expenditure	733	728	763	792	916	966	1 033
of which: Investment	226	232	249	258	332	347	381
Total public PAC expenditure (% of GDP)	*0.5*	*0.5*	*0.5*	*0.5*	*0.6*	*0.6*	*0.6*
Water supply[b]	..	330	256	236	268	309	325
Total public environmental expenditure (% of GDP)		*0.8*	*0.7*	*0.7*	*0.8*	*0.8*	*0.8*

a) At constant 2000 prices.
b) May include expenditure on wastewater.
Source: Eurostat; National Statistical Office.

3. Environmental Employment

During the review period, Greece has experienced high economic growth accompanied by a steady *decline of unemployment* and an increasing rate of female participation. Nonetheless, the Greek unemployment rate (8.3% in 2007) remains well above the OECD average (5.8%), and the female unemployment rate is twice that of the OECD (Box 6.1). Unemployment levels differ among regions, ranging from 5.3% in Kriti (Crete) to over 10% in Ipeiros (Epirus) and Dytiki Makedonia (Table 6.1).

The *net labour market effects* of Greek environmental policies have not been assessed systematically. Estimates from 2004 indicate that the pollution management sector accounts for about 0.6% of Greek workforce; this is among the lowest share in Europe and well below the 2.5-3.2% of top countries (*e.g.* Austria, Denmark and Poland). *Employment in Greek eco-industries* fell by nearly 18% in the period 1999-2004, paralleling the 8% decrease in total turnover (Ernst and Young, 2006). In 2004, the turnover of eco-industries was about 1.3% of GDP, one of the lowest in Europe. Solid waste management and recycling, wastewater treatment and water supply are by far the largest sectors (accounting together for 85% of total eco-industry turnover), and are mainly driven by the large investments needed to comply with the EU legislation. Greek businesses are gradually progressing in corporate environmental management and development of green products: during the review period, EMAS registered organisations increased from 1 in 1999 to 62 in 2008, and Ecolabel licenses increased from 9 in 2001 to 23 in 2008. Greece does not have a detailed *environmental employment strategy*, but various policy initiatives have been taken to stimulate employment in environment-related sectors (Box 6.2). The environmental dimension was integrated into some recent programmes related to the labour market, such as the Operational Programme "Human Resource Development" 2007-13 (partly funded by the European Social Fund). In 2006, the Employment Observatory Research – Informatics (PAEP) conducted a study on "Environment and Employment", forecasting a *growth in environment-related employment for forthcoming years*, mainly linked to the implementation of the EU environmental legislation and the use of EU funds. For example, the implementation of the Operational Programme "Environment" 2000-06 is estimated to create more than 4 600 direct jobs, mainly in government bodies at central level (*e.g.* YPEHODE, Central Water Agency, Environmental Inspectorate) and decentralised level (*e.g.* management bodies of protected areas), as well as in environmental public utilities. Eco-tourism and renewable energy sources are considered the most promising sectors. New employment opportunities are expected in the environmental research and consultancy sector (*e.g.* for environmental impact assessment of projects and plans).

1.3 Mechanisms of co-operation

Bilateral mechanisms

Greece's *country-to-country environmental co-operation* principally involves neighbouring states, and takes a variety of forms. "Bilateral Memoranda of Understanding (MOUs) on Environment and Sustainable Development" provide general frameworks for co-operation on a range of possible issues. The MOUs are elaborated by the YPEHODE and managed during ratification process by the Ministry of Foreign Affairs. For the most part they involve *ad hoc* meetings of experts, data and information exchange, training, and joint research and monitoring. Such umbrella agreements currently exist with Cyprus[2] (1996), Turkey (2001), Bulgaria (2005) and Albania (2005). Others have been signed, but not ratified, with Georgia and the Former Yugoslav Republic of Macedonia (FYROM). Under the MOUs, Greece has co-operated *inter alia* with Cyprus[3] on protection of soil, water and the marine environment; with Turkey on desertification and flood control on the Evros/Meric River; with Bulgaria on transboundary water monitoring; and with Albania on water pollution monitoring and establishment of a Permanent Commission on Transboundary Water Issues.

Specialised agreements, including "*bilateral protocols*", are concluded between Greek thematic ministries and their foreign counterparts to pursue joint activities on *specific thematic issues* (*e.g.* transboundary waters, energy, fisheries). They have a long history, stretching back to the 1960s when Greece and Turkey began to co-operate on

joint management of water flows on the Evros/Meric river. Later examples included a 1995 agreement with Bulgaria on water sharing and use on the Nestos and Ardas rivers; a 2005 agreement with Albania to establish a Joint Greek-Albanian Commission for transboundary water management issues; and a 2007 accord with Albania on energy co-operation (headed by the Ministry of Development on the Greek side). In addition, Greece and its neighbours have negotiated a number of bilateral protocols on "Economic and Technical Co-operation", managed by joint ministerial-level councils, which on occasion address issues of environmental management and sustainable development. Responsibility for these resides with the Ministry of Foreign Affairs, and secondarily with the Ministry of Economy and Finance.

Greece's expanding *Development Assistance Programme* provides another avenue for bilateral environmental co-operation as it now extends to over 80 countries. To date, however, environmental projects have been carried out in less than a quarter of them.

Regional mechanisms

Greece's environmental co-operation at the regional level involves participation in a broad array of conventions (Reference II.B) and programmes. This is dominated by Greece's membership in the European Union and the many environment-related policy and programme commitments this entails.

During the review period, Greece's domestic, regional and global environmental efforts have been *heavily influenced by EU environmental directives and regulations*, as well as regional and multilateral conventions and programmes. These efforts have also benefited from *EU financial support*. The European Commission has also been able to catalyse through the hosting of meetings and financial support for joint projects between Greece and non-EU members in key issue areas, such as Greece-Bulgaria-Turkey collaboration on Evros River water management. Similarly, the EU's "INTERREG III A" cross-border co-operation programme, financed on a 50-50 basis by the European Regional Development Fund, includes a component on the enhanced conservation of common or similar environmental and cultural resources. Under the 2000-06 phase of this long-running programme, Greek experts have been involved in a range of projects with counterparts in Italy, Bulgaria, Albania, the FYROM, Cyprus[4] and Turkey.

Greece has a relatively good record in *transposing EU legislation on the environment into domestic law*, especially as the result of a major effort to do so over the past three years. Over the entire 1999-2007 period, however, the conversion of and follow-up to EU directives was in some cases slow or considered incomplete by the European Commission (EC, 2006), resulting in referrals of Greece to the European Court of Justice for non-compliance (*e.g.* on illegal waste dump cleanup; providing and

implementing a legal regime for protected areas). Greece also proposed more stringent environmental criteria in major EU directive and regulations proposals, some of which were eventually incorporated in the final legislative texts.[5] The conversion of EU legislation into Greek law and implementation of the associated policy and programme commitments is an ongoing process and challenge (Chapter 5).

Concerning *OECD*, Greece is a long-standing member, and has accepted a broad spectrum of OECD Council Decisions and Recommendations on environmental issues. It became a full *member of the Organisation's Development Assistance Committee (DAC)* in 1999, and also holds membership in the International Energy Agency (IEA). Greece's participation in the OECD's environmental work programme has focused on chemicals and waste management activities, peer reviews and data and information management. Follow-up to OECD Council Decisions and Recommendations has been slow, but is progressing.

Concerning the *UN Economic Commission for Europe* (UNECE), with its ratification in 2005 of the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, Greece is now a *party to the five major environmental conventions* of the UNECE. The others are the Conventions on Environmental Impact Assessment in a Transboundary Context; on Transboundary Effects of Industrial Accidents; on Protection and Use of Transboundary Watercourses and International Lakes; and on Long-range Transboundary Air Pollution (LRTAP). Regarding the latter, Greece has *not yet ratified key protocols* which set out quantified targets for the reduction of sulfur emissions, heavy metals, volatile organic compounds (VOC) and persistent organic pollutants (POPs), but is on the verge of doing so. Greece has been contributing funding for the UNECE Cooperative Programme for Monitoring and Evaluation of Long-range Air Pollution in Europe (EMEP), but has been slow in providing the air pollution data required under the programme. Greece is leading the "Education for Sustainable Development" (ESD) Initiative within the UNECE.

Concerning the *Council of Europe*, Greece supports numerous activities in the areas of wetlands, forests and wildlife conservation that it views as directly or indirectly supportive of major Council of Europe environmental initiatives. The latter include the 1979 Bern Convention on Conservation of European Wildlife and Natural Habitats; the programme of Pan-European Nature Co-operation, intended as Europe's contribution to the global Convention on Biological Diversity; and an Ecological Networks Programme which includes the Emerald Network. Greece has signed and is close to ratifying the 1999 European Landscape Convention. Concerning the *NATO Committee on the Challenges of Modern Society* (CCMS), Greek scientists and technical experts, from both government and private sector, continue to participate in a number of the pilot projects sponsored by the CCMS.[6]

Concerning *regional seas*, Greece has assigned especially high priority to the *1976 Barcelona Convention* concerning Protection of the Mediterranean Sea against Pollution and its implementing programme, and also to accords and co-operative activities on managing fish stocks in regional seas. The UNEP Mediterranean Action Programme (MAP) Co-ordination Unit is based in Athens. However, ratification of several of the protocols under the Barcelona Convention is pending. Environmental co-operation is also a component of the 2000 "*Adriatic-Ionian Initiative*". This engages Greece, Albania, Bulgaria, Bosnia and Herzegovina, Croatia, Italy, Slovenia and Serbia in a multifaceted work programme centred on promoting political and economic growth in the region. Greek authorities view this as an opportunity to strengthen co-operation on confronting water pollution in the Ionian Sea. Greece is a member of the Black Sea Economic Co-operation (BSEC), a multilateral political and economic initiative which includes environmental protection as a specific area of co-operation.

Global mechanisms

Greece is a party to a broad spectrum of multilateral environmental agreements (Reference II.A), and the associated action plans and implementing programmes. Prominent among them are the *global conventions, protocols and programmes* on climate change, stratospheric ozone depletion, biological diversity, desertification, marine pollution, and hazardous waste management.

Greece assigns a high priority to the *International Maritime Organisation (IMO)* and its agreements and work programme on marine transport and pollution. Greek officials and experts also participate actively in the work under the UN Framework Convention on Climate Change and the Kyoto Protocol, *UNEP* on transboundary water management, ozone depletion, forest management, hazardous waste, and biodiversity, as well as in the Global Environment Facility (GEF) mechanism.[7] Other priority international organisations for Greece's environmental work include the *UN Food and Agriculture Organisation (FAO)* on desertification, fish conservation and aquaculture issues; and the *World Trade Organisation* on environment-trade relationships. The *United Nations Educational, Scientific and Cultural Organization (UNESCO)*'s work programme on environmental education and scientific research is also of considerable importance.

2.3 Trade and investment

Endangered species

Greece has made substantial progress since 2000 in controlling the illegal movement of threatened or endangered species of animals and plants into and out of the country. The basis for action has been Greece's commitments under the 1973 *Convention on Trade in Endangered Species of Wild Fauna and Flora (CITES)* which Greece ratified in 1992, and the 1997 *EU Wildlife Trade Regulation (338/97)* which enforces CITES and provides additional measures of control.[14] The EU Directives on Birds and Habitats also provide Greece with guidance and obligations on endangered species protection and trade.

Management responsibility for CITES resides in the Ministry of Rural Development and Food (Department of International Conventions), with designated regional authorities competent to issue CITES permits. Enforcement is carried out by the Customs and Excise Duties General Directorate of the Ministry of Economy and Finance, and the Hellenic Police Headquarters in Athens. A computer control system to track and authenticate trade is in place, and Greek authorities work with Interpol on interdiction of illegal activities.

Greece prohibits the export of endemic species, and allows legal import, transit or export of CITES-listed species only in a small number of ports. Over the last decade, reports and confirmed *incidents of illegal trade* involving Greek firms and citizens, coupled with the more stringent EU control regulations, have prompted the government authorities to adopt additional and strengthened control measures.

Under a 2006 Joint Ministerial Decision, additional implementing provisions for CITES were established, and the scope of coverage expanded. The *strengthened control measures* include: a scheme of "simple permits" for the export, import, re-export and re-import, and the general movement of all flora and fauna species; the augmentation of staff of the responsible Regional Administrative Bodies for CITES; and preparation of new documentation by the Ministry of Rural Development and Food to facilitate the identification by customs officers of CITES species. The inspection and enforcement function has been further upgraded by the holding of capacity-building workshops and provision of improved equipment for control officials; and the creation of a registry of companies which trade in wild fauna and flora to assist with monitoring.

The encouraging progress Greece has made in recent years in implementing CITES and EU obligations was cited by the World Wildlife Fund in a 2007 review of the status of environmental legislation in Greece (WWF Greece, 2007). Nonetheless, given the strength of the international market for certain endangered and threatened species, *Greek authorities need to remain vigilant* to ensure that CITES requirements are fully met. This will require continued training and equipping of customs officers; ensuring that adequate, trained manpower is available at the prefecture and local levels; maintaining a strong public information campaign; and enforcing laws consistently with strong penalties for CITES infractions.

Hazardous waste

Some *330 000 tonnes of hazardous waste* are being generated annually in Greece, principally by industry, healthcare facilities and transport activities. Overall, 42% of total hazardous waste production is oil and liquid fuel waste (which is almost all recovered); 14.5% is end-of-life and out-off-specification products and 13.4% is waste from thermal processes, especially steel and aluminium. Hazardous waste are produced in Attica (48.5%), Central Macedonia (12.6%), Sterea Ellada (10.2%), Thessaly (6.9%) and Western Greece (5.2%). Of the total volume of hazardous waste produced, *4 442 tonnes were exported* in 2006, compared to 3 262 tonnes in 2003 and 905 tonnes in 2001. The largest amounts of hazardous waste exported were biocides and phytopharmaceuticals, waste dyes, inks and paints, and PCBs (polychlorinated biphenyls).[15] Greece imports only *waste oils and lead batteries* for recovery purposes. Greece has not imported hazardous waste for disposal.

Greece has been responsive to a variety of environmental commitments and obligations assumed under global and regional accords on the *transboundary movement of hazardous waste*. The *UN Basel Convention* (1989) on the Transboundary Movement of Hazardous Waste and their Disposal, which Greece ratified in 1994, establishes a control procedure for the export and import of hazardous waste among the convention parties. Greece has fully adopted the Basel procedures that require prior notification of waste exports and imports, and written consent from the concerned authorities before any transboundary movement takes place, based on waste lists agreed to by the Convention parties. In 1995, an amendment ("Basel Ban") was adopted which prohibits all exports of hazardous waste destined for disposal from OECD to non-OECD countries. Greece is in the process of ratifying the amendment (which has not yet entered into force). The Basel Convention provisions, including the "Basel Ban" amendment, are already implemented by Greece through the EU Waste Shipment Regulation (WSR).[16] Greece's waste management activities are also *compliant with OECD procedures and guidelines* on transboundary movement of hazardous waste and with the Izmir Protocol (1996) to the Barcelona Convention on Protection of the Mediterranean Sea from Marine Pollution, which prescribes controls on hazardous waste movement and disposal.

Based on data collected from 2004 to 2007 from waste producers, the *first National Plan on Hazardous Waste* was approved in 2007 (Joint Ministerial Decision 8668/2007). It is based on the polluter-pays-principle: the companies generating hazardous waste are to bear the cost of their environmentally sound management, including safe disposal. The National Plan estimates that, of the 330 000 tonnes of hazardous waste produced each year, 62% is sent for disposal and the rest designated for recovery. An estimated additional 600 000 tonnes of hazardous waste are kept in storage by their producers. The recovery, environmental evaluation and rehabilitation of these storage sites are expected to be completed by the end of 2011.

Based on EU policy, Greece has been attempting to promote the use of waste as secondary raw materials and to *reduce the amount of hazardous waste generated*, by providing subsidies and other incentives. The focus has been on promoting the application by industry of advanced technologies for recycling and recovery, as well as introducing cleaner technologies in the production process.

Shipbreaking

Since the 2000 OECD Environmental Performance Review of Greece, the *management of end-of-life ships* containing hazardous materials has become a highly visible and contentious international environmental issue. This is the result of numerous reports of unhealthy working conditions, and environmental degradation,

associated with unregulated shipbreaking and salvage operations in low-wage countries of Asia, particularly India, Bangladesh, China and Pakistan.[17] Given inadequacies in the regulations and equipment needed to deal effectively with the hazardous substances contained in old ships (*e.g.* asbestos, PCBs, tributyltin and oil sludge), there are too often incidents of serious pollution of the water and soil in coastal areas, contamination of natural habitats and fishing grounds, and accidental injury, deaths and chronic environment-related illnesses in the workplace. This situation is likely to worsen over the coming years. A large number of vessels in the world's fleet are approaching the end of their useful lifetime, and there is an obligatory phasing-out of single-hull tankers under European Union legislation and international conventions. A number of international bodies are thus working on the design and negotiation of a binding global regime to protect human health and the environment during shipbreaking operations (Box 8.2).

The end-of-life ship dismantling situation attracted *international attention* at the beginning of this decade. In 2001, the International Chamber of Shipping produced an Industry Code of Practice along with a form to be used by ship owners and recyclers in preparing an inventory of potentially hazardous materials on board. During the period 2002-04, the International Maritime Organisation (IMO), the International Labor Organisation (ILO) and the Secretariat of the Basel Convention (BC) all issued technical guidelines on dismantling of ships to help protect the environment and health by promoting best practices. The OECD Working Party on Environmental Performance has given attention to this matter, in its second cycle of reviews, since the 2000 OECD Environmental Performance Review of Norway.

Given differences in approaches and perspectives, as well as the complexities involved in establishing environmentally-effective and economically-sound regulations (*e.g.* ships may become "waste" under Article 2 of the Basel Convention and at the same time be defined as "ships" under other international rules), the IMO, in co-operation with the ILO and the Basel Convention Secretariat, has been co-operating in the development of the *International Convention on the Safe and Environmentally Sound Recycling of Ships*. The text of the Convention was approved at the 58th session of the Maritime Environmental Protection Committee (MEPC) of the IMO; the Convention is expected to be adopted by an *ad hoc* diplomatic conference in Hong Kong (China) in May 2009. Greek experts and officials from government and industry have been actively involved in the ongoing analyses and negotiations, with some international and national environmental NGOs complaining that the Greek position in the negotiations has been too heavily influenced by its shipping industry seeking minimalist regulation of the shipbreaking trade. It appears, however, that Greek industry's major objective is to ensure that a truly worldwide accord is reached to ensure a "level playing field" of environmental and health obligations for all countries.

This would prevent the emergence of an EU regional approach which could result in Greece's competitive disadvantage *vis-à-vis* non-EU shipping states, and to a large flagging out from the Greek flag (and EU flags, in general) rendering regional measures ineffective. Another concern of the shipping industry is to make sure that when the Convention enters into force, a sufficient number of ship recycling facilities worldwide will fulfil its environmental and safety requirements.

As one of the world's leading maritime countries, Greece clearly has a major stake in the outcome of the deliberations on a binding global accord on end-of-life ship scrapping. It is also in a position of great influence. In 2003, Greece was *first among the OECD countries which exported end-of-life ships*, with 110 destined for dismantling. Of these, only 16 were Greek-flagged vessels; the remainder were Greek-owned but flagged in other countries. During the 2001-03 period, of the 20 companies worldwide that exported the most end-of-life ships, seven were Greek firms which together exported 80 of the 209 total vessels.

It will take some years (perhaps until 2015) for the Convention on the Safe and Environmentally Sound Recycling of Ships to come into force. And even then, it is likely that some countries will fail to ratify the agreement. Therefore *interim steps will need to be taken* by Greece and other shipping countries to address the long-term consequences of unregulated disposal of hazardous waste from end-of-life ships in developing countries for short-term economic profit. In the near-term, the Greek Government should continue to support the adoption of the new convention as soon as possible and encourage all Greek ship owners to follow rigorously the (voluntary) technical guidelines on "best practices" prepared by the IMO, ILO and BC to ensure that end-of-life vessels owned by Greek individuals and companies, wherever flagged, are sent to dismantling operators with good environmental records.

With respect to ship dismantling *within the EU*, there are still relatively limited facilities as operations have shifted to Asian countries offering lower labour costs and

environmental regulations. Greece has two facilities (Bacopoulos and Savvas Pireus) with good environmental records, but which handle only relatively small end-of-life ships (ferries and fishing vessels).

Chemicals management

Greece's efforts to ensure sound environmental management of chemicals and other toxic substances involved in international trade have, in recent years, been focused largely on the transposition and implementation of EU directives and regulations. This has involved, in particular, the *comprehensive EU REACH system* (Registration, Evaluation, Authorisation and Restriction of Chemicals) which came into force in 2007. Under REACH, which brings together some 40 EU laws on chemical safety into one system, and fills earlier gaps, the chemicals industry must report systematically on the safety of chemicals produced or imported in large quantities. Further, public access to information on chemical safety is to be expanded significantly. A European Chemicals Agency (ECHA) located in Helsinki under the EU REACH legislation oversees the programme and receives reports from EU member states on their implementation progress.

Greece has also maintained a long-standing involvement in the *OECD's Environmental Health and Safety programme*. With the exception of the component on Good Laboratory Practices and occasional workshops in other areas, Greek involvement in OECD chemicals activities has, however, been limited and sporadic in recent years. Greece experts have been more active in the area of food safety, hosting a meeting of the OECD Task Force on the Safety of Novel Foods and Feeds in Athens in 2006.

At the multilateral level, Greece participates in *UNEP's International Registry of Potentially Toxic Chemicals* (UNEP-IRPTC) and the *Intergovernmental Forum on Chemical Safety* (IFCS). It is also a party to the 1998 Rotterdam Convention on Prior Informed Consent for Hazardous Chemicals and Pesticides (ratified in 2003) and the 2001 Stockholm Convention on Persistent Organic Pollutants (POPs) (ratified in 2006).

The *government's institutional focus for chemicals management* is the Inspectorate for Industrial Chemicals and Pesticides under the Ministry of Economy and Finance. The Ministry also oversees the General Chemical State Laboratory which maintains a National Register of Chemical Products and serves as the national focal point for the IFCS programme as well as Greece's technical contact for REACH. The Ministry of Rural Development and Food, and Ministry of Health's Poison Center, also play important roles in promoting the safe use of chemicals in Greece. Given the new requirements associated with REACH, it would be timely for the government to *review the existing institutional mandates and arrangements*, with

a view to eliminating programme overlap, filling gaps and ensuring that staffing levels are adequate.

Corporate environmental responsibility

With respect to the environmental behaviour of *Greek firms with overseas operations*, a unit within the Ministry of Economy and Finance (the Unit for International Investments of the Directorate for International Developments and Co-operation) serves as the requisite National Contact Point for promoting and monitoring the *OECD Guidelines for Multinational Enterprises* which cover, *inter alia*, environmental and social responsibilities. The Guidelines have been made available to the general public, and are available electronically on the Websites of both the Ministry of Economy and Finance and the Greek Investment Protection Agency (ELKE). Indications are, however, that Greek industry has made *only very limited use* of either the National Contact Point or the Guidelines.

Greece also participates in the OECD's Export Credits Group which approved, in 2007, a strengthening of the environmental requirements for the *provision of export credits and credit guarantees by government export credit agencies* to national firms competing for overseas sales. The Export Credit Insurance Organization, established in 1988 and supervised by the Ministry of Economy and Finance, is the responsible body in Greece, and has established policies and criteria for environmental decision-making.

2.4 Development assistance

While Greece continues to receive large net funding from the EU (Table 5.2), *Greece has become a donor* country. In the early 1990s Greece had initiated its bilateral aid activities. In 1997, the first medium-term assistance programme (1997-2001) was launched, budgeted at USD 400 million. In 1999, Greece joined the OECD's Development Assistance Committee (OECD/DAC).[18]

Programme evolution

Greece's *development assistance programme* has evolved substantially since 2000 with respect to scope, structure, coherence and level of expenditure. Financial outlays remain small, however, compared to development funding by OECD donor countries; and financial support for environmental management activities is modest.

The second *five-year Programme of Development Co-operation and Assistance of Greece (2002-06)* provided the broad policy framework for Greece's development support efforts, along with programme objectives and priorities. It was endorsed by an Inter-ministerial Committee for the Co-ordination of International Economic Affairs,

chaired by the Ministry of Foreign Affairs. Representation comes from the Ministries of Economy and Finance, Development, Mercantile Marine, Aegean and Island Policy, Transportation and Communication as well as the Foreign Ministry, with other ministries (including YPEHODE), participating in discussions of particular issues. The Committee oversees on a continuing basis the content and co-ordination of the development programme, and endorses each five-year programme. The third five-year programme, which is currently being prepared, integrates the bilateral aid activities carried out by 17 entities in 12 Ministries, including YPEHODE.

The *General Directorate for International Development Co-operation (Hellenic Aid)* was established in 1999 within the Ministry of Foreign Affairs. During 2002-03, its mandate was broadened, and the competencies and the budget for development co-operation previously located in the Ministry of Economy and Finance were transferred to it. Hellenic Aid is also mandated to engage, co-ordinate and co-finance *participation from the private sector*. Some 430 Greek NGOs were listed in its development co-operation register in 2007, compared to 150 in 2002. A National Advisory Committee on NGOs, chaired by the Ministry of Foreign Affairs, was established by law in 1999 with representation from government ministries and agencies and civil institutions. While intended to meet twice a year to formulate and recommend policies related to activities by development NGOs, the Committee was never activated. It was replaced by an *ad hoc* advisory group which is convened as necessary to address particular sectors and issues.

In 2004, an *Action Plan for Co-ordination and Harmonisation* was adopted by the government with guiding principles and measures for strengthening Greece's development assistance programme, including an intensified effort to fulfil the UN Millennium Development Goals (MDGs). The Action Plan takes into account international commitments emanating from the MDGs, the 2000 Barcelona Process, the Monterrey Conference (2002), the 2003 Rome Declaration on Harmonization, an OECD/DAC Good Practice Paper on aid delivery, and the 2004 Marrakech Memorandum on Managing for Development Results. It also identifies geographic and sector priorities as well as areas for increased attention, including expanded co-operation with international bodies and partnership approaches with recipient countries.

Six major objectives have been defined for Greek development assistance, and applied in both developing and transition countries: combating starvation and poverty; pursuing steady and sustainable economic growth (and the integration of aid recipients into the world economy); promoting peace and security; enhancing the application of democratic principles, the rule of law and human rights; mobilising and developing human resources, with emphasis on the equitable participation of men and women; and protecting the environment and natural resources (Ministry of Foreign

Affairs, 2007).

Bilateral aid and multilateral support

In terms of outlays for *Official Development Assistance* (ODA), in 2007 Greece's ODA was USD 501 million (compared to USD 226 million in 2000 and USD 321 million in 2004). Of the 2007 total, USD 249 million was provided bilaterally (all in the form of grants), while USD 252 million was distributed through multilateral channels. In 2007, the ratio of ODA/GNI for Greece stood at 0.16%, after 0.20% in 2000 and 0.16% in 2004 (Figure 8.2). Greece's announced current goal is to progressively increase the ODA/GNI ratio to 0.35% in 2010 and 0.51% in 2012, subject to final approval of the 3rd five-year Programme of Development Co-operation and Assistance 2008-12 (Figure 8.2). It compares to an OECD/DAC average of 0.28, an EU 15 average of 0.40 and the UN goal of 0.7%.

Greece's *bilateral assistance* has, from its inception, been focussed on countries in the Balkan and Black Sea regions. As some of these countries have become ineligible for development assistance (*i.e.* as they accede to the EU or join OECD/DAC), the list of aid recipients has broadened to include countries of the Middle East and Sub-Saharan Africa. Plans are to increase the annual percentage of aid allocated to Sub-Saharan Africa to 20-25% of the total outlay. In 2005 the National Development Programme listed 21 "priority" countries.[19] With the expansion of Greek aid to African and Asian countries beginning in 2003, the number of developing and transition countries receiving some form of assistance (including a large number of scholarships), numbered 83 in 2006.

A *broad spectrum of development sectors* receives Greek bilateral support. These include environment and natural resources along with health, education, agriculture, culture and sports, democratisation and human rights, institution-building, micro-credit programmes and income generation. In 2006, the bulk of the investments were devoted to government and civil society (24%), health (13%), education (12%), and emergency assistance (11%). General *environmental protection* accounted for only 1.2% of disbursements of bilateral assistance in 2006, while water supply and sanitation support amounted to some 0.5%.

While most *multilateral funding* (90%) is being directed to the development assistance efforts of the European Union, this is not counted as national multilateral aid (as for other EU member countries). The remainder (which is counted as multilateral aid) is disbursed to some 40 UN and other development programmes administered by, *inter alia*, the World Bank, World Health Organisation, Global Fund to Combat AIDS, OECD/DAC and the Economic Community of West African States. Smaller contributions are being made to a number of international environmental

institutions, notably the Global Environment Facility (GEF), the International Union for Conservation of Nature (IUCN), the Montreal Trust Fund and the UNEP Environment Fund. While the Ministry of Foreign Affairs (Hellenic Aid) is the co-ordinator for bilateral aid, the Ministry of Economy and Finance is the main actor on multilateral support. Since the latter manages both EU and the International Bank for Reconstruction and Development (IBRD) funds, it controls upwards of 92% of multilateral disbursements.

Environmental development assistance

In 1999, *YPEHODE began a Bilateral Development Assistance Programme* within the framework of the overall national programme. It was built on priorities and obligations associated with OECD/DAC, UN institutions (particularly UNCSD, UNEP and UNESCO), the Rio conventions on biodiversity, climate change and desertification, and Greece's bilateral environmental memoranda of understanding with neighbouring countries. YPEHODE's efforts focused on capacity building, and promoted the principles of demand-driven projects and local ownership. Thematic priorities included water and natural resources management, wastewater and solid waste management, climate change, and establishment of transboundary networks and monitoring mechanisms. In 1999, 22 projects were supported under the YPEHODE Programme, carried out by Greek universities and scientific institutions, with a budget of EUR 1.87 million over the 1999-2005 period. In late 2000, 38 additional projects were launched, with time frames up to four years and a budget of EUR 6.16 million. NGOs (19) were included for the first time as project implementers, receiving 45% of the second-tranche budget. On a geographical basis, Balkan countries received 65% of the support; SE Mediterranean countries 32%; and Black Sea countries 3%.[20]

Since 2002, however, no new bilateral environment assistance projects have been funded as the emphasis has shifted to completing projects already underway and most important, to *directing environmental funds toward regional and global programmes and initiatives*. The latter have included: the United Nations Development Programme for its work on environment and energy; the European Bank for Reconstruction and Development for technical assistance in the field of environment in the Balkans; the United Nations Industrial Development Organization's Office in Athens, for Investment and Technology Promotion; and the European Union-Africa Infrastructure Trust Fund for projects in the sectors of transport, energy, water and information technology.

Since the 2002 WSSD, the Greek Government (YPEHODE and the Ministry of Foreign Affairs, with Secretariat support from the Global Water Partnership-Mediterranean) has taken the lead of the *Mediterranean Component of the EU Water*

for Life Initiative (MED EUWI). MED EUWI seeks to make progress in poverty eradication, health, and in sustainable economic development in the Mediterranean and South-Eastern Europe, and to promote peace and security in the region. The MED EUWI coordinates individual donors (bilateral ODA, World Bank, GEF, development banks) on a demand basis, and mobilises additional funding from the European Commission (about EUR 1.07 million for 2006-08). These funds complement MED EUWI's annual core funding provided by the Greek Government.

Greece also voluntarily contributed EUR 6.85 million over the 2000-06 period to the *Global Environment Facility* (GEF).[21] Further, some USD 4 million has been allocated to 17 countries to support their *greenhouse gas adaptation and mitigation strategies* under the UNFCCC and the Kyoto Protocol. Greece is currently further intensifying its support to climate change and adaptation programmes in least developed countries and in regions that, due to their geographical locations, are in severe danger from climate change. To ensure the best possible use of funds, the Greek plan will be implemented in co-ordination with regional organisations, especially with the African Union (EUR 3 million in 2007 and EUR 1 million in 2008), the Caribbean Community and Common Market (EUR 1 million in 2007 and EUR 1 million in 2008) and the Alliance of Small Island States (EUR 1 million in 2007).

Greece's support of the Millennium Development Goals included EUR 11.6 million from 2003 through 2005 for "*Ensuring Environmental Sustainability*" (the total Greek contribution to the MDG was EUR 238.4 million over the three-year period). Additional funding for environment-related support for developing countries is being provided through Greece's contributions to a variety of "sustainable development" initiatives (YPEHODE, 2007).

However, while the overall Greek development assistance has evolved rapidly over the past decade to become better planned, financed, co-ordinated and implemented, the *environmental component has not grown apace* Consideration should be given to establishing an environmental position within Hellenic Aid to help insure the effectiveness of investments in environment and natural resources management, and to assess on a continuing basis the environmental significance of projects carried out in other sectors. It would also seem timely to include YPEHODE as a regular member of the Inter-ministerial Committee for the Co-ordination of International Economic Affairs that approves and oversees the five-year development co-operation programmes. These steps become especially important as Greece attempts to respond to the 2006 recommendations of OECD/DAC, which emphasise the need for Greece to sharpen the focus of its development efforts with respect to both programme and country priorities (OECD, 2006).