Report on Portuguese Environmental Economic Instruments 2010

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2010

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Foreword

Environmental Fiscal Reform in Portugal is an important issue in this difficult time.

This is an opportunity to reflect on the strong relationship between our economic goals and the delicate environmental balance we pursue.

An important part of the environmental financial policy of the last years took the form of subsidies or tax exemptions on goods that contribute to environmental improvement (eg solar panels).

To persist in using only these environmental financial instruments is extremely difficult: they tend to increase both consumption and the fiscal and external deficits, albeit added environmental and economic gains are marginally smaller and smaller. We must therefore adopt solutions that both promote more ambitious environmental goals and claim a positive contribution to the improvement of the external and fiscal balances – the double dividend.

This huge challenge has already been taken since 2006. Since then several environmental taxes were created, that are altogether an important part of the Portuguese total tax collection revenues. These are taxes due and calculated on an environmental basis; in particular, it is the case of Motor Vehicle Tax, Single Road Tax, Low Efficiency Light Bulbs Tax, Water Resources Tax, Waste Management Tax and Water Quality Tax. The results are quite striking: in Portugal, the revenues from environmentally related taxes in 2008 accounted for 2.6% of GDP and 8% of total tax receipts – well above OECD's average.

It is now important to extend this movement to other ecological and environmental services, in particular in what regards biodiversity. We must also expand the environmental dimension in indirect and consumption taxation.

Therefore, it comes as no surprise that Portugal's Stability and Growth Plan 2010-13 foresees several environmental measures:

- introducing a fiscal incentive for purchases of electric vehicles by businesses, while discouraging purchases of conventional fuel-powered vehicles and the provision of such vehicles as benefit-in-kind to employees;
- extending tax credits for the purchase of energy efficient equipment;
- revising the vehicle registration tax by annually reducing the CO_2 emission categories by 5g/km, so as to maintain the revenue-raising ability of the tax and better link it to development of the car market;
- elimination of tax expenditure related to excise duties on energy products, linking fiscal benefits and exemptions to more rigorous environmental criteria;
- rationalisation of tax expenditure related to vehicle taxes, linking fiscal benefits and exemptions to more rigorous environmental criteria. On the other hand, some important advances are to be registered as well in the field of environmental public expenditure. Full compliance with polluter pays and user pays principles led to the creation of several environmental funds.

Environmental funds were established to enable a harmonious environmental and financial management. Initially functioning as a vehicle for the polluter pays and user pays principles, they ensure that revenues from environmental taxes are converted into environmental expenditure.

Moreover, the environmental funds enable resetting public environmental financial decision from short term goals to projects that envisage a longer period of time, consistent with sustainable development concerns.

Also, environmental funds reflects more strongly the results of the deep reflection on the dimension and forms of action of the State, creating solutions of greater economical, administrative and environmental rationality meaning the State is able to cooperate with private sector and to adopt private law solutions. This is what happens with the creation of public funds for the purpose of direct intervention in market or management of environmental compensation regimes.

The first fund created in Portugal was the Permanent Forest Fund. It was later followed by the Portuguese Carbon Fund. More recently, the establishment of the Environmental Intervention Fund, the Water Protection Fund and the Nature and Biodiversity Conservation Fund ensures a full applicability of polluter pays and user pays principles.

Another challenge for the coming years will be, of course, to implement the double dividend on the expenditure side. That implies, on the long-term, abandoning earmarked revenues and shift the basis of the State finance from income taxes to environmental taxes.

There will always be more than budget and financial objectives at stake: safeguarding a country's natural resources legacy is decisive for our future wellbeing and for the future of our planet.

The book that is now in our hands, in its first edition, intends to report in a factual and systematic performance the new mechanisms of environmental policy financial indispensable tool to understand these instruments and to conduct an assessment of their own sustainable development.

In matters of competence of Portuguese Environmental Agency (APA), much has been done, particularly in the waste areas, but also in the Environmental Impact Assessment (EIA), Risk Analysis, Accident Policy (PAG) and Environmental Safety of the Population, Environmental Permit (EP), European Trade Emissions Trading Scheme (EU ETS), among others. It is now important to assess, consolidate and improve existing financial and environmental mechanisms.

The Integrated System of Registration of the Portuguese Environmental Agency (SIRAPA), the National System of Environmental Information (SNIAmb) and CIRCA (for processes EIA, EP and concourse of the consignment of TGR – Rate Waste Management), have been the main focus of the APA in the dematerialization of registration procedures (which began with the waste) and the availability of current and spatial information, allowing communication between APA and its customers and partner organizations (national and international), optimizing and rationalizing the collection procedures, evaluation and communication of information on reliable environment, which allows one to support decision-making processes and the development and implementation of policies and strategies relating to the environment and their integration into sectorial and financial policies. Here too, considering that the tools are in wide deployment, it is crucial to adapt the growing environmental and financial instruments to reality.

Mário Grácio,
Director-General – APA (Portuguese Environment Agency)

Acronyms and Abbreviations

AFN	National Forest Authority (Autoridade Florestal Nacional)
APA	Portuguese Environment Agency (Agência Portuguesa do Ambiente)
ARH Norte	River Basin District Administration for North (Administração de Região Hidrográfica do Norte)
ARH Centro	River Basin District Administration for Centre (Administração de Região Hidrográfica do Centro)
ARH Tejo	River Basin District Administration for Tejo (Administração de Região Hidrográfica do Tejo)
ARH Alentejo	River Basin District Administration for Alentejo (Administração de Região Hidrográfica do Alentejo)
ARH Algarve	River Basin District Administration for Algarve (Administração de Região Hidrográfica do Algarve)
CCDR Norte	Regional Co-ordination and Development Committee for North (Comissão de Coordenação e Desenvolvimento Regional do Norte)
CCDR Centro	Regional Co-ordination and Development Committee for Centre (Comissão de Coordenação e Desenvolvimento Regional do Centro)
CCDR LVT	Regional Co-ordination and Development Committee for Lisbon and Tejo Basin (Comissão de Coordenação e Desenvolvimento Regional de Lisboa e Vale do Tejo)
CCDR Alentejo	Regional Co-ordination and Development Committee for Alentejo (Comissão de Coordenação e Desenvolvimento Regional do Alentejo)
CCDR Algarve	Regional Co-ordination and Development Committee for Algarve (Comissão de Coordenação e Desenvolvimento Regional do Algarve)
CECAC	Climate Change Commission's Executive Committee (Comité Executivo da Comissão para as Alterações Climáticas)
CIRVER	Integrated centers for recovery, recycling and disposal of hazardous waste (Centros integrados de recuperação, valorização e eliminação de resíduos perigosos)
CM	City Council (Câmara Municipal)
CO_2	Carbon Dioxide
DGAIEC	Directorate-General for Customs and Special Consumption Taxes (Direcção-Geral das Alfandegas e dos Impostos Especiais do Consumo)
DGCI	Directorate-General for Taxes (Direcção-Geral dos Impostos)
DGEG	Directorate-General for Energy and Geology (Direcção-Geral de Energia e Geologia)
DGTF	Directorate-General for Treasury and Finance (Direcção-Geral do Tesouro e Finanças)
ERSAR	Regulatory Authority for Water and Waste Services (Entidade Reguladora dos Serviços de Águas e Resíduos)
FCNB	Nature and Biodiversity Conservation Fund (Fundo de Conservação da Natureza e Biodiversidade)
FFP	Permanent Forest Fund (Fundo Florestal Permanente)
FIA	Environmental Intervention Fund (Fundo de Intervenção Ambiental)
FPC	Portuguese Carbon Fund (Fundo Português de Carbono)
FPRH	Water Protection Fund (Fundo de Protecção de Recursos Hídricos)
ICNB	Nature and Biodiversity Conservation Institute (Instituto da Conservação da Natureza e Biodiversidade, IP)

IFAP	Agriculture and Fisheries Finance Institute (Instituto de Financiamento da Agricultura e Pescas, IP)
IGAOT	Environment and Land Use Inspection General (Inspecção-Geral do Ambiente e do Ordenamento do Território)
INAG	Water Institute (Instituto da Água, IP)
IRAR	Water and Waste Services Regulatory Institute (Instituto Regulador dos Serviços de Águas e Resíduos, IP)
ISP	Petroleum and Energy Products Tax (Imposto Sobre Produtos Petrolíferos e Energéticos)
ISV	Motor Vehicle Tax (Imposto Sobre Veículos)
IUC	Single Road Tax (Imposto Único de Circulação)
MOR	Waste Organized Market (Mercado Organizado de Resíduos)
RCD	Construction and demolition waste (Resíduos de construção e demolição)
REEE	Electric and electronic equipment waste (Resíduos de equipamentos eléctricos e electrónicos)
RU	Urban waste (Resíduos urbanos)
SLF	Local Tax Administration (Serviço local de finanças)
TGR	Waste Management Tax (Taxa de Gestão de Resíduos)
TLBEE	Low efficiency light bulbs tax (Taxa sobre Lâmpadas de Baixa Eficiência Energética)
TQA	Water Quality Tax (Taxa de Qualidade da Água)
TRH	Water Resources Tax (Taxa de Recursos Hídricos)

Summary

The use of economic instruments in environmental policies is a phenomenon with already some tradition in many countries that share the same experience with Portugal. Among us it is still a rather new solution, but nonetheless there is no doubt that it is an essential tool for the achievement of environmental goals.

Until the end of the former century the pursuit of environmental policies in Portugal neglected the contribution of economic instruments, which were limited to some minor tax regimes. None of the Portuguese taxes could be considered as strict environmental taxes, even though some undeniably produced some behaviour modifications towards more environmental friendly options – such were the case of Automobile Tax, Petroleum and Energy Products Tax, or some tax benefits concerning Income Taxes. And albeit the Environment Base Law (Law 11/87) established that charges should be levied on the use of natural resources, only in 1994 such legislation was approved for water resources – and it was never duly applied.

However, in the past decade Portugal has redesigned its environmental policy giving economic instruments a far more important role than before.

First of all, a most significant transformation has been in course in the Portuguese tax system. There are now several environmental taxes – taxes due and calculated on an environmental basis – that are altogether an important part of the Portuguese total tax collection revenues. In particular, it is the case of Motor Vehicle Tax, Single Road Tax, Low Efficiency Light Bulbs Tax, Water Resources Tax, Waste Management Tax and Water Quality Tax. Also, some other specific tax regimes with environmental purposes were created, namely the car scrappage program and the bio fuels framework.

On the other hand, some important advances are to be registered as well in the field of environmental public expenditure. Full compliance with polluter pays and user pays principles led to the creation of several environmental funds. These funds have been given the tasks of administrating some environmental taxes collection revenues and financing environmental recuperation projects. And later environmental funds were created with the purpose of resettling public expenditure decision from a short-term logic to sustainable development concerns, being given important financial means.

One of the indisputable merits of these mechanisms is that their behaviour can be evaluated quantitatively and the analysis of its performance is objective. Despite we still find ourselves at the start of its operation, there is already a sufficient history of activity that justifies the collection of quantitative evidence that may reveal what is their degree of effective implementation and tangible its results are – in other words, if they have produced the desired environmental effects.

This publication provides a factual and systematic report on the performance of these mechanisms. In addition, it contains a succinct explanation of its operation, financial reporting and operational environment of their institutionalization. The general public, academia, public services and the majority of policy makers thus have at their disposal a means to better understand these instruments and to consider with solid foundation its own evolution.

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Economics of Water

0. Synthesis

Presently, the existing economic instruments in the water sector are essentially of public nature. Indeed, there are no relevant voluntary markets for the use of water resources, so behaviors related to water are usually driven by stimuli that emanate from the State.

There are several taxes that seek to implement the polluter pays and user pays principles; Particularly important in this context is the Water Resources Tax (*Taxa de Recursos Hídricos – TRH*).

As the effective collection of TRH started only recently, is still too early to assess what its actual impact on the preservation and improvement of water resources. Only a longer period will allow an accurate measure of the trends in use of water resources and of the impact produced by the TRH on the choices of the users. However, some provisional observations can already be made.

Perhaps the most important one is that the numbers of the revenue collection evidence TRH as a tribute with asymmetric contours. This asymmetry should be carefully analyzed, discerning those cases in which it is an intrinsic and neutral feature of the tax from the others in which it is a symptom of maladjustment of its structure to realities and is therefore a source of environmental distortions.

The clear asymmetry detected in the geographical distribution of income (the Hydrographic Regions of the Tejo and North are jointly responsible for nearly three quarters of total revenues, albeit contributing parts of the Centre, Alentejo and Algarve mount up only to one quarter) was to be expected, given the different abundance of the resource in each region. But some thought must be put in the asymmetry detected in the amount collected by each of the various components of TRH (abstraction and effluents components together account for four fifths of revenue; but aggregates, occupation and general management mount up to less than one fifth). And the division of the tax burden of TRH among the various economic sectors definitely needs some rethinking, should the trend be confirmed in the coming years, as the Urban Water Cycle bears almost 60% of total TRH revenues, while Irrigation contributes with less than 5% – hardly justifiable, considering that human consumption is the noblest and more economically relevant use given to water and irrigation is the sector that consumes more water in Portugal.

The still early enforcement of the TRH determined that only in 2010 has commenced the activity of FPRH. Only this year started its operation, with the approval of its Regulation of Management, but the significant volume of financial resources being allocated to the Fund predicts that this instrument will configure itself as one of the most dynamic and fruitful of the Economics of Water.

Finally, mention should be made to the tariffs in the sector of water supply services.

The industry itself is highly fragmented and it is known that the tariffs in general are not a guarantee of financial sustainability of services. Another conclusion cannot be drawn when in over 60 municipalities sanitation services are provided free of charge and while most municipalities' practical values are below or far below the average national rates.

Moreover, it is suspected that in most services the tariffs do not allow full cost recovery; so, water consumption is probably provided with hidden subsidies, which tends to aggravate the problems of overexploitation of the resource. This hypothesis will be confirmed or denied in the coming years, with the expansion of ERSAR's regulatory powers.

Rates are therefore marked by a large gap, coexisting cases of inexistence of tariffs with others of very high tariffs. This is a situation to be reviewed, to ensure the financial sustainability of these activities and to end the discrepancy with the existing legal framework, as the Water Law (Law No. 58/2005 of 29 December) and the Economic and Financial Regime for Water Resources (Decree-Law No. 97/2008 of June 11), determine that the system of tariffs for water services must ensure the recovery of the initial investment and new investment expansion, modernization and replacement of infrastructure, ensure the maintenance, repair and renovation of all goods and equipment allocated to services as well as payment of all compulsory charges that may be involved, and ensure the effectiveness of services.

1. Water Taxation

Water Resources Tax

Description

The Economic and Financial Water Resources Management Regime (approved by Decree-Law 97/2008) created the Water Resources Tax (*Taxa de Recursos Hídricos – TRH*), which is a key instrument of national policy for water, in accordance with Water Law (Law 58/2005, which implemented the Directive 2000/60/CE of the European Parliament and the Council of 23 October).

TRH = A + E + I + O + U
$A = V_{base}.m^3.SC$ The abstraction of public water for private uses, and it is calculated by multiplying the base value of the respective use by the volume of water drawn, diverted or used expressed in cubic meters, and by the applicable shortage coefficient
$E = V_{base}.kg$ The direct or indirect discharge of effluents on water resources which may cause significant impact, and it is calculated by multiplying the base value of the effluent to the quantity of toxicity or pollution loads contained in the discharge, expressed in kilograms
$I = V_{base}.m^3$ The aggregate extraction of public water resources, calculated by multiplying the base value to the volume of aggregate extracted, expressed in cubic meters
$O = V_{base}.m^2$ The land occupation of the public water resources and/or the occupation and creation of water plans, and it is calculated by multiplying the base value of the respective use by the occupied area, expressed in squared meters
$U = V_{base}.m^3$ The private use of water, whatever its nature or statutory regime, subject to planning and public management, which may cause significant impact; it is calculated by multiplying the base value of the respective use to the volume of water drawn, diverted or used, expressed in cubic meters

TRH implements the basic idea that the private user of water resources must compensate the cost generated to the community and/or restore the benefit's extent that the community grants (polluter pays and user pays principles). Apart from collecting funds for public environmental purposes, TRH has a clear intention of guiding private users´ (1) towards a more efficient water usage and (2) to prefer water usage in activities of more economic worth. Accordingly, it sets off: (1) the advantage resulting from the public water private use, (2) the environmental costs related to the activities likely to cause a significant impact on water resources, and (3) the administrative costs regarding planning, management, supervision and water quality and quantity surety.

Tax structure

The TRH is due on a yearly basis, and the debtor entity is the private user of water resources.

The components have various differences, corresponding to: (1) the different contribution that each economic sector should be required to provide for water resources sustainable management, (2) the varied shortage of water resources in different parts of the territory; (3) concerns with user groups on a more social and economic distress.

Base Values 2009-2010 (in Euros)		
A e U		
Agriculture, fish farming, aquaculture, marine and biogenetic cultures		0.003
Hydric energy production		0.00002
Thermal energy production		0.0027
Public water supply systems		0.013
Other cases		0.015
Minho. Lima. Cávado. Ave. Leça e Douro		1
Vouga. Mondego. Lis. ribeiras do oeste e Tejo		1.1
Sado. Mira. Guadiana e Ribeiras do Algarve		1.2
E		**1**
Oxidizable Matter (kg): (COD + 2.CBO5)/3		
(COD = chemical oxygen demand		250/m^3
BOD5 = biochemical oxygen demand)	0.3	
Total nitrogen (kg)	0.13	
Total phosphorus (kg)	0.16	
O		
Electric power production and fish farming equipment located in the sea and water plans creation		0.002
Agriculture, fish farming, aquaculture, marine biogenetic crops, infrastructure and support equipment to traditional fisheries, sanitation, public water supply and electricity generation		0.05
Farms, fisheries, aquaculture, marine and biogenetic cultures occupying an higher area than 1 acre in the portion of the corresponding excess		0.025
Industry		1.5 ≥ 2
Residential/dwellings		3.75 ≥ 5
Temporary beach constructions and casual occupations of commercial, tourist or recreational nature for profit purposes		5 ≥ 7,5
Permanent beach constructions and lasting occupations of commercial, tourist or recreational nature for profit purposes		7.5 ≥ 10
Other cases		1

The taxable rate of TRH is determined on the basis of self-regulating and constant measuring of the values estimated by users (effective use) or, failing that, by the maximum values constant of the use titles issued by the ARH, as all water resources uses must be titled. In case of impossibility of direct liability of the taxable base resulting from the lack of evidence of use or breach of its terms, the water resources rate settlement is officiously done by indirect methods, in order to proceed to the estimate of the components that make up its taxable base using the elements of fact and law that ARH has at its disposal, including users indicators in activity sector and employing similar production methods.

The result of the tax collection regarding TRH is exclusively a source of revenue of the competent public entities in matters of water resources: it reverts by 50% to the FPRH, 40% for the ARH

incumbent on the respective settlement and 10% for the INAG. Moreover, the annual revenue is consigned to activities and projects regarding water resources recuperation and preservation.

Values

Base values have remained unchanged since the TRH began being levied.

This value is based on a minimum price of reference when the concession of the marine aggregate extraction is done through tender procedure or where aggregates extraction is encouraged by the initiative of the ARH and held on its behalf. In order to determine the volume of aggregate extracted, it is considered as factor of conversion volume/mass of dry sand the value of 1.6 ton/m^3. Component I shows a downward trend for collection which can be explained due to the fact that the aggregate extraction on water resources – in particular in rivers – a practice being prohibited to the commercial activity as from 2007 (with the entry into force of the Water Resources Utilization Regime – Decree-Law 226-A/2007), is only possible under the public authorities initiative and for environment adjustments purposes.

Reductions 2009-2010	
Generic	
Good use of irrigation projects or developments of multi-purpose of predominantly hydro agriculture nature	Coefficient of efficiency of 0,60
Industrial users whose water drawing exceeds the annual volume of 2 000 000 m^3, and in what accounts the portion of the excess, whenever they are under activity in July 2008 and prove that they have achieved a significant reduction in water use over the five years prior to that date or have investment plan to ensure that within five years (under special permission of the Minister of Environment)	50% of components A and U
Industrial users whose water drawing exceeds the annual volume of 2 000 000 m^3, whenever they are under activity in July 2008 to prove that they have achieved a significant reduction in the rejection of effluent over the five years prior to that date or hold an investment plan that is supposed to ensure it within five years (under special permission of the Minister of Environment)	50% of component E
By components	
A and U	
Water for hydroelectric power production in hydro area with a maximum drop of only up to 10 m	50%
Pumping water to hydro electric energy production that use reversible groups advantages of hydroelectric energy groups	80%
Sea water use in cooling circuits for thermal energy production and other forms of thermal regulation, such as industrial cooling and regasification of liquefied natural gas	90%
Thermal regulation of agricultural crops	90%
Very small uses, namely when the power of extraction equipment does not exceed 5 hp	Exempt
Uses resulting from security reasons of supply or other national strategic reasons	Exempt
E	
Effluents discharges into the aquatic environment when the quality of water abstracted is justified (under special permission of the Minister of Environment)	Up to 20%
Industrial installations covered by the IPPC regime, which demonstrate best practices and techniques available	35%

cont.

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Reductions 2009-2010	
Effluents discharges into the sea via outfall, if properly treated	35%
Effluents discharges carried out by sanitations structures of urban wastewater	50%
Discharges derived from isolated dwellings with their own solutions to wastewater treatment	Exempt
Discharges from urban areas with size up to 200 inhabitants, as long as the respective wastewaters do not contain untreated industrial effluents	Exempt
O	
Exemptions: The land or water plans occupation where are established infrastructure or support equipment to existing traditional fishing activities in 2008; The land occupation of by self and permanent households taxpayers whose household taxable income derives gross income for income taxable purposes not exceeding twice the annual amount of the monthly minimum wage, when that occupation already exists since 2008; The land occupation or water plans for infrastructure and equipment used in pilot projects designed to research and testing of technologies related with power energy production from sea waves, under the permission of members of the Government responsible for environment and energy; The land occupation or water plans for infrastructure and equipment designed for signalling and Marine rescue, public safety as well as to prevent and fight marine pollution; The land occupation by roads, railways and other means of public communication; The land occupation made by the water levels of hydro plants, hydro agriculture or supply for human or industrial consumption whenever the water use contained in their reservoirs is intended for public use or public interest purposes.	

Collection of the TRH began only in 2008. The available register is insufficient to allow conclusive judgments regarding the achieving of its environmental purposes, namely the behavioural responsiveness from the water private users.

The implementation of the TRH is experiencing the difficulties inherent in starting a taxation that is entirely new to the Portuguese taxpayer, on a subject until recently considered of full gratuity – suffices to say that industry and irrigation are finally subject to the payment of a fee on behalf of the natural resources consumed, both in "A" as in "E" components.

Furthermore, the institutional and administrative framework that collects TRH is extremely recent: the TRH is charged by the ARH, which are in operation only since the start of 2008; and the collection of the TRH is based on a national register of the use of water resources, in many cases in an early stage.

However, the number of taxpayers that do not meet the payment of TRH is low. Also, the volume of revenue increased exponentially from the first to the second year, a phenomenon explained by the broadening of taxpayers' field, which became possible due to an effort of the authorities to detect and legalize a higher number of uses, making the registration system a more complete procedure.

A disaggregation of the total revenue by the five hydrographical regions identifies which uses are more relevant in each one; this identification is influenced by the regions' characteristics: in the North there is a more industrialized use while in the South irrigation becomes more prominent.

Revenue from North and Tejo hydrographical regions clearly represent the greater amount surely because Tejo region is the largest region of the country, occupying almost one third of the territory, and because the North is a region of higher water abundance.

It is possible to identify four major economic uses subject to the charge of the TRH, each one due to a specific reason.

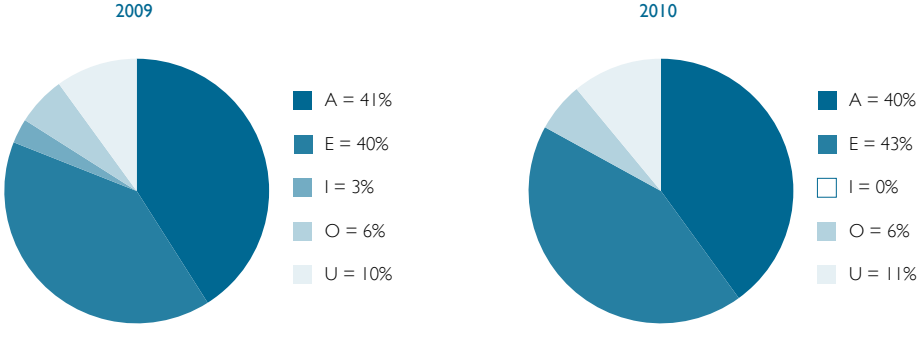
- Firstly the Urban Water Cycle, which aggregates the complete set of uses regarding public water supply and sanitation; which is explainable by the fact that the register index is almost entirely complete and updated, as those services are public utilities and were almost fully implemented in the entire territory in the last decades.

- The thermoelectric production, which is explained by the fact that it is still a major source of electricity generation in Portugal and needs a large volume of water.

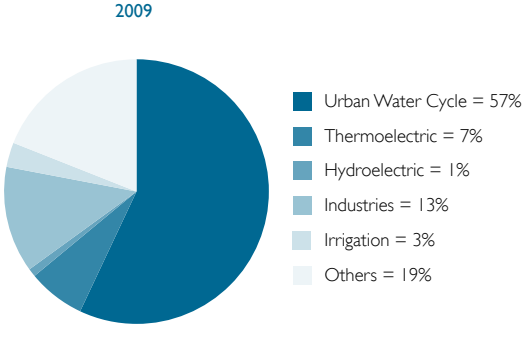
- Paper industries, which are one of the most important industrial sectors in Portugal and one of the main export industries, responsible for remarkable water consumption.

- Finally, irrigation because, excluding in the North hydrographic region, Portuguese agriculture has a traditionally intensive use of water.

Total tax collection revenues (in Euros)						
	Abstraction (A)	Effluent (E)	Aggregates (I)	Occupation (O)	Management (U)	Total
2009	8,274,505.63	8,234,510.78	679,659.10	1,178,705.62	1,992,809.44	**20,360,190.57**
2010	14,276,238.17	15,209,017.98	147,714.41	2,168,120.47	3,926,973.15	**35,728,064.18**
Total						**56,088,254.75**

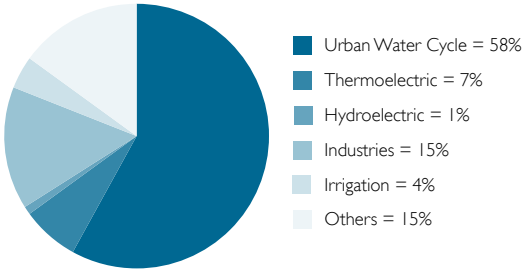


2009 TRH collection revenues by economic sectors (in Euros)					
	A	E	O	U	Total
Urban Water Cycle	4,865,965.46	5,600,134.87	32,013.96	1,193,872.31	**11,691,986.60**
Thermoelectric	1,330,230.07	3,118.66	2,675.42	145,483.13	**1,481,507.28**
Hydroelectric	80,397.62	0.00	54.18	17,538.35	**97,990.15**
Industries	1,008,815.76	1,344,166.31	36,453.46	301,478.74	**2,690,914.27**
Paper	*461,958.63*	*666,788.30*	*17,596.95*	*101,621.68*	***1,247,965.56***
Chemical	*200,728.19*	*143,092.73*	*8.80*	*52,739.18*	***396,568.90***
Food processing	*134,352.14*	*284,893.46*	*5,669.99*	*60,086.77*	***485,002.36***
Irrigation	503,279.36	0.00	18,893.93	121,783.15	**643,956.44**
Others	-	-	-	-	**3,753,835.83**



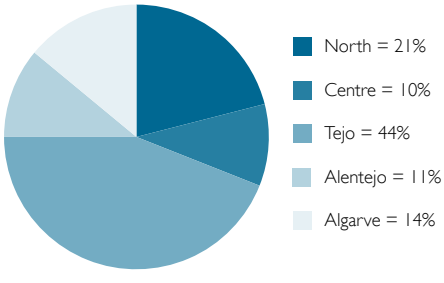
2010 TRH collection revenues by economic sectors (in Euros)					
	A	E	O	U	Total
Urban Water Cycle	8,078,457.60	10,318,786.36	37,513.52	2,124,667.58	**20,559,425.06**
Thermoelectric	2,146,583.92	5,845.89	5,084.08	396,934.30	**2,554,448.19**
Hydroelectric	232,579.34	0.00	148.62	43,603.45	**276,331.41**
Industries	1,888,955.32	2,980,713.40	78,421.06	580,862.35	**5,528,952.13**
Paper	*800,275.86*	*1,662,279.68*	*29,853.41*	*181,689.75*	***2,674,098.70***
Chemical	*397,919.92*	*287,654.08*	*1,366.11*	*101,206.51*	***788,146.62***
Food processing	*228,786.82*	*414,691.69*	*4,441.64*	*107,280.47*	***755,200.62***
Irrigation	1,002,113.43	0.00	49,114.74	324,408.24	**1,375,636.41**
Others	-	-	-	-	**5,433,270.98**

2010

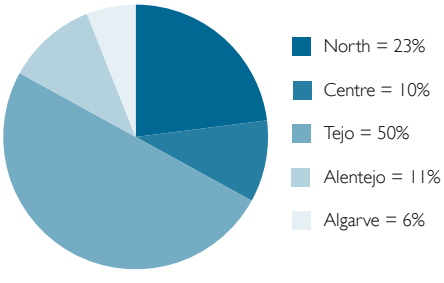


TRH total collection revenues by Hydrographic Region (in Euros)					
	North	Centre	Tejo	Alentejo	Algarve
2009	3,975,742.11	1,966,823.25	8,490,061.28	2,148,712.61	2,588,257.48
2010	8,117,871.10	3,374,772.06	17,347,976.40	3,790,556.41	2,123,821.58
Total	**12,093,613.21**	**5,341,595.31**	**26,665,411.19**	**5,939,269.02**	**4,712,079.06**

2009



2010



North Hydrographical Region TRH collection revenues by component and sector (in Euros)								
	A		E		O		U	
Sector	2009	2010	2009	2010	2009	2010	2009	2010
Urban Water Cycle	1,411,844.95	2,812,543.26	1,128,412.65	2,518,464.56	14,503.49	25,910.60	305,360.51	639,673.67
Thermoelectric	506,716.64	924,939.23	99,466.60	585.64	200.22	133.65	66.82	178,381.14
Hydroelectric	22,433.14	95,076.13	-	-	-	-	7,084.15	19,015.24
Industries	180,898.93	324,945.59	135,962.26	274,954.66	16,553.60	29,162.98	50,275.31	93,846.29
Textiles	*101,254.86*	*210,317.23*	*74,510.50*	*110,574.25*	*60*	*520.53*	*27,354.34*	*60,018.97*
Paper	*46,206.40*	*71,226.84*	*20,927.48*	*48,191.65*	*13,553.00*	*27,780.15*	*9,284.59*	*14,457.95*
Chemical	*17,979.41*	*30,559.01*	*5,867.49*	*8,082.83*	*8.8*	*669.11*	*3,595.88*	*6,112.78*

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North Hydrographical Region TRH collection revenues by component and sector (in Euros)								
	A		E		O		U	
Sector	2009	2010	2009	2010	2009	2010	2009	2010
Food processing	*270*	*4,272.42*	*1,331.60*	*87,767.06*	-	*193.19*	*389.52*	*7,174.46*
Others	*15,188.26*	*8,570.09*	*33,325.19*	*20,338.87*	*2,931.80*	-	*9,650.98*	*6,082.13*
Beach supports/etc.	-	-	-	-	95,962.84	174,941.65	-	-
Others	-	605.23	-	188.36	-	-	-	369.70
Total	**2,121,893.66**	**4,141,802.09**	**1,363,841.51**	**2,756,056.77**	**127,220.15**	**225,273.74**	**362,786.79**	**915,891.70**

Source: ARH Norte (2011)

Centre Hydrographical Region TRH collection revenues by component and sector (in Euros)								
	A		E		O		U	
Sector	2009	2010	2009	2010	2009	2010	2009	2010
Urban Water Cycle	326,383.99	663,922.22	236,473.41	409,767.70	1,578.92	3,568.73	66,088.80	137,486.36
Hydroelectric	19,495.19	53,366.59	0.00	68.70	0.00	40.25	3,540.38	9,678.51
Industries	347,973.68	561,811.77	408,490.52	933,708.22	11,977.18	26,978.24	81,664.17	139,282.12
Chemical	*29,918.25*	*50,679.07*	*34.05*	*274.59*	*0.00*	*0.00*	*5,554.96*	*9,603.08*
Paper	*282,873.47*	*476,665.91*	*343,976.21*	*820,110.03*	*3,458.95*	*874.01*	*51,431.54*	*86,791.99*
Food processing	*26,414.27*	*12,526.68*	*31,203.56*	*58,945.33*	*4,267.92*	*1,282.50*	*9,133.90*	*13,508.42*
Others	*8,767.69*	*21,940.11*	*33,276.70*	*54,378.27*	*4,250.31*	*24,821.73*	*15,543.77*	*29,378.63*
Aquaculture	7,944.46	0.00	9,911.97	47,033.37	33,752.82	66,452.73	1,472.62	3,627.73
Beach supports/etc	0.00	0.00	0.00	0.00	242,463.42	350,125.98	0.00	0.00
Municipalities	140,123.25	244,505.13	435,292.63	419,412.84	5,220.05	4,104.83	88,493.33	151,223.58
Others	7,968.40	44,282.62	0.00	314.34	0.00	0.00	1,448.80	8,208.54
Total	**849,888.97**	**1,567,888.33**	**1,090,168.53**	**1,810,305.16**	**294,992.39**	**451,270.76**	**242,708.10**	**449,506.83**

Source: ARH Centro (2011)

Tejo Hydrographical Region TRH collection revenues by component and sector (in Euros)								
	A		E		O		U	
Sector	2009	2010	2009	2010	2009	2010	2009	2010
Urban Water Cycle	1,856,407.85	3,571,878.78	2,896,709.30	5,917,972.29	193.96	387.91	534,399.79	1,085,376.77
Thermoelectric	353,267.93	759,960.87	-	-		-	63,222.08	133,759.67
Hydroelectric	33,150.71	58,536.77	-	-	54.18	108.37	6,027.40	10,643.06

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Tejo Hydrographical Region TRH collection revenues by component and sector (in Euros)								
	A		E		O		U	
Sector	2009	2010	2009	2010	2009	2010	2009	2010
Industries	312,508.30	636,814.94	621,472.94	1,316,582.19	585.00	1,896.25	105,143.94	240,160.09
Chemical	*152,830.53*	*316,681.84*	*137,191.19*	*279,296.66*	-	*697.00*	*43,588.34*	*85,490.65*
Paper	*101,240.48*	*171,631.76*	*221,396.48*	*525,735.07*	*585.00*	*1,199.25*	*22,502.60*	*44,474.73*
Food processing	*55,263.10*	*115,635.88*	*168,040.28*	*121,418.24*	-	-	*28,587.96*	*62,462.51*
Textiles	*1,921.82*	*3,635.07*	*2,955.32*	*3,355.58*	-	-	*794.04*	*1,477.69*
Others	*1,252.37*	*29,230.39*	*91,889.67*	*386,776.64*	-	-	*9,671.00*	*46,254.51*
Aquaculture	-	-	-	-	7,836.44	15,672.84	-	-
Irrigation	248,070.30	499,386.41	-	-	-	0.24	45,595.93	170,754.42
Beach supports/etc	-	-	-	-	289,839.05	594,399.35	-	-
Others	12,377.18	17,428.29	45,118.36	60,208.87	13,306.69	9,775.89	5,063.77	50,818.66
Total	**3,128,290.57**	**6,180,821.00**	**4,184,773.54**	**8,611,345.54**	**312,400.32**	**624,137.10**	**864,596.85**	**1,931,672.76**

Source: ARH Tejo (2010)

I (in Euros)		
2009	2010	Total
679,659.10	147,714.41	**827,373.51**

Source: ARH Tejo (2010)

Alentejo Hydrographical Region TRH collection revenues by component and sector (in Euros)								
	A		E		O		U	
Sector	2009	2010	2009	2010	2009	2010	2009	2010
Urban Water Cycle	164,394.49	424,703.92	628,050.55	1,007,374.88	1,351.61	2,761.14	60,597.84	152,694.27
Thermoelectric	470,245.50	461,683.82	3,118.66	5,845.89	2,475.20	4,950.43	82,194.23	84,793.49
Hydroelectric	5,318.58	25,599.85	-	-	-	-	886.42	4,266.64
Industries	167,434.85	365,383.02	178,240.59	455,468.33	7,337.68	20,383.59	64,395.32	107,573.85
Liquefied gas	*51,960.00*	*109,252.50*	-	-	-	-	*10,392.00*	*21,850.50*
Mines	*26,438.60*	*52,169.17*	-	*4,324.77*	*5,754.03*	*11,580.29*	*4,406.43*	*8,694.87*
Paper	*31,638.28*	*80,751.35*	*80,488.13*	*268,242.93*	-	-	*18,402.95*	*35,965.08*
Food processing	*52,404.77*	*96,351.84*	*84,318.02*	*146,561.06*	*1,402.07*	*2,965.95*	*21,975.39*	*24,135.08*
Others	*4,993.20*	*26,858.16*	*13,434.44*	*36,339.57*	*181.58*	*5,837.35*	*9,218.55*	*16,928.32*

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Alentejo Hydrographical Region TRH collection revenues by component and sector (in Euros)								
	A		E		O		U	
Sector	2009	2010	2009	2010	2009	2010	2009	2010
Aquaculture	4,733.16	-	4,560.49	9,563.32	7,295.12	14,590.25	790.16	1,563.38
Tourism	162.61	210.65	2,296.16	4,586.37	36,089.00	69,240.07	5,170.81	2,965.09
Irrigation	181,831.45	420,675.63	-	-	18,872.93	49,114.50	42,748.83	83,774.55
Others	-	9.05	7,296.20	9,653.27	107.13	171.75	717.04	955.41
Total	**994,120.64**	**1,698,265.94**	**823,562.65**	**1,492,492.06**	**73,528.67**	**161,211.73**	**257,500.65**	**438,586.68**

Source: ARH Alentejo (2011)

Algarve Hydrographical Region TRH collection revenues by component and sector (in Euros)								
	A		E		O		U	
Sector	2009	2010	2009	2010	2009	2010	2009	2010
Urban Water Cycle	1,106,934.18	605,409.42	710,488.96	465,206.93	14,385.98	4,885.14	227,425.37	109,436.51
Aquaculture	-	-	21,675.59	28,834.43	5,727.11	7,618.60	3,597.30	4,785.40
Irrigation	73,377.61	82,051.39	-	-	21.00	-	33,438.39	69,879.27
Beach supports/etc	-	-	-	-	350,430.00	693,723.40	-	-
Others	-	-	40,000.00	44,777.09	-	-	755.99	7,214.00
Total	**1,180,311.79**	**687,460.81**	**772,164.55**	**538,818.45**	**370,564.09**	**706,227.14**	**265,217.05**	**191,315.18**

Source: ARH Algarve (2011)

Water Quality Tax

Description

As a result of the approval and entering into force of the legal framework governing the quality of water used for human consumption (Decree-Law 306/2007), a charge has been levied thereon pertaining to inspection activities and the control of the quality standards of water used for human consumption carried out by the ERSAR – the Water Quality Tax (*Taxa de Qualidade da Água* – TQA).

$$TQA = B_{value} \times m^3$$

The charge is calculated in accordance with the base value and the volume of distributed water stated on the billing.

At the heart of the matter lays the water quality control plans laid down by managing entities responsible for the distribution of potable water, the undertaking of inspection activities concerning water quality standards regarding any part of the public water supply system, alerting the health authorities and the managing entities of the occurrence of any irregularities, carrying out the supervision of laboratories that guarantee the analytical quality control in water, providing annual technical reports with reference to the quality of water used for human consumption designed for public broadcast and also providing triennial reports concerning the quality of water used for human consumption intended for the European Commission.

The charge is levied on any service rendered which is carried out by a managing entity responsible for the distribution of potable water, namely, the State, the municipalities, the associations of municipalities, municipal services, parish councils, concessionary companies and recipients of delegated state-owned systems and also EPAL – Empresa Portuguesa de Águas Livres, S.A. (a 100% public corporation responsible for a water supply system which stretches more than 2100 kilometres). Globally, the charge encompasses over 300 entities.

Base value (in Euros)				
	2007	2008	2009	2010
€/1.000m³	1.5000	1.5360	1.5775	1.5633

Values

The base value of the TQA has increased marginally since 2007, while the universe of taxpayers is stable. The growing movement of TQA revenues is probably explained, therefore, by the increase of services provided to taxpayers, and in particular in terms of volume of water supplied.

Total taxpayers	
2007	303
2008	304
2009	308
2010	304

Source: ERSAR (2011)

Total revenues (in Euros)	
2007	1,528,699.90
2008	1,598,286.18
2009	1,677,647.13
2010	1,726,246.25
Total	**6,530,879.46**

Source: ERSAR (2011)

Water and Wastewater Services' Regulation Tax

Description

Entities responsible for providing services of potable water, wastewater and solid waste are levied with a charge regarding the regulatory activity of the ERSAR. This activity has been broadening in the last years and its scope includes the entire activity of the abovementioned managing entities.

$$Tax = V_{fixed} + V_{variable}$$

The fixation of the amount of the charge is based on the economic activity of the managing entity. That activity is evaluated according both the number of served inhabitants and the quantification of the services rendered, measured by the volume of cubic metres of distributed water or wastewater or the weight of solid waste collected.

Base values		
	Fixed Component (€/1000 inhabitant)	Variable Component (€/1000 m³)
2000	37.4098	1.2470
2001	39.2654	1.3069
2002	39.2700	1.3100
2003	39.2700	1.3100
2004	53.0000	1.7700
2005	55.1200	1.8400
2006	58.7000	1.9600
2007	59.9300	2.0000
2008	61.3100	2.0460
2009	61.3100	2.0460
2010	62.1100	2.0726

Values

The tax collection revenues have been consistently growing, now being nearly the triple of the amount collected 10 years ago. The reason appears not to be the increase of the respective base values charged in the last ten years as much as the constant expansion of the array of entities subject to IRAR's (nowadays ERSAR) regulatory activity.

With the approval of ERSAR's new statutes, which again expands its regulatory scope, as well as the legal frameworks of water and wastewater and waste services, collection revenues may register even further increase beyond 2010.

Total revenues (in Euros)				
Year	Total	*Fixed*	*Water*	*Wastewater*
2000	1,359,794	-	-	-
2001	1,438,625	-	-	-
2002	1,628,505	-	-	-
2003	1,791,111	-	-	-
2004	2,763,025	-	-	-
2005	3,081,115	-	-	-
2006	4,153,623	-	-	-
2007	3,494,472.15	*927,877.41*	*1,341,856.12*	*1,224,738.62*
2008	3,465,938.35	*1,432,169.11*	*1,246,421.60*	*787,347.64*
2009	3,605,929.39	*1,423,458.10*	*1,343,937.08*	*838,534.21*
2010	3,742,786.85	*1,460,958.75*	*1,164,652.69*	*1,117,175.41*

Source: ERSAR (2011)

Note: values up to 2006 include the sector of urban waste. The fixed component includes also the three sectors.

2. Public Investment Funds

Water Protection Fund (FPRH)

Description

Environmental funds nowadays are mainly investment or rotation funds, resetting public environmental financial decision from short-term goals to projects that envisage a longer period of time, consistent with sustainable development concerns.

The Water Protection Fund (*Fundo de Protecção de Recursos Hídricos – FPRH*) was created by Decree-Law 172/2009 on the result of Water Resources Economical and Financial Legislation (approved by Decree-Law 97/2008), as established by Water Act (Law 58/2005 which transposed the Directive 2000/60/EC of the European Parliament and of the Council of 23 October). It is a public investment fund, designed to promote water rational use and protection by financing projects and investments. It entirely relies on TRH, working as a mechanism to return to economical operators the tax revenue generated by them, through the allocation of financial resources to public and private projects and investments. To that effect, 50% of TRH revenues are earmarked to FPRH, which constitutes its most important financial resource.

FPRH Management Regulation was published 13th July 2010 by Portaria n.º 486/2010, establishing the procedures for presentation and selection of intervention projects, the payment and financing rules, as well as the terms of reimbursement. At 13th August 2010 the FPRH procedure manual was finally approved, setting the terms and process to be followed by beneficiaries from the presentation to the conclusion of the funding eligible project.

FPRH financial resources' are applied in financing activities whose target is the efficiency of water use and water resources quality, financing measures to improve water status and associated ecosystems and covering costs of water resources management, object of use and protection. The FPRH may also redistribute resources among the ARH, whenever necessary to accomplish interventions and major projects demanding greater financial support.

More specifically, FPRH's financial resources are invested in:

a) Projects to improve efficiency in water collection, use and distribution;

b) Projects to reduce water resources pollutant load rejection;

c) Projects to reduce environmental impact of the occupation of State's public water domain;

d) Projects to improve water ecosystems;

e) Projects to control floods and other interventions to systematize rivers;

f) Other projects to protect and recover water resources under INAG and ARH's.

The FPRH can act as a sinking fund, in the sense that financing can be carried out without return or payment; however, it acts preferentially as a revolving fund, since funding should be repaid and may be recovered through participation in income from projects implementation and may be remunerated by charging interests.

Values

Outset in 2010, only since then the FPRH receives it's TRH 50% share. In 2009, the amount affected to FPRH was redistributed by all ARH and INAG. From the total amount allocated to ARH Tejo remained the sum of €85.886,20, which in 2010 was reimbursed to FPRH.

As the Management Regulation only entered into force in 14th July 2010, only afterwards it was possible to begin the submission of projects for FPRH approval, more precisely in the period elapsed between 14th July and 31st October 2010. During that period 85 projects were presented to FPRH. As they were still under evaluation in the end of 2010, during that year there was no financial execution associated to funding projects.

FPRH total resources (in Euros)			
	TRH	Others	Total
2009	7,754,283.00	-	**7,754,283.00**
2010	15,498,668.69	85,886.20	**15,584,554.89**

Source: FPRH Activities Report 2010 (2011)

FPRH revenues redistribution (in Euros)				
	2009		2010	
	Amount	%	Amount	%
ARH Norte	1,400,000.00	*18,05*	2,067,107.00	*22,95*
ARH Centro	900,000.00	*11,61*	1,247,269.00	*13,85*
ARH Tejo	1,800,000.00	*23,21*	2,462,841.00	*27,35*
ARH Alentejo	1,000,000.00	*12,90*	1,388,372.00	*15,42*

WRT contributors (in Euros)		
	2010	
	Amount	%
ARH Norte	3,801,472.16	*24,53*
ARH Centro	1,435,735.47	*9,26*
ARH Tejo	7,131,861.82	*46,02*
ARH Alentejo	1,630,586.25	*10,52*

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FPRH revenues redistribution (in Euros)				
	2009		2010	
	Amount	%	Amount	%
ARH Algarve	2,000,000.00	*25,79*	1,840,228.00	*20,43*
INAG	654,283.00	*8,44*	0.00	*0,00*
Total	**7,754,283.00**	***100,00***	**9,005,817.00**	***100,00***

Source: FPRH Activities Report 2010 (2011)

WRT contributors (in Euros)		
	2010	
	Amount	%
ARH Algarve	1,499,012.99	*9,67*
Total	**15,498,668.69**	***100,00***

Source: FPRH Activities Report 2010 (2011)

3. Water and Wastewater Services' Tariffs Regulation

Description

The industry structure for water services is fragmented in 23 wholesale and 275 retail water service providers, nearly all of which are owned and controlled by municipalities. Very small-scale suppliers, with few economies of scale, too often operate these services.

The average degree of cost recovery in water supply is of 80%, yet little over 30% in wastewater services, with roughly 50 municipalities (out of 300) not charging explicitly for this service.

Wastewater collection and treatment charges are well below full-cost recovery (FCR) level in many localities, with local and/or national taxation making up the difference. The ERSAR estimates that the financial sustainability of wholesale water services is, under present circumstances, either doubtful (one-third) or of concern (another one-third) for two-thirds of operators.

There are significant affordability problems potentially impacting between 5% and 10% of Portuguese households, even without FCR. FCR realisation and predicted future increases in real water charges will worsen these problems, unless social tariffs involving a measure of cross-subsidisation are introduced.

This is a situation clearly at odds with the existing legal framework. In fact, the Water Law (Law 58/2005 of 29 December) and the Economic and Financial Regime for Water Resources (Decree-Law 97/2008 of June 11), determine that the system of tariffs for water services must ensure the recovery of the initial investment and new investment for expansion, modernization and replacement of infrastructure, ensure the maintenance, repair and renovation of all goods and equipment used, as well as the payment of all compulsory charges that may be involved, and ensure the effectiveness of services within a framework of efficiency of resource use. Similarly, the Local Finance Law (Law 2/2007 of January 15) expressly establishes that the tariffs set by the municipalities on the services of water and wastewater services must ensure cost recovery directly and indirectly supported with his performance.

As a result, ERSAR has produced a recommendation concerning the structure and criteria that should be observed in setting urban water and wastewater tariffs (Recomendação IRAR 01/2009).

The recommendation establishes a framework for the tariff structure, which is to be followed by all service-providers, with the following orientation:

- Standard household tariff to be a fixed charge plus a 4-block IBT.

- Standard non-residential tariff to be a fixed charge plus a uniform volumetric rate (which must be equal in value to the 3rd household block), thus implying a built-in measure of unavoidable cross-subsidisation of the household by the non-household sectors.

- Block widths for the standard household tariff structure are set in the legislation and prices for each block to be approved by each municipality.

- ERSAR can issue further recommendations on topics such as absolute or relative prices for each block to be applied by utilities, monitor progress on FCR and compliance with legislation and issue recommendations directed at specific service providers.

- It is mandatory for wastewater charges to follow precisely the same tariff structure as the structure used for the water supply of any given household. This is achieved by setting the variable portion of the wastewater bill equivalent to a certain percentage of the variable portion of the water supply bill.

- Lump-sum charges for new service-connections can at present be very high (between €500 and €1.000). This significant barrier to universal access will have to be gradually phased-out over a 5-year period.

- It should be implemented a social tariff structure for low-income households, as well a larger family plan tariff structure.

The implementation of the recommendation began in 2010, after a period of public discussion in which new tariffs the municipalities and the services' providers elaborated plans.

Values

Regarding the burden for the end user, it is possible to show the three levels of household consumption more relevant during 2009 in all Portuguese municipalities (60 m^3, 120 m^3, 180 m^3), whereas the 120 m^3 consumption is considered by ERSAR as the average level.

One may verify that:

- The water supply is paid in almost all municipalities,

- However, in more than 60 municipalities, wastewater services are provided free of charge;

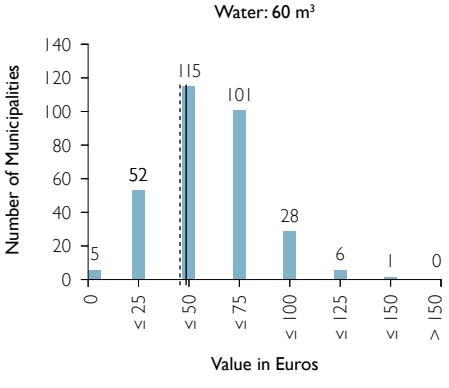
- Most municipalities practice values below or well below the average;

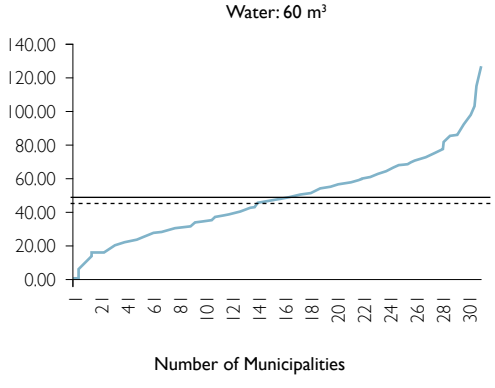
- The average values grow due to the higher rates applied in the higher tariffs, as it is demonstrated by the fact that the average values are always higher than the median ones.

An analysis on full cost recovery will only be available by ERSAR from August 2011, as only then begins its effective economic regulation of entities in models of direct and delegated management.

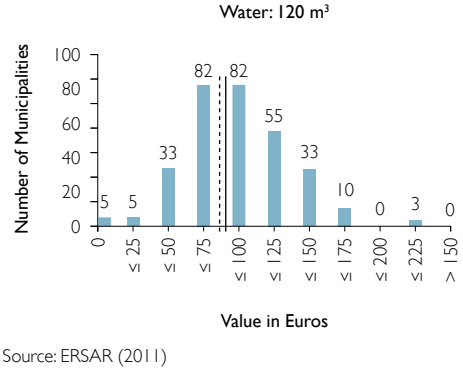
Water tariffs 2009 (in Euros)			
	60 m³	120 m³	180 m³
Minimum	0.00	0.00	0.00
Maximum	126.24	222.84	378.84
Average	47.64	86.52	138.20
Median	46.68	83.88	132.70

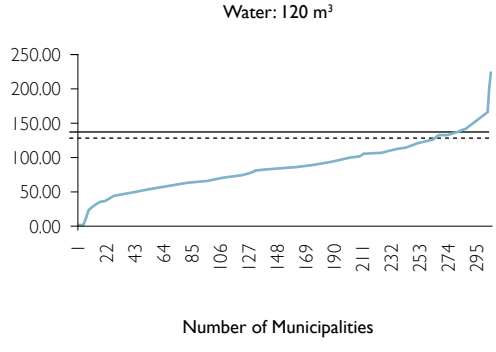
Source: ERSAR (2011)





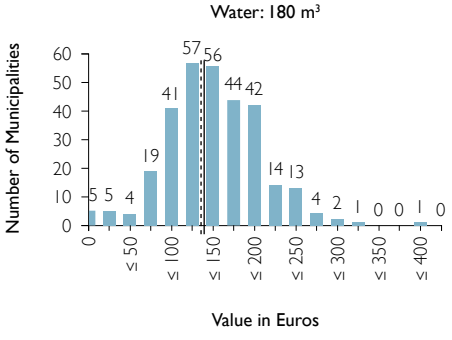
Source: ERSAR (2011)

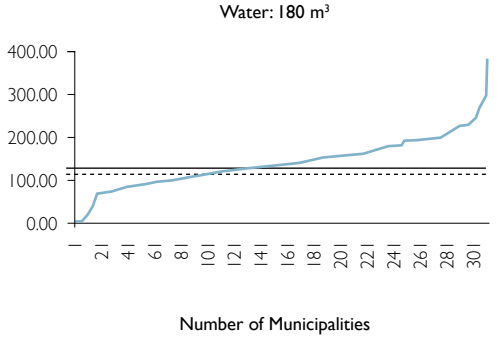




Source: ERSAR (2011)

Median
Average



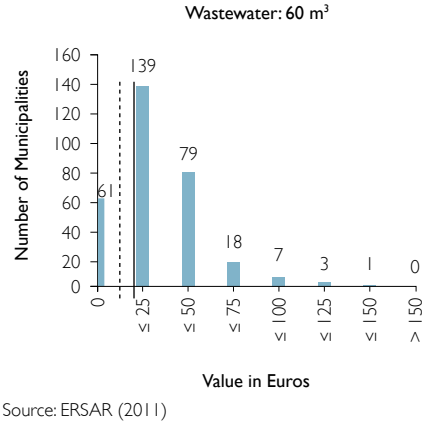


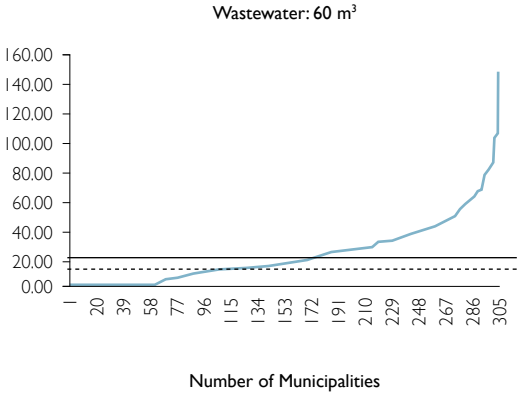
Source: ERSAR (2011)

Median
Average

Wastewater tariffs 2009 (in Euros)			
	60 m³	120 m³	180 m³
Minimum	0.00	0.00	0.00
Maximum	147.24	360.00	231.96
Average	22.18	36.98	51.00
Median	15.86	27.63	41.40

Source: ERSAR (2011)





Source: ERSAR (2011)

Median
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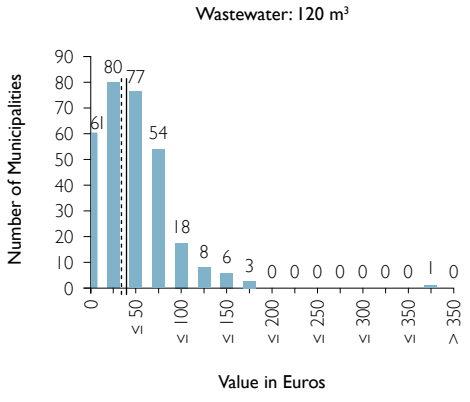

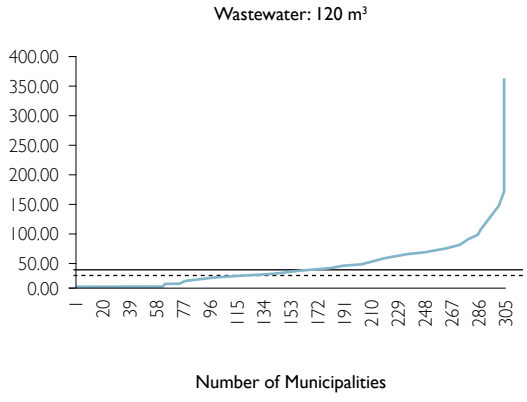

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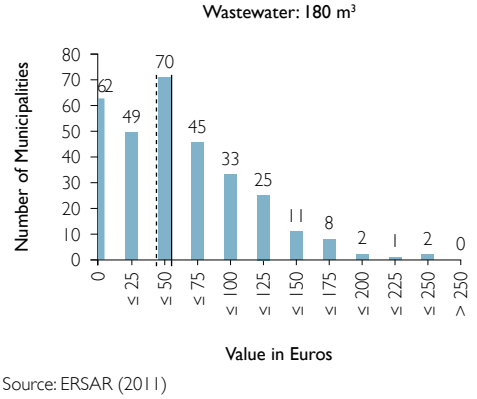

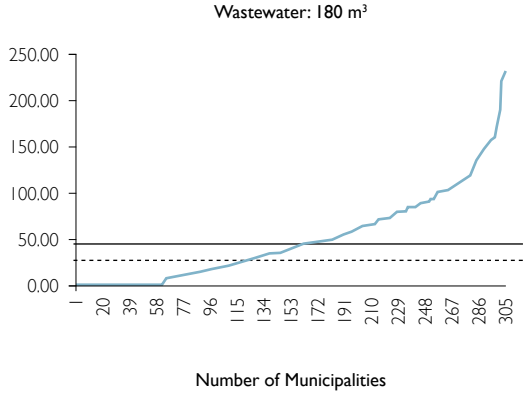

Source: ERSAR (2011)

Median
Average

Carbon & Energy Finance

0. Synthesis

Under the Carbon and Energy Finance, attention focuses on the functioning of the Carbon trade and all the taxes that make up vehicle and energy taxation.

On the side of the Carbon trade, highlights are drawn to the contribution given by the Portuguese Carbon Fund *(Fundo Português de Carbono – FPC)* to the efforts made to meet the national targets under the Kyoto Protocol. The purchase of credits through permits, clean development mechanisms and joint implementation and investments in various funds have been part of the strategy for placing Portugal's emissions below the greenhouse gases ceilings that have been set for 2012. The coming years will confirm this trend or not.

With respect to taxation with environmental impact, is now understood that the reform of vehicle taxation in 2007, by basing the tax on vehicles on CO_2 emissions, contributed decisively to the national policy on climate change in the crucial sector of road transportation. The applicable rates of ISV and IUC increase according to CO_2 emissions and all available information reveals that the consumers' decisions are shifting to the purchase of vehicles with less environmental impact.

Despite being a budget-neutral reform – the total tax revenue collected by the State remained broadly unchanged – the importance of the environment in taxation is increasingly prevalent. It is particularly visible that the average CO_2 emissions from new vehicles imported for consumption has repeatedly and consistently fallen since 2007 – regardless of increase or decrease of tax collected and therefore the number of vehicles sold – reaching in 2010 a level of leadership among OECD countries.

As for the ISP, there is a declining trend in revenue since 2007, although between 2008 and 2010 nominal rates have been kept unchanged. This decline reflects, therefore, the rising price of raw materials. The positive environmental performance of the ISP is hampered by the many exemptions and tax benefits in place, which, according to the recommendations of the OECD, should be removed shortly. The end of the biofuels tax benefits regime by the end of 2010 is a good example.

Finally, the energy taxation in Portugal stands out positively on the account of TLBEE, designed to offset the costs originated to the environment by the use of such lamps, and stimulate the achievement of national targets on CO_2 emissions. Since its inception, has been responsible for raising revenue for projects to stimulate energy efficiency and the operation of the FPC.

The final step to be taken in the coming years lies in the implementation of the Tax on Electricity, transposing into national law the European directive on energy taxation – in fact, it is an obligation for which the Portuguese State is already in default.

1. Carbon Trade

Portuguese Carbon Fund (FPC)

Description

Decree-Law 71/2006 created the Portuguese Carbon Fund (*Fundo Português do Carbono – FPC*), a financial instrument to support measures to fulfil the Portuguese commitments under the Kyoto Protocol, and to obtain emission credits from the Kyoto Protocol's market based mechanisms.

The FPC develops its activity in several areas, namely, such as the purchase of credits through direct investment in Kyoto mechanisms (CDM, JI and IET) or the investment in other Funds or other instruments of the carbon market, supporting the development of projects in Portugal that aim at the reduction of GHG emissions; and supporting the participation of public and private entities in the carbon market.

The FPC is managed by the CECAC and by the DGTF; the first one is responsible for technical management and the second for financial management. The government endowed the FPC with a nominal value of 348 million Euros over the Kyoto period (2008-2012).

Values

The FPC has received 152 million Euros between 2006 and 2010, of which 78 million was granted by the State Budgets and 74 million generated by its own revenues.

By the end of 2010, the account of the FPC on the National Register of Allowances (RPLE) amounts to 5,321,629 tonCO_2e.

Revenues (in Euros)			
	2006-2009	**2010**	**Total**
State budget	55,000,000	23,000,000	78,000,000
Own revenues	47,552,714	26,770,447	74,323,161
ISP on heating diesel	*44,305,378*	*20,533,133*	*64,838,512*
Light bulbs tax (TLBEE)	*2,878,417*	*5,911,994*	*8,848,095*
Fines	*0*	*286,441*	*286,441*
Investments returns	*317,493*	*38,878*	*350,113*
Total	**102,501,288**	**49,770,447**	**152,323,161**

Source: CECAC | FPC – Activities Report 2010 (2011)

The FPC has invested about 136 million Euros by 2009. In 2010, investments amounted to the value of the FPC total assets of 141.8 million Euros. By the end of 2010, the FPC has committed about 140.9 million Euros and the payments amount to approximately 98.8 million Euros.

This investment represents about 23.1 MtonCO_2e, of which 9.1 Mton regards to pre-2012 credits, with an average price of €10.90 / Ton.

The total committed investment of the FPC in participations in carbon funds was 75.8 million Euros, at an average price of €11.22 / Ton.

The FPC has concluded an AAUP (Assigned Amount Unit Purchase Agreement) with Latvia in 2009 to purchase 4 million AAU, which was paid in 2010. 200 000 AAU were also purchased as part of an AAU transaction through a World Bank operation.

Values 2010 (in Euros)					
Investments	Accumulated subscription	Year realizations	Accumulated realizations	Accumulated default realizations	Net value 31.12.2010
Funds	72,985,095.74	382,889.00	45,315,470.74	27,669,625.66	45,315,470.74
Luso Carbon Fund	28,263,121.74	0.00	28,263,121.74	0.00	28,263,121.74
Carbon Fund Europe	11,700,000.00	0.00	5,600,000.00	6,100,000.00	5,600,000.00
Natsource Carbon Asset Pool	22,800,000.00	382,889.00	1,230,375.00	21,569,625.00	1,230,375.00
Asia Pacific Carbon Fund	10,221,974.00	0.00	10,221,974.00	0.66	10,221,974.00
Assigned Amount Units (AAU)	40,090,990.00	21,090,000.00	40,090,000.00	990.00	40,090,000.00
Secondary market CER/ERU	10,585,581.00	6,939,642.00	10,585,579.00	0.00	10,585,579.00
Total	**123,561,666.74**	**28,412,531.00**	**95,991,049.08**	**27,670,617.66**	**95,991,049.08**

Source: DGTF (2011)

The FPC has also participated in national projects to reduce emissions, supporting the program Mobi. E (electrical mobility) and concluding agreements with the IGP and the AFN for the accounting of emission / capture of CO_2e component in agricultural and forest-forest management.

2. Vehicle Taxation

Motor Vehicle Tax

Description

Motor Vehicle Tax (*Imposto sobre Veículos –ISV*) in Portugal is since 2007 based on CO_2 emissions and on cylinder capacity, making of it an important tool in the context of environmental and climate change policy. Passenger cars (including all road vehicles – 4x4) and multipurpose vehicles are taxed based on CO_2 emissions and on cylinder capacity. The corresponding rates increase according to the level of CO_2 emissions and are designed to encourage the acquisition of vehicles that are environmentally less detrimental.

This means that this tax has not simply an environmental implication, as its predecessor (Imposto Automóvel – IA) had; Law 22-A/2007, created the ISV as an environmental tax itself, as one of the novelties lays in the introduction of the abovementioned environmental factor, which started by representing 30% of the total tax basis and then, as of 1st January 2008, encompassed 60% of the taxation base. Therefore, as a result of this ongoing environmental policy, the weight of cylinder capacity has decreased significantly, promoting a sustained change of heart by consumers who have started to opt for less polluting forms of transport, i.e., those that have less CO_2 emissions and have less cubic capacity.

ISV Tax Rates 2007-2010 (A – passengers vehicles)				
Cylinder engine component				
	2007 (70%)		2008-2010 (60%)	
Cubic centimetres	Rate	Quota decrease	Rate	Quota decrease
≤ 1250 cc	€1.96	€1,350.00	€0.90	€670.00
>1250 cc	€7.16	€7,850.00	€4.25	€4,875.00
CO_2 component				
2007 (30%)				
Gasoline			Diesel	
CO_2 bands – g/km	Rate	Quota decrease	CO_2 bands – g/km	Rate	Quota decrease
$CO_2 \leq 120$	€0.95	€0.00	$CO_2 \leq 100$	€2.60	€0.00
$121 \leq CO_2 \leq 180$	€18.50	€2,106.00	$101 \leq CO_2 \leq 150$	€27.00	€2,440.00
$181 \leq CO_2 \leq 210$	€53.00	€8,316.00	$151 \leq CO_2 \leq 180$	€85.00	€11,140.00
$CO_2 > 210$	€60.00	€9,786.00	$CO_2 > 180$	€105.00	€14,740.00

cont.

cont.

ISV Tax Rates 2007-2010 (A – passengers vehicles)					
CO_2 component					
2008 (40%)					
Gasoline			Diesel		
CO_2 bands – g/km	Rate	Quota decrease	CO_2 bands – g/km	Rate	Quota decrease
$CO_2 \leq 120$	€5.00	€475.00	$CO_2 \leq 105$	€15.00	€1,100.00
$121 \leq CO_2 \leq 150$	€33.00	€3,835.00	$106 \leq CO_2 \leq 130$	€55.00	€5,300.00
$151 \leq CO_2 \leq 180$	€40.00	€4,885.00	$131 \leq CO_2 \leq 150$	€105.00	€11,800.00
$181 \leq CO_2 \leq 210$	€85.00	€12,985.00	$151 \leq CO_2 \leq 180$	€122.00	€14,350.00
$CO_2 > 210$	€115.00	€19,285.00	$CO_2 > 180$	€160.00	€21,190.00
2009 (40%)					
Gasoline			Diesel		
CO_2 bands – g/km	Rate	Quota decrease	CO_2 bands – g/km	Rate	Quota decrease
$CO_2 \leq 115$	€3.50	€329.00	$CO_2 \leq 95$	€10.00	€730.00
$116 \leq CO_2 \leq 145$	€31.50	€3,549.00	$96 \leq CO_2 \leq 120$	€48.00	€4,340.00
$146 \leq CO_2 \leq 175$	€38.00	€4,491.50	$121 \leq CO_2 \leq 140$	€98.00	€10,340.00
$176 \leq CO_2 \leq 205$	€90.00	€13,591.50	$141 \leq CO_2 \leq 160$	€119.00	€13,280.00
$CO_2 > 205$	€125.00	€20,766.50	$CO_2 > 160$	€168.00	€21,610.00
2010 (40%)					
Gasoline			Diesel		
CO_2 bands – g/km	Rate	Quota decrease	CO_2 bands – g/km	Rate	Quota decrease
$CO_2 \leq 115$	€3.57	€335.58	$CO_2 \leq 95$	€17.18	€1,364.61
$116 \leq CO_2 \leq 145$	€32.61	€3,682.79	$96 \leq CO_2 \leq 120$	€49.16	€4,450.15
$146 \leq CO_2 \leq 175$	€37.85	€4,439.31	$121 \leq CO_2 \leq 140$	€109.02	€11,734.52
$176 \leq CO_2 \leq 195$	€96.20	€14,662.70	$141 \leq CO_2 \leq 160$	€121.24	€13,490.65
$CO_2 > 195$	€127.03	€20,661.74	$CO_2 > 160$	€166.53	€20,761.61

There exist a vast array of full exemptions and reduced rates such as full exemption for hybrid motor vehicles powered by electric or solar energy or by so-called traditional fuel sources, namely petrol or diesel. Moreover, there is a reduced rate in the amount of 50% concerning passenger vehicles equipped with hybrid engines and vehicles powered exclusively with liquefied petroleum gas (LPG) or natural gas as well as for rent-a-car vehicles conditional to CO_2 emissions being equal to or less than 130 g/km.

Average CO_2 emissions New vehicles sales 2006-2010		
	Petrol	Diesel
2006	145	150
2007	144	146
2008	140	138
2009	136	137
2010	132	126
Variation	- 13gr	- 24gr

Source: DGAIEC (2011)

Values

With the refurbishment in 2007, the centre of vehicle taxation shifted from acquisition of the vehicle to its property, meaning that in the long run tax revenues will fall in ISV and increase in IUC.

The overall price tags of motor vehicles have remained the same, although the emphasis on aggravated taxation must lie on cars that pollute more than cars that have less CO_2 emissions. Currently, CO_2 tax component already plays a decisive role in reducing car emissions as seen in the diagram below.

Collection revenues by type of vehicle (in million Euros)						
		All-road and light cargo	Light cargo	Mixed	Passenger or mixed	Motorcycles and others
Imposto Automóvel	**2001**	92.7	32.5	0.0	1,102.8	0.0
	2002	61.8	12.4	18.5	1,089.6	0.0
	2003	45.6	5.7	23.2	938.3	0.0
	2004	43.8	3.7	26.8	1,076.1	0.0
	2005	37.8	3.4	30.0	1,135.7	0.0
	2006	39.4	2.8	46.0	1,109.5	0.0
	2007	29.9	19.5	61.2	1,075.1	0.4
ISV	**2008**	0.0	47.5	0.0	857.9	0.9
	2009	0.0	34.0	0.0	665.8	0.8
	2010	0.0	40.0	0.0	772.6	0.7

Source: DGAIEC (2011)

Total collection revenues (in million Euros)		
Imposto Automóvel	**2000**	1,204.9
	2001	1,192.9
	2002	1,150.4
	2003	985.1
	2004	1,121.3
	2005	1,173.2
	2006	1,166.0
	2007	1,186.6
ISV	**2008**	917.6
	2009	693.3
	2010	809.1

Source: DGAIEC (2011)

Car scrapping scheme

The car-scrapping scheme set out by Decree-Law 292-A/2000 will be extended until 31st December 2010, although differing from the transitional framework in force until 31 December 2009. This transitional tax structure set in place for 2009 granted a €1250 tax reduction if a person acquired a new vehicle to replace one with a 8 year old and under 13 year old register plate, bearing in mind it was bound to be disassembled. Likewise, a vehicle with a 13 year old or over register plate benefited from a €1500 tax reduction.

Henceforth as set out in the State Budget for 2010, the possibility to reduce the motor vehicle tax payable preceding the purchase of a new passenger car will be reduced by € 750 (for cars at the end of its cycle with a register plate over 10 years and up to 15 years old) or € 1000 (for cars at the end of its cycle with a register plate in excess of 15 years) bearing in mind the introduction of an environmental factor based on carbon dioxide (CO_2) emissions, i.e., the purchased vehicles CO_2 emissions cannot exceed 130g/km.

The estimated tax expenditure as referred to in the State Budget for 2010 amounts to € 24 Million Euros. In 2009, tax expenditure was approximately 50.7 million Euros.

Years	Amount (in Euros)
2001	9,595,949.00
2002	5,018,889.00
2003	3,206,925.00
2004	3,920,464.00
2005	4,397,277.00
2006	7,381,144.00
2007	18,767,676.00
2008	44,774,053.00
2009	51,349,125.00
2010	35,379,792.24

Source: DGAIEC (2011)

Single Road Tax

Description

As abovementioned Law 22-A/2007 enacted a global amendment of motor vehicles and as a result a Single Road Tax (*Imposto Único de Circulação – IUC*) entered in force that resulted in the simultaneous repeal of the Municipal Vehicles Tax, the former Road Tax and the Road Haulage Tax.

The IUC is an annual tax levied based on an ownership principle as well as grounded on the principle of tax equivalence intended to burden taxpayers according to the environmental damage they cause as well as to the proportionate wear and tear of road network as a direct cause of vehicle circulation.

IUC Structure			
Category B: Other passenger vehicles and mixed use vehicles originated from passenger vehicles with a gross weight not over 2500 kg registered after the date of entry into force of Road Tax Code			
Cylinder capacity (in cubic centimetres)	**Rates (in Euros)**	**CO_2 Levels (Grams per Kilometre)**	**Rates (in Euros)**
Up to 1 250	26.10	Up to 120	52.40
More than 1 250 up to 1 750	52.40	More than 120 up to 180	78.50
More than 1 750 up to 2 500	104.70	More than 180 up to 250	157
More than 2 500	314	More than 250	261.70

Year of acquisition (category B)	Coefficient
2007	1
2008	1.05
2009	1.10

Henceforth, in the case of passenger vehicles and mixed use vehicles originated from passenger vehicles with a gross weight not over 2500 kg, the tax to be paid depends on the vehicle's CO_2 emissions level and the respective cylinder capacity. The environmental component is likewise included in the calculation of the IUC at the same percentages used for ISV. To the remaining vehicles, taxation is calculated according the vehicles' weight.

There are also full exemptions for vehicles powered by non-combustion renewable energy sources.

Values

The tax collection revenue of Category B (with environmental criteria) has a growing trend, both in the total amount of collected tax as in its proportion in the total IUC collection revenue.

Likewise, the environmental component of the circulation tax, based on the CO_2 emissions, is gaining an increasing importance.

Tax collection revenues (thousand Euros)			
Category	**2008**	**2009**	**2010**
A	125,889.49	125,095.76	123,668.84
B	43,596.15	75,141.20	106,660.95
CO_2	*23,262.27*	*39,493.34*	*56,624.53*
Cylinder	*20,333.87*	*35,647.86*	*50,036.42*

cont.

cont.

Tax collection revenues (thousand Euros)			
Category	**2008**	**2009**	**2010**
C	62,063.79	65,732.92	65,724.77
D	16,782.28	16,455.28	15,583.74
E	6,038.75	7,257.92	7,793.85
F	4,020.00	4,169.48	4,229.81
G	123.74	127.00	130.66
Total	**258,514.20**	**293,979.55**	**323,792.62**

Source: DGCI (2011)

IUC structure (%)			
Category	**2008**	**2009**	**2010**
A	48.70	42.55	38.19
B	16.86	25.56	32.94
CO_2	*9.00*	*13.43*	*17.49*
Cylinder	*8.87*	*12.13*	*15.46*
C	24.01	22.36	20.30
D	6.49	5.60	4.81
E	2.34	2.47	2.41
F	1.56	1.42	1.31
G	0.05	0.04	0.04

Source: DGCI (2011)

Evolution 2008-2010		
Category	**2009/2008**	**2010/2009**
A	-0.63%	-1.14%
B	72.26%	41.95%
CO_2	*69.77%*	*43.38%*
Cylinder	*75.31%*	*40.36%*
C	5.91%	-0.01%
D	-1.95%	-5.30%
E	20.19%	7.38%
F	3.72%	1.45%
G	2.63%	2.88%

Source: DGCI (2011)

3. Energy Taxation

Petroleum and Energy Products Tax

Description

Taxation on petroleum and energy products encloses clear environmental goals, apart from the economic rationale from a tax collection standpoint, such as energy efficiency, energy saving and the reduction of CO_2 emissions.

The Petroleum and Energy Products Tax (*Imposto Sobre Produtos Petrolíferos e Energéticos – ISP*) structure basically reproduces the EU harmonised excise duties framework. Taxable products are petroleum and other energy products, any other products to be used, sold or consumed as motor fuel, vegetable oils (when used as motor fuel or as furl), mineral oils including lubricating oils which are non-harmonized – products identified by their NC codes of Ch. 27, 29, 34 and 38, coal and natural gas (used as motor fuel), bio fuels (when used as motor fuel or as fuel).

ISP Rates 2007-2010 (in Euros)											
Product		01.01.2007 a 07.01.2007	08.01.2007 a 22.02.2007	23.02.2007 a 31.12.2007	01.01.2008 a 09.01.2008	10.01.2008 a 31.12.2008	01.01.2009 a 28.02.2009	01.03.2009 a 31.12.2009	01.01.2010 a 28.04.2010	29.04.2010 a 31.08.2010	01.09.2010 a 31.12.2010
Leaded gasoline	For 1000 litres	650	650	650	650	650	650	650	650	650	650
Unleaded gasoline		557.95	582.95	582.95	518.95	518.95	518.95	518.95	518.95	518.95	518.95
Diesel		339.41	364.41	364.41	278.41	278.41	278.41	278.41	278.41	278.41	278.41
Agricultural diesel		77.51	77.51	77.51	77.51	77.51	77.51	77.51	77.51	77.51	77.51
Heating diesel		91.44	91.44	137.2	137.2	176.18	176.18	176.18	176.18	176.18	176.18
Petroleum		308.04	308.04	308.04	308.04	308.04	308.04	308.04	308.04	308.04	308.04
Industrial petroleum		110.64	110.64	110.64	110.64	110.64	110.64	110.64	110.64	110.64	213.83

cont.

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ISP Rates 2007-2010 (in Euros)											
Product		01.01.2007 a 07.01.2007	08.01.2007 a 22.02.2007	23.02.2007 a 31.12.2007	01.01.2008 a 09.01.2008	10.01.2008 a 31.12.2008	01.01.2009 a 28.02.2009	01.03.2009 a 31.12.2009	01.01.2010 a 28.04.2010	29.04.2010 a 31.08.2010	01.09.2010 a 31.12.2010
Fuel oil w/ sulphur <=1%	For 1000 kg	15.3	15.3	15.3				29.25	29.25		29.25
Fuel oil w/ sulphur >1%	For 1000 kg	29.25	29.25	29.25				29.25	29.25		29.25
Propellant gas	For 1000 kg	106.54	106.54	106.54	108.78	108.78	108.78	108.78	108.78	109.65	109.65
Heating gas	For 1000 kg	7.81	7.81	7.81				7.81	7.81		7.81
Industrial lubricant	For 1000 kg	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78
Other lubricant	For 1000 kg	21.28	21.28	21.28	21.28	21.28	21.28	21.28	21.28	21.28	21.28
Coal	For 1000 kg	4.16	4.16	4.16				4.16	4.16		4.16
Natural Gas	Giga-joule	2.72	2.72	2.72	2.78	2.78	2.78	2.78	2.78	2.78	2.78

There are full exemptions concerning petroleum and other energy products that are proved to be used for purposes other than as motor fuel or as heating fuel, used in air navigation (except for private pleasure flying) used in coastal and internal navigation, including fishing but excluding pleasure navigation (gas oil and fuel oil), used for producing electricity or electricity and heat (coal and fuel oil), used in public transportation (LPG and natural gas), used as industrial fuels in approved installations (coal, coke, fuel oil and petroleum gas), under emissions license scheme or energy efficiency agreements, used in dredging operations in ports and waterways (gas oil and fuel oil), used in railways (gas oil) and bio fuels (small producers).

On the other hand, partial exemptions are conferred to agricultural and forestry equipment, power-producing engines (fixed generators foe electricity production and compressors) and bio fuels (large producers).

Values

The following tax rates and overall tax collection revenue of ISP (in Million Euros) are as follows (situation as of January 1st 2010):

ISP collection revenues by fuel (million Euros)							
	Gasoline	Diesel	Fuel oil	LPG	Kerosene	Gas	Others
2001	772.6	1,345.4	17.4	9.0	0.7	0.0	2.1
2002	1,223.3	1,495.3	14.4	9.2	0.9	0.0	2.4
2003	1,278.0	1,649.3	7.9	8.6	0.7	0.0	2.0
2004	1,252.2	1,691.6	8.0	8.5	0.7	0.0	2.2
2005	1,202.1	1,771.9	7.7	4.0	0.7	4.2	2.1
2006	1,178.0	1,849.3	6.8	3.6	0.6	4.5	2.3
2007	1,164.9	1,968.3	6.1	5.7	0.4	2.6	21.4
2008	967.1	1,522.7	0.4	3.4	0.9	0.3	35.1
2009	941.5	1,471.9	2.3	4.9	0.9	1.7	11.0
2010	902.9	1,456.9	2.5	5.5	0.8	2.3	35.2

Source: DGAIEC (2011)

Total ISP collection revenues (million Euros)	
2000	2,114.5
2001	2,147.4
2002	2,745.4
2003	2,946.4
2004	2,963.4
2005	2,992.7
2006	3,045.1
2007	3,169.4
2008	2,530.0
2009	2,434.2
2010	2,406.1

Source: DGAIEC (2011)

Low Efficiency Light Bulbs Tax

Description

The enactment of a tax on low efficiency light bulbs is intended to compensate the costs that the utilization of these bulbs have on the environment due to the effects of inefficient energy consumption. Furthermore, it proposes to stimulate the fulfilment of the domestic objectives concerning CO_2 emissions. This was the objective of the publication of Decree-Law 168/2008, which created the aforementioned tax.

$Tax = (W_{BULB} - W_{reference}).Hours_{bulb}.EmissionFactor.CO_2$
W_{bulb} Light bulb wattage subject to taxation
$W_{reference}$ Wattage of the alternative of high efficiency for the same level of measurement in lumens of light
$Hours_{bulb}$ Estimated average rated life cycle of the type of bulb subject to taxation
EmissionFactor Average factor of CO_2 emissions of the National Electric System expressed in TCO_2 per Wh
CO_2 Reference price per tonnage of CO_2

The tax on low efficiency light bulbs is due by manufacturers and importers and all other economic agents that introduce these products into the Portuguese market and is levied on the following type of bulbs:

- Incandescent light bulbs for generic usage, without halogen glare, of any format or type of finish (clear, textured glass, opaline), with spiral screw E14, E27 and B22, of wattage between 15 W and 200 W and a rated voltage between 220 V and 240 volts, even if included in lamps;

- High-pressure mercury vapour lamp without diodes, generally used in urban and industrial lighting, with wattage between 50 W and 1000 W.

Values

Amounts of tax as well as the value parameters comprised in the formula for tax calculation are specified in Portaria 63/2008:

- Incandescent light bulbs: € 0,41/unit

- High pressure mercury vapour lamps: € 6,77/unit

The reporting period began in January 2008 and to date taxes were levied until the end of the first half of 2009. As we can see from the table below, between January 2008 and June 2009 about 6 million Euros were raised related to this charge, which represents an annual average of 4 million. Of these, about 3.2 million (annual average) returned to the FPC for the purchase of carbon credits and about 0.8 million (annual average) paid into the Fund for Energy Efficiency intended to support measures for Energy Efficiency in Portugal.

The overall tax revenue collection is as follows:

Tax collection revenues (in Euros)	
First semester 2008	924,715
Second semester 2008	2,673,306
First semester 2009	2,416,847
Total	**6,014,868**

Source: DGEG (2010)

4. Public Investment Funds

Permanent Forest Fund (FFP)

Description

Environmental funds were originally conceived as vehicles for the polluter pays and user pays principles, as they ensure that revenues from environmental taxes are converted into environmental expenditure. Its only natural, then, that the first fund created in Portugal was the Permanent Forest Fund.

Decree-Law 64/2004 established the Permanent Forest Fund (FFP) as a result of the political options undertaken via the Resolution of the Council of Ministers 178/2003 concerning the primary guidelines of the future of the Portuguese forestry sector. It was a continuous environmental process ante ceded by the enactment of the 1996 **Framework Law** on **Forest Policy** that introduced the concept of 'sustainable forest management' for the first time.

The FFP, an autonomous body, was created complementarily with the Institute for Financing and Supporting the Agriculture and Fisheries Development (IFADAP). It sets the objectives of the Fund, as, for instance: promoting the investment, management and prevention of forest fires; supporting the preventive measures of forest fires; creating financial mechanisms for enabling sustainable forestry models. The Ministry for Agriculture, Rural Development and Fisheries shall approve the programme of financial aid to be granted by the FFP. Finally, the Decree indicates the various possible aids foreseen (subsidies, credit lines, insurance premiums and guarantees) and the areas covered by the Funds.

FFP's target activities comprise forest fire prevention such as bolstering the number of existing forest fire fighters and forest offices on a municipal level, improvements in forest management by means of "Forest intervention zones" (ZIFs), forest research, provision of forest public goods (ecological, social and cultural services) and monitoring of forest health conditions and biotic risks. The Fund's main beneficiaries are forest owner's ´associations, municipalities and Public Forest Services.

Since 2010 FFP is allowed to grant support to the certification of forest management in the axis of intervention "Sustainability of the Forest", both in the constitution of Systems Certification of Forest Management and in the adherence to already existing Systems Certification of Forest Management. The beneficiaries of these grants are forest owners and producers, producer organizations and the forest management bodies of commons not subject to the Forestry Legal Framework, as well as fund managers in areas of forest intervention (ZIF), particularly those with high standards of competitiveness and technology. The financial support is provided in the form of non-repayable subsidies, and the level of support to be provided is equivalent to 80% of eligible expenses in the case of the ZIF areas and 50% for non-adherent areas.

Values

As far as funding is concerned, the FFP is financed primarily by a percentage of 0,5% of tax revenue collected on ISP, which is specifically earmarked to that effect.

The tax expenditure was approximately 25 million Euros in 2009 and over 51 million in 2010.

Approved funding (in Euros)		
Intervention axis	**2009**	**2010**
Awareness and information	1,822,000.00	2,359,720.00
Prevention and protection of forest	18,854,688.60	20,802,750.00
Planning, forest management and intervention	4,517,429.42	898,854.65
Forest sustainability	0.00	25,915,839.87
Research, experimentation and studies	183,135.00	1,865,989.00
Total	**25,377,253.02**	**51,843,153.52**

Source: IFAP (2011)

Economics of Waste & By-product

0. Synthesis

The Economics of Waste and By-product presents itself as the field in which economic instruments are more comprehensive, diversified and, as a whole, present a more advanced stage of maturation. From the Organized Waste Market to various taxes, through the eco-value of the system of extended producer responsibility, varied economic instruments are in force.

The Organized Waste Market is still a reality in its infancy, but with its onset of activity in 2010 it will soon be possible to assess its real capacity to return waste back into the economic circuit. An essential step has to be given by the transposition of Directive 2008/98, adapting the concept of by-product to the national legal system.

Among the many tributes that somehow implement the polluter pays and user pays principles, it is worth highlighting the performance of the Waste Management Tax (*Taxa de Gestão de Resíduos – TGR*). TGR's revenue has been growing since 2007 and this growth is the result of the enlargement of subjects to a greater number of operators and economic activities, as the environmental authorities have been able to integrate them into the system. In fact, the nominal values of TGR have remained untouched and perhaps it is high time to reflect what is the real effect of this tax instrument in inducing behavior. Looking at the volume of waste recorded for the purposes of TGR is not yet clear that the levy of this tax has led to a substantial change from the previous options of economic agents. Therefore, it should be evaluated whether the values of the rates of TGR should be increased so as to intensify the burden put on the shoulders of economic agents whose choice always lies on undesirable alternatives – thus guiding their decision more strongly.

The eco-value is a typical example of a well conceived economic instrument: the majority of economic agents have already embraced the idea that production and consumption of goods generates a cost to society by virtue of the creation of waste; that that cost is materialized and economically visible in all decisions through the eco-value; which is only fair that the social cost is thereby supported by the beneficiaries of the private good; and that the eco-value revenues are not channeled to the State – as an intermediary in the context of the polluter pays principle, as is the case with environmental taxes – but to the system's managing entity, in order to restore the environmental and economic balance. The volumes of waste and financial resources handled by the various systems affirm eco-value as a solid and streamlined economic instrument.

Finally, we stress the tariffs applied in the service sector of urban waste. This is a highly fragmented sector and, also here, tariffs' rates in general are not a guarantee of financial sustainability of the services – contrary to the Local Finance Law, which expressly provides that the tariffs set by the municipalities on services of municipal solid waste management should ensure the coverage of direct and indirect costs incurred for their benefit. Another conclusion cannot be drawn when waste

collection and treatment services are provided free of charge in about 50 municipalities and while most municipalities practice values below or far below the average national rates. Moreover, it is suspected that in most services the tariffs do not allow full cost recovery. This hypothesis will be confirmed or denied in the coming years, as the ERSAR will be expanding its regulatory powers.

1. Waste Trade

Organized Waste Market

Description

Economical and financial legal framework of waste contemplated in Waste Management Legal Framework (Decree-Law 178/2006) created the Organized Waste Market (*Mercado Organizado de Resíduos – MOR*), as a means to foster an adequate and effective recovery and reintroduction of waste in the economical circuit, facilitating its exchange and encouraging its demand to be used as a resource.

More precise legal framework of the Organized Waste Market was approved by Decree-Law 210/2009, which sets out the principle of free waste marketing, although conditioning this freedom to the rules that safeguard environment protection and public health, as it is essential, and fixes the terms of its constitution, management and operation, as well as the rules applied to transactions made and their operators.

The Organized Waste Market unites various electronic negotiation platforms where the waste transactions are processed as meeting the conditions of sustainability and security. Waste producers and operators have access to these negotiation platforms in order to launch orders for the purchase or sale of waste. On the other hand, the functioning of this negotiation platforms within the framework of waste market is subject to authorization of the APA, which verifies if they have an adequate electronic support, if the necessary operation and information security mechanisms exist and also if actually contribute to satisfy the goals fixed by waste management plans.

The APA's authorization allows the managing entity to use a logo as well as the designation "Integrated Platform on the Organized Waste Market" in all media communications regarding its own activities.

In the Organized Waste Market waste of all categories can be traded when directed only to recovery, except waste defined as potentially dangerous by the Waste Management Legal Framework.

The negotiation platforms are e-platforms that support the negotiation of waste, made through queries to the market, indications of interest and transactions, and are of universal and equal access by all potential users. Managed by private entities, provided they ensure transparency, universality, timeliness and accuracy of the information that circulates within them and are subject to confidentiality regarding transactions operated in their trading platforms. To accomplish this, negotiation platforms should:

- Have mandatory management systems of information security, certified by ISO 27001 on Management Systems of Information Security or by other certification equivalent certification by independent auditing entity and accepted by APA;

- Adopt measures to prevent access to the system by those without appropriate authorization and qualification, through the authentication of each user in the system using an identification code and password;

- Be housed on secure servers with high levels of redundancy in their operation systems and data security.

Negotiation platforms must be financially self-sustaining; management entities may charge transaction fees, annual dues for membership or earn additional revenues, particularly those from complementary services.

Activity

After the entering into force of the legal framework in late 2009, two licensing procedures for two negotiation platforms were presented in the beginning of 2010 by business associations and other economic agents.

The first licensed Portuguese negotiation platform is called MOROnline; it has received authorization to operate in the market as from July 21, 2010, and the electronic platform was released on November 25, 2010.

2. Waste Taxation

Waste Management Tax

Description

The Waste Management Legal Framework (*Regime Geral da Gestão de Resíduos*) approved by Decree-Law 178/2006 lays down the economic and financial structure concerning waste management. Its main objective is the fulfilment of the environmental objectives that Portugal is bound to as a result of its obligations and commitments to the European Union and also those Portugal has undertaken on its own initiative.

$$TGR = Base_{value}.ton$$

The new fiscal instruments created in this respect are intended to guide operators´ behaviour and final consumers in the direction of a reduction in the production of waste in general as well as to a more efficient waste management approach.

That is precisely the intention of the Waste Management Tax (*Taxa de Gestão de Resíduos* – TGR) created by Decree-Law 178/2006. It is designed to serve as a gradual compensation mechanism for (1) the social and environmental costs generated by waste producers in detriment of the community as a whole and (2) the benefits that the same community provides as a result of waste activities, in accordance with the general principle of equivalence, as well as stimulating the carrying out of the domestic objectives in regard to waste management.

Tax structure

The TGR is due on a yearly basis and arises from, although varying in amount, the quantity of waste (1) deposited in landfills (2) managed by specific waste flow systems (3), overseen by CIRVER or (4) eliminated in incineration or co-incineration facilities.

In any case, the minimum amount due is € 5.000 per entity. The TGR is threefold in nature, consisting simultaneously of a landfill tax, an incineration tax and lastly an inefficiency waste tax.

The debtor entity is the waste managing entity, even though it has the obligation to reflect this cost on the economic agents by means of tariffs and financial services that they are responsible for charging.

The result of the tax collection regarding TGR is exclusively a source of revenue of the competent public entities in matters of waste management (on a national level, the APA; and regionally the CCDR). Moreover, the annual revenue is consigned to:

a. Accompaniment expenses pertaining to the taxpayers activities;

b. Expenses pertaining to the financing of the APA or the CCDR activities, when applicable, that contribute to the fulfilment of the domestic objectives concerning waste management;

c. Expenses related to the financing of activities of taxpayers that are instrumental to the implementation of the domestic objectives concerning waste management.

Values

The TGR revenue intake reveals an upward trend, explicable by its recent inception: created in 2007, the tax collection has progressively encompassed a growing number of operators and economic activities.

However, it is noteworthy to underline that the measure of effectiveness of this fiscal instrument in regard to the level of behavioural responsiveness is not totally perceptible due to the fact that merely three years have elapsed since the effective computation of the TGR. A situation that may deserve special mention is the shift of landfill waste derived from construction and demolition and other inert waste – but also a consequence of specific legislation enacted that has lead the way to the reutilization in construction and other similar activities.

Base values 2007-2010 (in Euros)						
Operation	Waste	Years				**50%** aggravation for waste characterized as recyclable
		2007	2008	2009	2010	
Landfill	Inert waste and industrial non-hazardous waste	5	5.5	-	-	-
	Urban waste and similar	2	2.5	3	3.5	Yes
	Inert waste derived from construction and demolition	-	2.5	3	3.5	Yes
	Wasted deposited in CIRVER landfills	-	-	5	5.5	Yes
	Other types of waste deposited in landfills	-	-	5	5.5	Yes
CIRVER	Waste managed in CIRVER facilities	1	1.03	-	-	-
Incineration	Waste managed in incineration and co-incineration facilities	1	1.03	1.06	1.05	Yes
Inefficiency	Waste indexed to the rate of retrieval stipulated in the licenses of the managing entities of specific waste flow systems, either individual persons or enterprises, and granted that these systems are not steered towards reutilization, recycling or valorisation purposes, in accordance with the terms and conditions of the respective licenses	2	2.05	2.1	2.08	No

Quantity of waste relevant for calculation of TGR (ton)				
	2007	2008	2009	2010 (estimate)
Urban waste landfill	3,599,388.34	3,657,064.40	3,334,281.76	3,321,879.23
Urban waste	*3,491,507.62*	*3,510,714.69*	*3,204,129.37*	*3,191,726.83*
Construction waste	*107,880.72*	*17,202.32*	*7,822.52*	*7822.52*
Other waste		*129,147.38*	*122,329.87*	*122329.87*
Other landfills	341,623.07	254,215.96	318,193.34	322,207.19
Urban waste	*13,214.00*	*23,211.68*	*107,529.80*	*107,149.06*
Construction waste	*328,409.07*	*3,053.52*	*6,557.70*	*6,684.24*
Other waste		*227,950.76*	*204,105.84*	*208,373.89*
CIRVER	-	50,987.95	143,007.55	99,601.72
Incineration	793,201.23	913,269.27	1,001,325.41	992,405.61
Urban waste	*784,913.60*	*904,854.82*	*984,506.67*	*974,317.65*
Other waste	*8,287.63*	*8,414.45*	*16,818.74*	*18,087.96*
Co-incineration	85,579.24	133,407.51	143,082.15	143,082.15
Managing entities	-	-	13,207.00	13,207.00
Total	**4,819,791.89**	**5,008,945.09**	**4,939,890.23**	**4,892,382.89**

Source: APA (2011)

Total collection revenues (in Euros)				
	2007	2008	2009	2010
	10,119,673.00	12,060,101.00	13,957,467.88	N/A

Source: APA (2011)

Waste Services' Regulation Tax

Description

Entities responsible for providing services of potable water, wastewater and solid waste are levied with a charge regarding the regulatory activity of the ERSAR. This activity has been broadening in the last years and its scope includes the entire activity of the abovementioned managing entities.

$$Tax = V_{fixed} + V_{variable}$$

The fixation of the amount of the charge is based on the economic activity of the managing entity. That activity is evaluated according both the number of served inhabitants and the quantification of

the services rendered, measured by the volume of cubic metres of distributed water or wastewater or the weight of solid waste collected.

Base Values (in Euros)		
	Fixed component (€/1000inhabitant)	Variable component (€/ton)
2000	37.4098	0.1247
2001	39.2654	0.1297
2002	39.2700	0.1300
2003	39.2700	0.1300
2004	53.0000	0.2000
2005	55.1200	0.2100
2006	58.7000	0.2200
2007	59.9300	0.2300
2008	61.3100	0.2353
2009	61.3100	0.2353
2010	62.1100	0.2384

Values

Tax collection revenues have been consistently growing, now being nearly the triple of the amount collected 10 years ago. The reason appears not to be the increase of the respective base values charged in the last ten years as much as the constant expansion of the array of entities subject to IRAR's (now ERSAR) regulatory activity.

With the approval of ERSAR's new statutes, which again expands its regulatory scope, as well as the legal frameworks of water and wastewater and waste services, collection revenues may register even further increase beyond 2010.

Total revenues (in Euros)			
Year	Total	Fixed	Variable
2000	**1,359,794**	-	-
2001	**1,438,625**	-	-
2002	**1,628,505**	-	-
2003	**1,791,111**	-	-
2004	**2,763,025**	-	-

cont.

cont.

Total revenues (in Euros)			
Year	Total	Fixed	Variable
2005	**3,081,115**	-	-
2006	**4,153,623**	-	-
2007	**1,592,516.69**	927,877.41	664,639.28
2008	**2,339,753.06**	1,432,169.11	907,583.95
2009	**2,316,871.09**	1,423,458.10	893,412.99
2010	**2,410,291.57**	1,460,958.75	949,332.82

Source: ERSAR (2011)

Note: values up to 2006 include the sectors of water and wastewater. The fixed component includes also the two sectors.

SIRAPA Charge

Description

APA houses since 2007 a system of information and communication between the Administration and the economic agents designated SIRAPA.

The SIRAPA is available through a web portal accessible to users of representatives of organizations or heads of establishments / installations with legal environmental obligations. Adherence to SIRAPA is mandatory for all entities (public or private), including those by way of ownership or operation of establishments or facilities fit into that situation.

By SIRAPA the APA provides a platform for communication with clients and partner agencies in the various environmental frameworks. The system aims to integrate information in a standardized manner, providing a range of services to its users, which will grow as the system evolves and consolidates. By SIRAPA registered entities may come to submit environmental information that are required by law, requests for information or licensing and review the status of its resolution or response and access your payment information.

The registration and renewal on SIRAPA involves the payment of an annual charge, a basic condition for access to the system and all the services available there.

Values

The present waste charges framework, namely its permits, values and respective revenues are as follows:

Operation	Value (in Euros)	Total collection revenues (in Euros)			
		2007	2008	2009	2010
Registration of waste producers and operators on SIRAPA	25.00	222,375.00	1,199,650.04	753,330.23	934,850.10

Source: APA (2011)

Notification of Waste Border Movements Charge

Description

Regulation (EC) n.º 1013/2006 of the European Parliament and the Council of 14 June 2006, which repealed Regulation (EEC) n.º 259/93 of 1 February, establishes procedures and control regimes for the transfer of waste, according to the source, destination and route of the shipment, the type of waste shipped and the type of treatment to be applied to the waste at its destination.

Decree Law 45/2008 of 11 March ensures the implementation and ensures compliance in domestic law of the obligations for the Portuguese State emerging of the abovementioned Regulation. Under this Decree, the APA is the competent national authority for the purposes of Regulation (EC) n.º 1013/2006 of the European Parliament and Council of 14 June 2006.

Portaria 242/2008 of 18 March establishes the payment of charges by the notifier, from examining the procedures for notification of shipments of waste intended for import, export or transit.

Values

The notification charges, namely its values and respective revenues, are as follows:

Operation	Value (in Euros)	Total collection revenues (in Euros)			
		2007	2008	2009	2010
Movement notification	500.00	34,962.45	335,485.93	321,600.00	176,600.00
Notification of import or export of waste	T = F + (M x N) T = tax supported by the notifier; F = fixed amount of € 500; M = fixed amount of € 50 per movement; N = total number of movements predicted in the notification				

Source: APA (2011)

Waste Permits Charges

Description

The waste management legal framework approved by Decree-Law 178/2006 simplified, condensed and rationalized the vast array of charges that were in force regarding waste. A residual category of general licensing charges was created. Concurrently, charges concerning the licensing of operations or operators subject to a specific legal framework were fully and autonomously regulated, as occurs with landfills, managing systems of specific waste flow systems, integrated systems for the CIRVER and incineration and co-incineration facilities as well as border movements of waste.

The aforementioned rationalization of charges was necessarily accompanied by the update of the cost of the licenses concerning the activities linked to the management of waste. This update comprises a twofold objective: on one hand, to guarantee that the amounts due cover in reality the economic cost that corresponding procedures generate on behalf of the State; on the other hand, to contribute by means of serving as an indicator to economic agents and society in general of the overbearing cost that this activity represents in the global context of the economy.

Values

The present waste charges framework, namely its permits, values and respective revenues are as follows:

Permit	Operation	Value (in Euros)	Total collection revenues (in Euros)			
			2007	2008	2009	2010
Licensing of operations and waste management operators	Issuing of licenses and authorizations	2,000	4,330.20	112,810.79	275,759.28	192,261.73
	Issuing of licenses (simplified procedure)	1,500.00				
	Inspection procedure	1,000.00				
	Register resulting from the change of conditions of the license or authorization	500.00				
Licensing of landfills	Exploration license	20,000.00				
	Inspection procedure	1,000.00				
	Register resulting from the change of conditions of the license	1,000.00				

cont.

cont.

Permit	Operation	Value (in Euros)	Total collection revenues (in Euros)			
			2007	2008	2009	2010
Licensing of specific waste flow systems, individual persons or enterprises	Licensing of managing entities	25,000.00	4,330.20	112,810.79	275,759.28	192,261.73
	Licensing of managing entities in charge of registering	20,000.00				
	Licensing, authorization or approval of individual systems	10,000.00				
	Operating authorization of reception centres for the scrapping of passenger cars at the end of their life cycle	5,000.00				
	Prior authorization or specific to operations dealing with the handling of passenger cars at the end of their life cycle or used oils	1,000.00				
	Register of transport operators	1,000.00				
	Inspection procedure	1,000.00				
	Register resulting from the change of conditions of the license or authorization	1,000.00				
Licensing of CIRVER	Pre-qualification phase	3,750				
	Examination phase and project selection phase	5,000.00				
	Installation licensing, exploration licensing or temporary/provisional operating authorization	25,000.00				
	Inspection procedure	2,500.00				
	Register resulting from the change of conditions of the license	1,000.00				
Licensing of incineration and co-incineration	Exploration license	20,000.00				
	Inspection procedure	1,000.00				
	Register resulting from the change of conditions of the license	1,000.00				

Source: APA (2011)

3. Eco-value

Description

At the heart of EU policies is the extended producers responsibility for the management of the waste generated by the production of goods. This extended responsibility provides positive stimulus to tailor product design, forcing the use of smaller quantities of raw material or the use of recycled or recyclable materials. Thus under Waste Management Legal Framework as well, economic operators that place the products in the market are held responsible for the respective waste management (i.e., to recover, re-use, recycle and eliminate the waste generated by those products).

They may, however, transfer this responsibility delegating it to another entity duly licensed by the Ministry of Environment. This delegation of responsibility occurs in several cases in Portugal: first with waste originated by packaging, and later with other waste flows, namely batteries and accumulators, tires, electric and electronic equipment, lubricating oils and vehicles. For these purposes, the various economic operators responsible for waste management constituted vehicle-entities for whom they transferred their extended responsibility of recovering and eliminating the waste.

As compensation, the producers must pay those vehicle-entities a price over the products they place in the market, in order to finance their activities and guarantee a proper waste management. That price is Eco-value (*Eco-valor*).

Eco-value is charged over the quantity of goods produced and marketed; it has a unit value or a value per unit of volume or weight, and is fixed in the license issued by the Ministry of Environment.

That means that the producer as a production cost supports the Eco-value. Hence, the Eco-value is economically incorporated in the price to the consumer under the form of a surcharge. That surcharge may be hidden in the price, as it is not mandatory to inform the consumer of Eco-value associated to the product being bought (visible fee). However, producers frequently choose to explicit Eco-value in the price, especially in the waste flows of mineral oils, tires, vehicles and electric and electronic equipment.

Values by waste flows

Batteries and accumulators

The legal regime that regulates the placement of batteries and accumulators in the waste market and the regime of collection, valorisation, recycling and elimination of batteries and accumulators residues contained in Decree-Law 6/2009 and Decree-Law 266/2009, both transposing Directive 2006/66/EC, of the European Parliament and of the Council of 6 September, concerning batteries

and accumulators and its residues, modified by Directive 2008/103/EC, of the European Parliament and of the Council of 19 November.

There are five entities responsible for integrated systems of management of used batteries and accumulators (Ecopilhas, Valorcar, Amb3E, ERP Portugal e GVB) and one responsible for an individual system (Autosil). The eco-values practiced for batteries and accumulators are as follows:

Valorcar	
Categories of batteries and accumulators	**Unit Value (in Euros)**
Non-electric vehicles	0.50
HDV, vessels and non-electric machinery	1.00
Pure electric cars, HDV, motorcycles and vessels	1.00
Non-electric motorcycles	0.15
Loading machines and others purely electrical	11.50
Hybrid cars	2.50

Source: APA (2011)

AMB3E	
Types of batteries and accumulators	**2009/2010 (Euro/kg)**
Portable batteries and accumulators	
ZnC + Alkaline	0.60
Lithium and others	0.97
Button	1.29
NiCd	0.40
NiMH	0.40
Lithium ion	0.57
Lead-acid	0.40
Industrial batteries and accumulators	
Lead-acid and others	0.55

Source: APA (2011)

ERP	
Types of batteries and accumulators	2009/2010 (Euro/kg)
Portable batteries and accumulators	
ZnC + Alkaline	0.49
Lithium and others	0.93
Button	0.90
NiCd	0.34
NiMH	0.34
Lithium ion	0.34
Lead-acid	0.40
Industrial batteries and accumulators	
Lead-acid and others	0.40

Source: APA (2011)

GVB						
Types of batteries and accumulators					2010	
Category	Technology	Application	Voltage (V)	Capacity (Ah)	(Euro/battery)	(Euro/Kg)
A	Lead-acid	SLI	6	2-14	0.05	-
			12	2-31		
B			6	15-79	0.36	-
			12	32-69		
C			6	80-179	0.48	-
			12	70-99		
D			6	180-240	0.60	-
			12	100-179		
E			12	180-240	0.72	-
F	Lead-acid	Traction & stationary	All	All	-	0.024
G	All, except lead-acid	All	All	All	-	0.024

Source: APA (2011)

Ecopilhas				
Types of batteries and accumulators	2003 (Euro/kg)	2004/2005 (Euro/kg)	2006/2007 (Euro/kg)	2009/2010 (Euro/kg)
ZnC + Alkaline	1.412	1.119	0.908	0.47
Lithium	1.653	1.402	1.141	0.70
Button	2.671	2.563	2.17	0.70
NiCd	1.115	0.79	0.598	0.49
NiMH	1.115	0.79	0.598	0.49
Lithium ion	1.039	0.704	0.522	0.40
Lead-acid	-	-	-	0.007

Source: APA (2011)

Electrical and electronic equipment waste

The legal framework for electric and electronic equipment waste management resides on Decree-Law 230/2004 and Decree-Law 174/2005, transposing Directive 2002/95/CE, of the European Parliament and of the Council, 27th January 2003, and Directive 2002/96/CE, of the European Parliament and of the Council, 27th January 2003, altered by Directive 2003/108/CE, of the European Parliament and of the Council, 8th December 2003.

Currently, the activity of management of an integrated system of REEE waste management is licensed to AMB3E – Associação Portuguesa de Gestão de Resíduos and to ERP – Associação Gestora de Resíduos. These two entities practice different eco-values.

The Eco-values practiced for electric and electronic equipment waste are as follows:

AMB3E (Euros/unit)				
REEE categories	2005/2006	2007/2008	2008/2009	2010
Category 1 – Large Appliances				
Large cooling appliances ≤ 20 kg	-	1.75	1.75	1.92
Large cooling appliances >20 e ≤150 kg	7.04	5.58	5.58	6.13
Large cooling appliances > 150 kg	34.39	21.1	21.1	23.21
Large Appliances ≤ 150 kg	4.62	3.39	3.39	3.72
Large Appliances > 150 kg	34.39	10.4	10.4	20.03
Appliances for cooking or processing food > 15 kg	1.75	1.5	1.5	1.65
Air conditioners and dehumidifiers ≤ 40 kg	1.75	1.75	1.75	1.92
Air conditioners > 40 kg e ≤100 kg	5.36	5.36	5.36	5.89

cont.

cont.

AMB3E (Euros/unit)				
REEE categories	**2005/2006**	**2007/2008**	**2008/2009**	**2010**
Air conditioners > 100 e ≤ 500 kg	8.05	7.17	7.17	12.08
Air conditioners > 500 kg	16.59	33.54	33.54	72.60
Heating, ventilation, exhaust ventilation and conditioning appliances ≤ 10 kg	0.40	0.3	0.3	0.33
Heating, ventilation, exhaust ventilation and conditioning appliances > 10 e ≤ 150 kg	1.65	1.04	1.04	1.14
Heating, ventilation, exhaust ventilation and conditioning appliances > 150kg	17.00	25.52	25.52	28.07
Category 2 – Small appliances				
Small equipment: watches and equipment for domestic use, cooking, personal care, hygiene and health ≤ 0,2 kg	0.40	0.05	0.05	0.11
Small equipment: watches and equipment for domestic use, cooking, personal care, hygiene and health > 0,2 kg	0.40	0.2	0.2	0.30
Cleaners ≤ 5 kg	1.43	0.54	0.54	0.59
Cleaners > 5 kg	1.43	1.43	1.43	1.57
Category 3 – Computer equipment and telecommunications				
Desktop, servers and ***main frame*** ≤ 25 kg (without monitor)	2.08	1.1	1.1	1.39
Desktop, servers and main ***frame*** > 25 kg (without monitor)	10.32	4.29	4.29	5.11
Laptops	0.29	0.36	0.36	0.45
CRT/LCD/TFT/Plasma Monitors ≤ 15"	3.87	1.69	1.3	1.43
CRT/LCD/TFT/Plasma Monitors >15 e ≤ 21"	3.87	3.24	2	2.20
CRT/LCD/TFT/Plasma Monitors > 21e ≤ 29"	3.87	7.02	3.5	3.85
CRT/LCD/TFT/Plasma Monitors > 29"	3.87	10.98	8	8.80
Printers and multifunction ***inkjet/gel jet***/other technologies	0.6	0.6	0.6	0.97
Copiers/printers/ multifunction ***laser*** ≤ 20 kg	1.75	1.04	1.04	1.53
Copiers/printers/ multifunction ***laser*** >20 e ≤ 60 kg	3.93	3.93	3.93	5.17
Copiers/printers/ multifunction ***laser*** > 60 kg	6.99	10.22	10.22	16.06
Large format copiers/***plotters*** ≤ 100 kg	10.32	5.32	5.32	9.64
Copiers/printers/ multifunction ***laser*** >100 kg	25.79	25.79	25.79	36.11
Laser thermal faxes and other technologies	1.03	0.64	0.64	0.83
Scanners	0.99	0.34	0.34	0.52
Pocket calculators/portable agendas/PDA	0.10	0.01	0.01	0.01
Calculators with printer/printer brass	0.48	0.2	0.2	0.27
Cash registers/POS	1.51	1.66	1.66	1.82
Desk phones	0.12	0.09	0.09	0.11
Wireless phones	0.10	0.07	0.07	0.08
Mobile phones	0.10	0.03	0.03	0.05
PABX (€/kg)	-	0.11€/kg	0.11€/kg	0.62€/kg
Other equipment ≤ 0,1 k	0.24	0.03	0.03	0.03
Other equipment > 0,1 e ≤1kg	0.24	0.06	0.06	0.08

cont.

cont.

AMB3E (Euros/unit)				
REEE categories	**2005/2006**	**2007/2008**	**2008/2009**	**2010**
Other equipment > 1 kg e ≤ 5 kg	0.96	0.19	0.19	0.33
Other equipment >5 kg e ≤ 15 kg	4.78	2.5	2.5	2.98
Other equipment > 15 kg e ≤ 50 kg	8.30	5.5	5.5	6.05
Other equipment > 50 kg	10.32	10.32	10.32	28.12
Category 4 – Consumer equipment				
TVs/CRT/LCD/TFT/Plasmas and surveillance monitors ≤15"	-	1.69	1.3	1.60
TVs/CRT/LCD/TFT/Plasmas and surveillance monitors > 15 e ≤ 21"	-	3.24	2	2.20
TVs /CRT/LCD/TFT/Plasmas surveillance monitors > 21 e ≤ 29"	-	7.02	3.5	3.70
TVs /CRT/LCD/TFT/Plasmas surveillance monitors >29"	-	10.98	8	8.00
Apparatus for receiving, recording and playing audio and video/video surveillance/ photographic material	-	0.31	0.31	0.48
Apparatus for receiving, recording and playing audio ≤ 1 kg	0.24	0.08	0.08	0.13
Apparatus for receiving, recording and playing audio > 1 kg	2.42	1.14	1.14	1.48
Video projectors ≤ 5 kg	1.19	0.42	0.42	0.46
Video projectors /overhead projectors > 5 kg	2.39	1	1	1.49
Small equipment: personal audio, portable audio, reception apparatus, video recording and playback, remotes and photographic material ≤ 0,1 kg	0.10	0.01	0.01	0.11
Small equipment: personal audio, portable audio, reception apparatus, video recording and playback, remotes and photographic material > 0,1 e ≤ 0,5kg	0.13	0.04	0.04	0.13
Musical instruments ≤ 5 kg	1.19	0.45	0.45	0.58
Musical instruments ≤ 5 kg	4.78	1.8	1.8	4.36
Other equipments ≤ 0,1Kg	-	-	0.03	0.03
Other equipments > 0,1 e ≤ 1kg	-	-	0.06	0.08
Other equipments > 1kg e ≤ 5kg	-	-	0.19	0.33
Other equipments > 5kg e ≤ 15kg	-	-	2.5	2.98
Other equipments > 15kg e ≤ 50kg	-	-	5.5	6.05
Other equipments > 50kg	-	-	10.32	34.98
Category 5 – Lighting equipment				
Fluorescent and discharge lamps	0.23	0.23	0.23	0.16
Fixtures ≤ 1 kg	0.10	0.10	0.10	0.18
Fixtures > 1 kg e ≤ 6 kg	0.39	0.39	0.39	0.54
Fixtures > 6 kg	1.73	1.50	1.50	1.62
Category 6 – Electrical and electronic tools				
Electrical and electronic tools ≤ 1 kg	0.10	0.05	0.05	0.07
Electrical and electronic tools > 1 kg e ≤ 5 kg	0.41	0.24	0.24	0.38
Electrical and electronic tools > 5 kg e ≤ 10 kg	1.16	0.73	0.73	0.99

cont.

cont.

AMB3E (Euros/unit)				
REEE categories	**2005/2006**	**2007/2008**	**2008/2009**	**2010**
Electrical and electronic tools > 10 kg e ≤ 15 kg	2.53	1.27	1.27	1.70
Electrical and electronic tools > 15 kg e ≤ 20 kg	3.99	1.86	1.86	2.20
Electrical and electronic tools > 20 kg	5.01	4.8	4.8	5.00
Category 7 – Toys and leisure and sports equipments				
Toys and leisure and sports equipments ≤ 0,5 kg	0.12	0.05	0.05	0.05
Toys and leisure and sports equipments > 0,5 kg e ≤ 5 kg	0.96	0.11	0.11	0.19
Toys and leisure and sports equipments > 5 kg e ≤ 20 kg	4.78	1.06	1.06	1.16
Toys and leisure and sports equipments > 20 kg	8.30	5	5	7.15
Category 8 – Medical devices				
Medical devices ≤ 5 kg	2.90	0.5	0.5	0.55
Medical devices > 5 e ≤ 20kg	2.90	0.9	0.9	1.81
Medical devices > 20 kg e ≤ 100 kg	5.34	5.34	5.34	6.14
Medical devices > 100 kg	5.34	26.8	39.5	60.36
Category 9 – Monitoring and control equipment				
Monitoring and control equipment	0.13	0.13	0.13	0.25 0.50
Category 10 – Vending machines				
Vending machines without cooling or refrigeration ≤ 20 kg	4.78	1.08	1.08	1.80
Vending machines without cooling or refrigeration > 20 kg e ≤ 60 kg	9.56	4.32	4.32	4.98
Vending machines without cooling or refrigeration > 60 kg	17.20	7.52	7.52	17.20
Vending machines without cooling or refrigeration ≤ 60kg	9.56	5.58	5.58	6.13
Vending machines without cooling or refrigeration > 60 kg	17.20	21.1	21.1	28.90

Source: APA (2011)

ERP (Euros/ton)			
Waste Categories	**2005-2006**	**2007-2008**	**2009-2010**
Large appliances	128	48	48
Cooling equipments	345	76	76
TV/monitors	180	156	156
Lamps	458	680	680
Others	108	91	82

Source: APA (2011)

End-of-life vehicles

The legal system applicable to the management of vehicles and end-of-life vehicles, its components and materials is ruled on by Decree-Law 196/2003, modified by Decree-Law 64/2008, transposing Directive 2000/53/EC of the European Parliament and of the Council of 18 September into Portuguese law.

A license to manage an integrated system of the end-of-life vehicles was granted to Valorcar – Sociedade de Gestão de Veículos em Fim de Vida, Lda, which brings together all vehicle manufacturers and importers and a recycling association.

The Eco-values practiced for end-of-life vehicles are as follows:

VALORCAR		
	Fixed component (Euros/month)	Variable component (Euros/vehicle)
2004-2005	123	0.413
2006	123	0.423
2007-2009	123	0.455

Source: APA (2011)

2010		
Number of vehicles	Fixed component (in Euros)	Variable component (Euros/vehicle)
< 500	250	1
From 500 to 9999	500	
From 10000 to 20000	1000	
> 20000	1500	

Source: APA (20110)

Packaging and waste originated by packaging

The Decree-Law 366-A/97, the Decree-Law 162/2000 and the Decree-Law 92/2006 establishes the principles and norms applicable to the management of packaging and waste originated by packaging and includes the legal framework that rules the integrated management systems, transposing Directive 94/62/EC of the European Parliament and of the Council of 20 December into Portuguese law, amended by Directive 2004/12/EC of the European Parliament and of the Council of 11 February, regarding packaging and waste originated by packaging.

Different packaging management entities are licensed. Despite this, they are not in a situation of real competition since one is a generalist while the others are aimed at very specific economic sectors. Thus, the Sociedade Ponto Verde – SPV is the managing entity of the integrated management of urban and non-urban packages and packaging waste; Valormed – Sociedade Gestora de Resíduos de Embalagens e Medicamentos, Lda, is the managing entity of the integrated system for medicines packages waste; and Sigeru – Sistema Integrado de Gestão de Embalagens e Resíduos em Agricultura, Lda, holds the integrated management system of phytopharmaceuticals packages.

The Eco-values practiced for packaging and waste originated by packaging are as follows:

SPV (Euros/ton)									
Material	From 01.2005 to 04.2005	From 04.2005	From 04.2006		From 01.2007		From 01.2008 (With WMT included)		
	Categories A e B	Categories A e B	Category A	Category B	Category A	Category B	Category A	Category B	Category C
Glass	6.3	8.7	9.5	9.5	14.7		14.7	-	-
Paper/ paper board	15.8	42.5	76.5	31	64.4	26.6	64.4	26.6	7.5
Ecal	-	-	76.5		64.4	-	64.4	-	-
Plastic	121.1	92.7	112.5	84	170.2	69.6	170.2	69.6	25
Steel	30.9	36.5	58.5	23	71.7	31.5	71.7	31.5	25
Aluminium	52.7	62	70	25	122.4	115	122.4	115	50
Wood	3.9	3.9	7.5	4	12.3	16.2	12.3	16.2	10
Others	126.4	126.4	150	150	180	-	180	-	-

Source: APA (2011)

SPV (Euros/ton)							
Material		Primary VPV		Secondary VPV		Tertiary VPV	
		2009	2010	2009	2010	2009	2010
Packaging for consumer products	Glass	13.5	18.3	-	-	-	-
	Plastic	169	228.2	68.4	92.3	23.8	23.8
	ECAL	63.9	86.3	-	35.2	-	7
	Paper /paperboard	63.9	129.4	26.1	-	7	-
	Steel	71.1	96	30.9	41.7	24.4	24.4
	Aluminium	121.8	164.4	114.4	154.4	49.4	49.4
	Wood	11.4	15.4	10.3	14.2	9.1	9.1
	Other materials	178	260	178	260	178	260
Packaging for industrial products and for raw materials	Glass	13.5	13.5	-	-	-	-
	Plastic	23.8	23.8	23.8	23.8	23.8	23.8
	Paper /paperboard	7	7	7	7	7	7
	Steel	24.4	24.4	24.4	24.4	24.4	24.4
	Aluminium	49.4	49.4	49.4	49.4	49.4	49.4
	Wood	9.1	9.1	9.1	9.1	9.1	9.1
	Other materials	178	55	178	55	178	55
Packaging for industrial products and for raw hazardous materials	Glass	-	13.5	-	-	-	-
	Plastic	-	23.8	-	23.8	-	23.8
	Paper /paperboard	-	7	-	7	-	7
	Steel	-	24.4	-	24.4	-	24.4
	Aluminium	-	49.4	-	-	-	-
	Wood	-	-	-	-	-	9.1

Source: APA (2011)

SPV (Euros/ton)		
Packaging	Material	2010
Service bags	Plastic	228.2
Service bags	Paper / paperboard	86.3

Valormed (Euros/package)				
2006	2007	2008	2009	2010
0.00504	0.00504	0.00504	0.00504	0.00504

Source: APA (2011)

Sigeru (Euros/ton)				
2006	2007	2008	2009	2010
336	336	336	336	336

Source: APA (2011)

Used tires

The Decree-Law 111/2001 and the Decree-Law 43/2004 rule the used tires management regime. Only one license was granted to ensure an integrated management system of used tires, the Valorpneu – Sociedade de Gestão de Pneus, Lda.

The Eco-values practiced for used tires are as follows:

Valorpneu (Euros/tire)								
Categories of tires	2003	2004	2005	2006	2007	2008	2009	2010
Passengers / Tourism	0.8	0.8	0.8	0.8	0.8	1.00	1.00	1.00
4x4 on/off road	1.79	1.79	1.79	1.79	1.79	1.99	1.99	1.99
Commercial	1.44	1.44	1.44	1.44	1.44	1.57	1.57	1.57
HGV	7.18	7.18	7.18	7.18	7.18	7.81	7.81	7.81
Agricultural (various)	1.71	1.71	1.71	1.71	1.71	2.55	2.55	2.55
Agricultural (Wheels)	8.82	8.82	8.82	8.82	8.82	9.47	9.47	9.47
Industrial (8" to 15")	3.1	3.1	3.1	3.1	3.1	2.74	2.74	2.74
Solid	3.72	3.72	3.72	3.72	3.72	4.10	4.10	4.10
Civil Engineering (<12,00-24")	7.14	7.14	7.14	7.14	7.14	8.91	8.91	8.91
Civil Engineering (>=12,00-24")	40.13	40.13	40.13	40.13	40.13	36.54	36.54	36.54
Bikes (>50cc)	0.56	0.56	0.56	0.56	0.56	0.67	0.67	0.67
Bikes (up to 50cc)	0.11	0.11	0.11	0.11	0.11	0.23	0.23	0.23
Aircraft	0.8	0.8	0.8	0.8	0.8	1.00	1.00	1.00
Bicycles	0	0	0	0	0	0.07	0.07	0.07

Source: APA (2011)

Used mineral oils

The legal regime on the oil management (old and new) is ruled on by Decree-Law 153/2003, transposing Directive 75/439/EC of the Council of 16 June into Portuguese law, amended by Directive 87/101/EC of the Council of 22 December 1986.

The management entity responsible for the management of new oils and used oils to who a license was granted is Sogilub – Sistema Integrado de Gestão de Óleos Usados.

The Eco-values practiced for used mineral oils are as follows:

Sogilub (Euros/litre)					
2005	**2006**	**2007**	**2008**	**2009**	**2010**
0.063	0.063	0.063	0.063	0.063	0.063

Source: APA (2011)

Values

An analysis of the total amount of financial benefits transferred from the producers to the vehicle-entities as a result of collection of Eco-values allows, at least, two brief conclusions.

First, the total amount of eco-value charged in each waste flow tends to be stable over the years, despite changes in their unit values and, eventually, volume of goods in market.

Second, that Eco-value produced its higher economic impact in the packaging sector; on the contrary, the sector in which eco-value produced its lower impact was the one associated to the vehicles waste flow.

Total transferences by waste influx (in Euros)									
	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Total**
Batteries and accumulators	N/A	2,266,859	3,236,975	2,513,015	2,384,077	1,566,019	1,344,443	1,897,539	**13,644,474.02**
Electrical and electronic equipment waste	N/A	N/A	N/A	10,934,844	4,822,857	22,050,522	20,707,333	21,990,563	**80,506,119.00**
End-of-life vehicles	N/A	152,486	155,454	171,222	178,365	186,282	184,537	225,609	**1,253,955.00**
Packaging	N/A	N/A	46,994,353	43,819,678	55,466,994	56,209,189	58,103,842	-	**260,594,056.00**
Used tires	7,263,667	8,251,224	8,115,843	8,673,407	9,123,255	10,621,345	9,965,251	10,369,402	**65,119,727.00**
Used mineral oils	N/A	N/A	N/A	5,587,964	5,678,553	5,632,445	4,995,806	5,156,182	**27,050,950.00**

Source: APA (2011)
N/A: The managing entities were not constituted up to this date / no info available

Total transferences by management entity (in Euros)										
		2003	2004	2005	2006	2007	2008	2009	2010	Total
Ecopilhas	Batteries and accumulators- portable & industrial	N/A	2,266,859	3,236,975	2,513,015	2,384,077	1,566,019	1,344,443	1,007,440	**14,318,828.00**
AMB3E	Electrical and electronic equipment waste	N/A	N/A	N/A	10,232,884	N/A	16,375,054	16,897,466	18,143,542	**61,648,946.00**
	Batteries and accumulators portable and incorporate eeew	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
GVB	Batteries and accumulators vehicles	N/A	N/A	N/A	N/A	N/A	N/A	N/A	192,428	**192.428**
ERP	Electrical and electronic equipment waste	N/A	N/A	N/A	701,960	4,822,857	5,675,468	3,809,867	3,847,021	**18,155,914.96**
	Batteries and accumulators portable and incorporate eeew	N/A	N/A	N/A	N/A	N/A	N/A	N/A	139,957	**139,957**
Valorcar	End-of-life vehicles	N/A	152,486	155,454	171,222	178,365	186,282	184,537	225,609	**1,253,955.00**
	Batteries and accumulators vehicles	N/A	N/A	N/A	N/A	N/A	N/A	N/A	557,714	**557,714**
Valormed	Packaging	N/A	N/A	N/A	1,512,998	1,451,887	1,564,745	1,582,449	1,721,496	**7,833,575.00**
Sigeru	Packaging	N/A	N/A	N/A	311,680	405,107	370,444	270,393	314,281	**1,360,225.00**
SPV	Packaging	N/A	N/A	46,994,353	41,995,000	53,610,000	54,274,000	56,251,000	71,500,000*	**277,630,000.00**
Valorpneu	Used tires	7,263,667	8,251,224	8,115,843	8,673,407	9,123,255	10,621,345	9,965,251	10,369,402	**48,752,660.00**
Sogilub	Used mineral oils	N/A	N/A	N/A	5,587,964	5,678,553	5,632,445	4,995,806	5,156,182	**27,050,950.00**

Source: APA (2011)

N/A: The managing entities were not constituted up to this date / no info available

4. Urban Waste Services' Tariffs Regulation

Description

The service sector of urban solid waste management is also fragmented and often assumed by the municipalities themselves or by small vendors, with few economies of scale. In this sector one also encounters the symptoms of economic and financial distortion found in the services sector of water and wastewater.

The General Waste Management Act (Decree-Law 178/2006, 5 September), establishes in its Financial and Economic Framework that tariffs must seek to compensate the social and environmental costs that the producer of the waste generates to the community or the benefits that the community provides. Similarly, the Local Finance Law (Law 2/2007, 15 January) expressly establishes that the tariffs charged by municipalities for the services of urban solid waste management must ensure the recovery of costs incurred directly or indirectly its provision.

These legal commands are also behind of IRAR Recommendation 1/2009, which also applies to entities of urban solid waste services, discerning the structure and criteria to be followed in setting tariffs. The recommendation establishes a framework for the tariff structure that is to be followed by all service-providers, with the following orientation:

- Standard household tariff to be a fixed charge plus a 4-block progressive charge;
- Standard non-residential tariff to be a fixed charge plus a uniform volumetric rate (which must be equal in value to the 3rd household block), thus implying a built-in measure of unavoidable cross-subsidisation of the household by the non-household sectors;
- Block widths for the standard household tariff structure are set in the legislation and prices for each block to be approved by each municipality.
- It should be implemented a social tariff structure for low-income households, as well a larger family plan tariff structure.

The implementation of the recommendation began in 2010, after a period of public discussion in which new tariffs the municipalities and the services' providers elaborated plans.

Values

Regarding the burden for the end user, it is possible to show the three levels of household consumption more relevant during 2009 in all Portuguese municipalities (60 m^3, 120 m^3, 180 m^3), whereas the 120 m^3 consumption is considered by ERSAR as the average level.

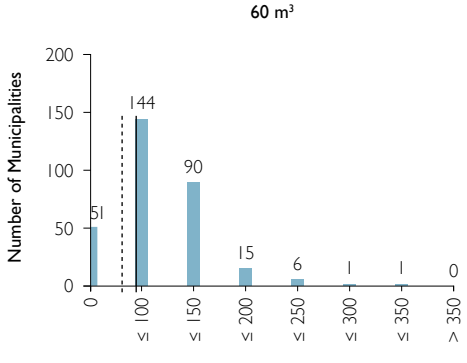
One may verify that:

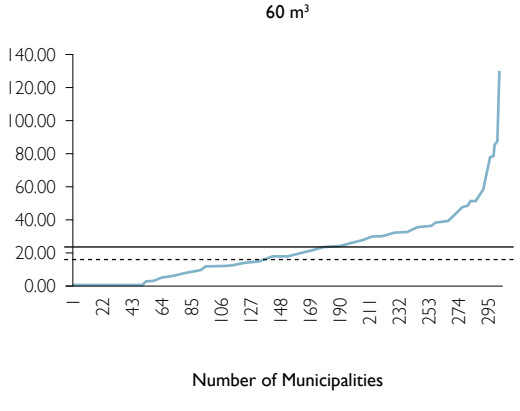
- At fifty municipalities, services are provided without any financial counterpart;
- Most municipalities practice values below or well below the average;
- The average values grow due to the higher rates applied in the higher tariffs, as it is demonstrated by the fact that the average values are always higher than the median ones.

An analysis on full cost recovery will only be available from ERSAR from August 2011, as only then begins its effective economic regulation of entities in models of direct and delegated management.

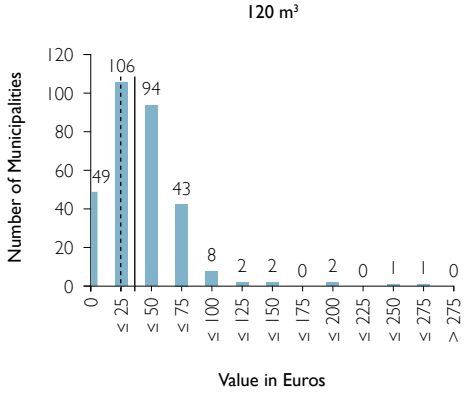
Tariffs 2009 (in Euros)			
	60 m^3	120 m^3	180 m^3
Minimum	0.00	0.00	0.00
Maximum	129.12	258.00	438.00
Average	22.01	31.45	41.98
Median	18.00	24.60	30.60

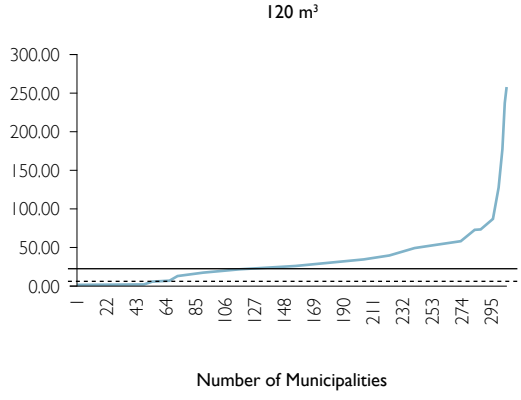
Source: ERSAR (2011)





Source: ERSAR (2011)





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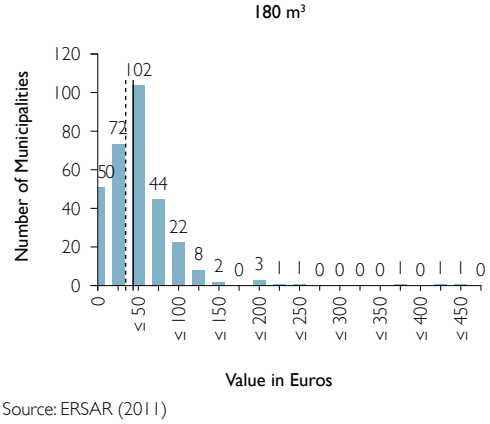

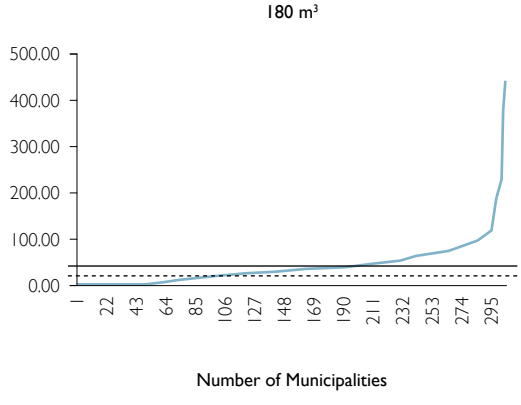

Source: ERSAR (2011)

Median
Average

Economics of Nature Conservation & Biodiversity

0. Synthesis

Nature and biodiversity conservation is recognized as the most difficult area of implementation of economic instruments, not only on national experience but also a bit everywhere.

Several obstacles contribute to make it so, but it has been particularly difficult to give ecological services and biodiversity an expression of a monetary nature, even though they arguably comprise the capital stock of any company or country. In other words, the obstacle lies in conducting economic evaluation of ecological services and biodiversity. The effort in this area has gone through to create the conditions for closer cooperation between business and nature conservation and biodiversity. Particularly through the adoption of instruments by which contributions made by any private operator for the conservation and improvement of ecological services and biodiversity turn in tangible assets for its business.

This goal has been explored in the context of public-private environment, anchored in the ICNB activity, especially in the context of existing regimes of environmental compensation in Portugal. In this particular case, the Legal Framework for Conservation of Nature and Biodiversity enables economic agents to offset the environmental impacts caused by them through the financing of conservation of nature and biodiversity in areas included in the Fundamental Network of Nature Conservation. Investments made under this scheme are already significant, especially when they pass by the scope of FCNB.

As for the FIA, the data suggests that it is not really an instrument at the service of conservation and environmental improvement. And that it will only be so when financial difficulties are remedied. In fact, the inflow of revenue for the fund is characterized by slowness and uncertainty: less than three million euros in three years of activity is clearly short of the needs that any environmental guarantee fund features. This situation should be solved by strengthening the control of environmental offenses fines collection, and especially by the introduction of the surcharge on the collateral constituted by the operators to the effects of environmental liability coverage, as it is expressly provided for since 2008 on the Legal Framework of Environmental Damage Liability.

Finally, it is worth mentioning the application of economic instruments in the form of subsidies by public authorities in the agricultural sector, with the aim of reconciling the economic activity with nature conservation and biodiversity. The agri-environmental incentives transform the environmental benefit in a benefit of economic nature; that is the case for the implementation of organic production methods, the conservation of the variability of plant and animal genetics, the utilization of local varieties or the conservation of natural or scenic values. These incentives normally take place in areas classified by value and/or natural landscape, particularly in Natura 2000 zones and the Douro area.

1. Private Investment

Public-private Investment Partnerships in Biodiversity

Description

Services of general economic concern, including environmental protection, are public because the regulation of such services is based on public rules defined by public entities directly or indirectly legitimized. But there is an open path of collaborative relationships between State and economic agents, united around common goals, in which agents offer their expertise and financial resources, allowing the State to function with greater efficiency and effectiveness: in other words, public-private partnerships or similar in environmental domain.

In biodiversity domain, the environmental entities chronic budget shortage was dealt with by adapting the public-private partnerships. This adaptation follows the general guidelines of State's financial activity, i.e., without place to the approval of a special regime of environmental public-private partnerships.

With the legal form of Public-Private Partnership two Bird Rehabilitation Centres were created, one at Serra da Estrela and another at River Formosa, with funds from ANA – Portuguese Airports, SA, and management of ALDEIA Organization with delegated powers from ICNB, after a public tender. These initiatives involve the amount of € 400.000,00.

In addition to the partnerships referred, there are nature conservation investment actions performed by a considerable number of companies under the *Business & Biodiversity Initiative*. As known, the main target of this initiative is to enhance the relationship between companies and biodiversity, allowing a significant contribution to biodiversity protection and to achieve 2010 target of stopping biodiversity loss at local, national, regional and global levels. This initiative is promoting, through long-term voluntary agreements, a common ground for collaboration between two distinct systems: business and biodiversity, promoting the introduction of biodiversity in companies' strategies and policies.

Values

Under this initiative, private companies and the ICNB join forces to carry out tasks of common interest whose purpose is the preservation of biodiversity. Since it is a voluntary and diversified initiative, investment values are not included in the Memorandums of Understanding but only the investment purposes. So it is not possible to identify accurately the right amounts.

This initiative has already 49 private members, including banks, cement plants, civil construction, electricity producers, paper producers, oil companies and the air, rail and road transportation.

Environmental compensation

Description

The difficulty of attributing an economic value to biodiversity hampers the creation of biodiversity markets with an economic extent and acceptance equal to the other environmental markets fully implemented, as carbon markets or waste markets.

However it has been created an early biodiversity market in Portugal, by enforcing economic agents to offset damages created to the environment, in particular biodiversity, by means of (1) paying the recuperation or compensation of affected ecosystems or (2) by paying the same measures in other ecosystems of equal value. The essential goal of internalization of social costs is assured, and in some sense an economic evaluation of biodiversity similar to an evaluation that would be made by a market is thus achieved.

Investment made through environmental compensation takes place within the Nature Conservation and Biodiversity Legal Framework (Decree-Law 142/2008), which predicts that funding the activities of conservation and biodiversity in areas which are part of Key Network of Nature Conservation should be promoted in articulation with private entities.

Specifically, article 36 of the Legal Framework of Nature Conservation and Biodiversity sets that economic agents can implement environmental compensation instruments in order to ensure satisfaction of the conditions and/or mandatory requirements depending on the implementation of projects and actions under the Legal Framework of Environmental Impact Assessment or the Legal Framework of Natura Network 2000.

Environmental compensation must be executed by developing projects or actions in areas integrated of Key Network of Nature Conservation, such as National Parks or other Protected Areas. These projects or actions can be drawn or implemented by the economic agent, under the approval of ICNB or FCNB; or, alternatively, an economic agent can choose to fund the FCNB's projects. Anyway, it is essential that initiatives may produce environmental benefits equivalent to environmental costs caused, assessment that is subject to a certification procedure made by environmental authorities.

Values

In these projects and only in the main ones are involved a dozen companies with investments in conservation around 3.8 million Euros. At this moment, investments made by companies in partnership with the ICNB pursuing the procedures for environmental assessment or partnerships negotiated with the ICNB are in progress, as follows:

Private investments in partnership with ICNB		
Economic agent	**Project**	**Investment**
ANA – Aeroportos de Portugal	Support to bird rehabilitation centres at Ria Formosa Natural Park and at Serra da Estrela Natural Park	€ 40 000/year, during 3 years
ANA – Aeroportos de Portugal	Compensation for extension of airport runway: investment in start up of weed species, monitoring of avifauna and observatories of avifauna at Ria Formosa Natural Park and at Castro Marim Nature Reserve	€ 1.6 Million
BRISA – Auto--estradas de Portugal	Preparation of plans to manage colonies for bird nesting	€ 10 000
REN – Redes Energéticas Nacionais	Avifauna monitoring project	€ 29 768
Somincor e EDIA	Investment in a ictological centre to manage endemic species of Guadiana River with emphasis on the Saramugo species, at risk	€ 13 000
e-Value	Investment in forestation with native species at Peneda Gerês National Park (counterpart in carbon credits)	€ 8/Ton/year (1000 ton for 30 years)
Portucel	Compensations for each paper mill: annual investments in Estuário do Sado Nature Reserve conservation	€ 27 000/year, during 10 years
SONAE Turismo	Compensation for the new crossing of Sado river by ferry: investment in the conservation of Sado Estuary Nature Reserve, especially managing dolphins	€ 180 000/year
Soltroia	Compensation for the construction of hotel: investment in the Sado Estuary Nature Reserve	Under evaluation
Carlinca	Compensation for plant deployment: investment in the conservation of Sado Estuary Nature Reserve	€ 50/ton/year
REN – Redes Energéticas Nacionais	Compensation for pipeline crossing at Sancha and Santo André Lagoons: investments in conservation projects in the Natural Reserve of Sancha and Santo André Lagoons	€ 200 000
ENERSIS	Compensation for wind farms deployment: investment in the Environmental Interpretation Centre Parque at Serra de Aire and Candeeiros Natural Park	€ 50 000
Irmãos Cavaco, SA	Rehabilitation of habitats at Sintra Cascais Natural Park	€ 575 000

Source: ICNB (2010)

2. Public Investment Funds

Nature Conservation and Biodiversity Fund (FCNB)

Description

Environmental funds also reflect the results of the deep reflection on the dimension and forms of action of the State, creating solutions of greater economical, administrative and environmental rationality meaning the State is able to cooperate with private sector and to adopt private law solutions. This is what happens with the creation of public funds for the purpose of direct intervention in market or management of environmental compensation regimes.

The establishment of the Nature and Biodiversity Conservation Fund (*Fundo de Conservação da Natureza e Biodiversidade – FCNB*) has been ongoing since 2009 under the Legal Framework of Nature Conservation and Biodiversity (Decree-Law 142/2008). The FCNB has been formally established on August 3, 2009 through Decree-Law 171/2009. In September 2009, a Draft Ordinance was drawn up to regulate this fund, settling 2010 as the actual starting date. The circumstances surrounding the electoral process and the subsequent arrival of the new government delayed the proposal's approval, presently in its final stage.

The FCNB was established to support the management of the Key Network of Nature Conservation through the allocation of resources to the necessary and appropriate projects and investments. With the adoption of operational regulations and the constitution of a management team in the second half of 2010, it could be said that Portugal has implemented, yet in an embryonic form, an innovative measure to encourage financing the Natura 2000 management. It is achieved through an autonomous management specialized Fund as well as an objective investment boost.

Its key objectives are to promote public and private investment in nature conservation projects and initiatives, to develop knowledge, to increase awareness of nature conservation issues through education and to create incentives and tools to encourage entrepreneurship in Protected Areas.

Even though being an autonomous entity, the FCNB is managed by the ICNB, not aiming at overlapping the ICNB budget. Quite to the contrary, the ICBN won't be direct recipient of FCNB. The resources allocated to the Fund will be used primarily to encourage social investment in conservation and biodiversity enabling a sustained increase of social awareness to the risks of biodiversity loss.

The main financing source of the Fund is the financial product of the system of environmental compensation. In addition to measures to minimize environmental impacts *in situ* based on Environmental Impact Assessment, the FCNB may manage the implementation of other environmental compensation.

The FCNB is also financed by government budget, by other funds, through donations, by tax incomes or other similar mechanisms that may be assigned.

The FCNB may participate in or integrate other funds not only to increase its critical management ability but also to evolve to other financial solutions in the conservation field, such as countervailing duties future markets.

According to 2010 State Budget, FCNB represents an investment around € 1 000 000.

Environmental Intervention Fund (FIA)

Description

Environmental Basic Framework for Administrative Offences (Law 50/2006), which provides the legal scheme for administrative offences in environmental matters, created the Environmental Intervention Fund (*Fundo de Intervenção Ambiental – FIA*), finally regulated by the Decree-Law 150/2008.

The FIA is an environmental guarantee and recovery fund. It is drawn as a public tool to prevent and remedy environmental damage that may occur as result of detrimental activities. It funds actions and protective measures as well as the recovery of environmental liabilities. It also has to bear the cost of public intervention in preventing and restoring environmental damages set out in Legal Framework of Environmental Liability, approved by Decree-Law 147/2008 (that transposed Directive 2004/35/CE, of the European Parliament and of the Council, 21st April 2004, on environmental liability with regard to the prevention and remedying of environmental damage).

The FIA Management Regulation was published 13th July 2010 by Portaria n.º 486/2010, establishing the procedures for presentation and selection of intervention projects, the payment and financing rules, as well as the terms of reimbursement. At 13th August 2010 the FIA procedure manual was finally approved, setting the terms and process to be followed by beneficiaries from the presentation to the conclusion of the funding eligible project.

The FIA finances public entities initiatives, such as prevention of serious and imminent threats to natural or human environmental components, prevention and remediation of any damage to natural or human environmental components caused by natural disasters or accidents, elimination of environmental liabilities, recovery of environmental damage whose prevention and repair is not covered by environmental liability regime and, finally, all sort of action in situations of delay, difficulty or impossibility of charging or compensating for damage to natural or human environmental components.

The activity of FIA and the selection of which projects to finance in particular, is ruled according to the following descending order of priorities:

a) Prevention, removal and minimization of extreme situations for people and goods;

b) Recovery of operation of basic environmental infrastructure;

c) Rehabilitation and recovery of natural and human environmental components;

d) Promotion of balanced, rational and sustainable environmental and economical usage of natural resources.

The FIA can act as a sinking fund, in the sense that financing can be carried out without return or payment; however, it acts preferentially as a revolving fund or even as an investment fund, since funding should be repaid and may be recovered through participation in income from projects implementation and may be remunerated by charging interests. Its (dual) genesis is based upon the polluter-pays principle. Therefore, its incomes are as much a product of fines collected on behalf of environmental administrative offences as well as a surcharge applied to financial guarantees constituted by economical agents under the legal framework of Environmental Damages Liability.

Values

The FIA´s financial resources have grown moderately since its creation, which is explained by two reasons: (1) revenues from environmental administrative offences fines implies sometimes full processing of its cases, including those in court, which extends the time of income collection; (2) regarding surcharge applied to financial guarantee under the environmental liability regime, collection has not started yet.

FIA overall resources (in Euros)			
	Fines	Others	Total
2008	131,885.52	-	**131,885.52**
2009	1,227,490.13	131,885.52	**1,359,375.65**
2010	1,579,006.77	1,301,058.91	**2,880,065.68**

Source: FIA Activity Report 2008-2009 (2010) and FIA Activity Report 2010 (2011)

During 2008 and 2009 it would be impossible to grant any funding to projects submitted to FIA, as FIA must first be capable to support the expenses that may be generated to the Portuguese State

regarding the enforcement of the Environmental Liability Act (article 23 of Decree-Law 147/2008). As such, it was necessary to accumulate in FIA a minimum amount that would enable the competent authorities to act promptly in case of need. For that reason, the revenues of 2008 were capitalised to 2009; and again all revenues of 2009 were capitalised to 2010.

As the Management Regulation only entered into force in 14th July 2010, only afterwards it was possible to begin the submission of projects for FIA approval, more precisely. Nonetheless, during that period no project was applied for funding by FIA. As such, during 2010 there was no financial execution associated to funding projects.

FIA revenues sources (in Euros)			
	2008	**2009**	**2010**
IGAOT	0.00	943,223.06	1,407,102.65
Courts	150.00	8,850.00	21,719.06
CACMEP	0.00	535.71	3,869.17
ARH Norte	0.00	9,576.00	0.00
ARH Centro	0.00	0.00	100.00
ARH Tejo	0.00	0.00	15,516.33
ARH Alentejo	0.00	0.00	818.15
CCDR Norte	131,111.42	215,860.76	34,452.26
CCDR Centro	0.00	11,846.15	30,263.88
CCDR LVT	374.10	200.00	125.00
CCDR Alentejo	0.00	26,485.95	58,564.72
CCDR Algarve	0.00	0.00	725.00
CM Montemor-o-Novo	250.00	1,375.00	1,413.18
CM Lagos	0.00	8,000.00	1,500.00
CM de Valongo	0.00	1,462.50	1,252.37
CM de Guimarães	0.00	75.00	310.00
CM São Brás Alportel	0.00	0.00	125.00
SLF Loulé	0.00	0.00	250.00
SLF Odemira	0.00	0.00	900.00
Total	**131,885.52**	**1,227,490.13**	**1,579,006.77**

Source: FIA Activity Report 2008-2009 (2010) an FIA Activity Report 2010 (2011)

3. Agro-environmental Incentives

Description

Part of government action in biodiversity conservation lies in the field of compatibility between economic activities and the ecological services available. The agricultural sector is, for obvious reasons, a sector capable of producing effects with particular focus on biodiversity; therefore, there is a strong public investment in measures that permit the coexistence of economic activity with these values.

As a rule, the investment takes the form of incentives (subsidies) that shape the environmental benefit as an economic one. Some actions support farmers to implement organic production methods; others aid the maintenance and conversion of production methods. Others are intended to conserve the plant and animal genetic diversity, promoting economic development for the use of local varieties and value traditional knowledge associated with plant genetic resources.

The integrated territorial interventions aimed at the conservation of natural values or scenery and, therefore, take place in areas classified by value and / or natural landscape, particularly in Natura 2000 and the Douro area. Each Integrated Territorial Intervention is specific to the territory that was created in accordance with their particular conditions. For each ITI are identified agricultural systems and are relevant to the conservation of natural values identified. The proposed measures aim, in this case, support the maintenance and recovery of systems at risk of abandonment or conversion, paying for the service of conservation or landscape maintenance provided.

Values

Over the past years various incentives were granted in the form of agri-environment and forestry incentives, as well as encourage to non-productive investments.

Paid incentives (in Euros)				
	2007	2008	2009	2010
Means of production valorization			33,119,741	52,517,696
Changes of agricultural production methods			23,511,521	41,296,901
Domestic biodiversity protection			3,050,824	4,873,994
Genetic resources conservation and development			6,557,395	5,872,269
Soil conservation				474,532
Integrated Territorial Interventions			5,497,891	7,820,681
ITI management support			72,399	102,986
ITI Douro Vinhateiro			2,244,488	3,192,756

cont.

cont.

Paid incentives (in Euros)				
	2007	**2008**	**2009**	**2010**
ITI Peneda Gerês			1,732,958	2,465,112
ITI Montesinho - Nogueira			158,122	224,927
ITI Douro Internacional			444,000	631,584
ITI Serra da Estrela			61,233	87,103
ITI Tejo Internacional			52,812	75,124
ITI Serra de Aire e Candeeiros			7,067	10,053
ITI Castro Verde			722,633	1,027,936
ITI Costa Sudoeste			2,179	3,100
Total	**0**	**36,180,148**	**38,617,632**	**60,338,377**