

Country Profile **GREECE**

National Reporting to the Twelfth Session of the
COMMISSION on SUSTAINABLE DEVELOPMENT
of the **UNITED NATIONS (UN CSD 12)**

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PREFACE

In 2002, in Johannesburg, at the World Summit on Sustainable Development, ten years after the Rio Summit on Environment and Development, the international community acknowledging the important problems facing the world and the constraints in implementing Agenda 21, and with a sense of urgency, adopted the Johannesburg Plan of Implementation (JPol). The JPol, building on the achievements since 1992 and aiming to expedite the realization of the outstanding objectives, constitutes an important step in committing countries to achieving specific and time-bound targets and internationally agreed goals, in line with goals contained in the Millennium Declaration adopted at the Millennium Summit in 2000.

Work in support of the JPol is focusing on promoting the integration of the three pillars of sustainable development – environment protection, economic growth and social welfare. As such, poverty eradication, changing unsustainable patterns of production and consumption and protecting and managing the natural resource base of economic and social development constitute overarching objectives and essential requirements for sustainable development. In this context, important horizontal issues such as finance, good governance and capacity building and technology transfer, at both domestic and international levels, constitute crucial prerequisites. These priority issues have been highlighted also in the framework of the EU Strategy for Sustainable Development that constitutes, with its internal and external dimensions, an important blueprint for EU's goals, priorities and objectives regionally and globally.

In 2003, during the Hellenic Presidency of the EU, at the first Session of the UN Commission on Sustainable Development (CSD 11) since Johannesburg, it was decided that the work of the CSD will be organized in a series of two-year 'Implementation Cycles', focusing on specific thematic clusters. The decision of CSD 11 to focus its first implementation cycle on Water, Sanitation and Human Settlements bears testimony to the sense of urgency the international community ascribes to these issues: poverty, the greatest challenge facing the world today, cannot be combated unless concerted action is also taken within the areas of water, sanitation and human settlements.

The 12th Session of the CSD in April 2004 will be crucial in keeping up the political momentum, reviewing progress made in achieving agreed targets and goals, sharing best practices and successes but also identifying obstacles, constraints and priority areas. CSD 12 is also expected to stress the importance of intensifying efforts, at all levels, to improve efficiency, effectiveness and integration of policies, especially domestic ones, intensify partnerships with emphasis on public-private schemes, enhance capacity building, promote means for additional and innovative financing, strengthen international cooperation as well as improve means and mechanisms for measuring and reviewing progress.

In this context, the present Report which constitutes the Thematic Country Profile of Greece on Water, Sanitation and Human Settlements to the CSD 12, outlines progress achieved over recent years, highlights challenges and obstacles encountered in implementing the goals and targets of JPol and Agenda 21, provides an overview of emerging issues and opportunities and describes lessons learned and experience gained across important cross-cutting areas, for example governance, capacity-building, awareness-raising, financing, cooperation.

Over recent years, Greece has progressed towards sustainable development, in the field of water, sanitation and human settlements. The Greek Government gives special emphasis to the integrated use of the untapped water resources of the country. The better and more effective use of our water resources, for which the necessary technical know-how and constructional experience are available, will be considered within an innovative framework, in the coming years.

We anticipate with great interest the outcomes of CSD 12, highlighting key priorities and outstanding objectives as well as reaffirming political will, that will pave the way to a successful Policy Session at CSD 13, in 2005. To this end we need to work collectively, with a view to achieve tangible results for meeting our commonly agreed targets, for moving on faster with implementation of the JPol and of Agenda 21, for pursuing a development which is sustainable and for laying the foundations for a better world for present and future generations.



George Souflias

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TABLE OF CONTENTS

Abbreviations, Signs & Notes	7
1. INTRODUCTION	9
<hr/>	
2. FRESHWATER	11
<hr/>	
Decision-Making	11
Programmes and Projects	12
A. <i>Integrated Water Resources Development and Management</i>	
B. <i>Water Resources Assessment</i>	
C. <i>Protection of Water Resources</i>	
D. <i>Drinking Water Supply and Sanitation, Water and Sustainable Urban Development</i>	
E. <i>Water for Sustainable Food Production and Rural Development</i>	
F. <i>Impacts of Climate Change on Water Resources</i>	
Status	17
Capacity-Building, Education, Training and Awareness-Raising	18
Information	19
Research and Technologies	20
Financing	20
Cooperation	21
3. SANITATION	23
<hr/>	
Decision-Making	23
A. <i>Basic Sanitation</i>	
B. <i>Solid Wastes</i>	
C. <i>Hazardous Wastes</i>	
D. <i>Radioactive Wastes</i>	
Programmes and Projects	27
A. <i>Basic Sanitation</i>	
B. <i>Solid Wastes</i>	
C. <i>Hazardous Wastes</i>	
D. <i>Radioactive Wastes</i>	
Status	29
A. <i>Basic Sanitation</i>	
B. <i>Solid Wastes</i>	
C. <i>Hazardous Wastes</i>	
D. <i>Radioactive Wastes</i>	
Capacity-Building, Education, Training and Awareness-Raising	31
A. <i>Basic Sanitation</i>	
B. <i>Solid Wastes</i>	
C. <i>Hazardous Wastes</i>	
D. <i>Radioactive Wastes</i>	
Information	32
A. <i>Basic Sanitation</i>	
B. <i>Solid and Hazardous Wastes</i>	
C. <i>Radioactive Wastes</i>	

Research and Technologies	33
<i>A. Solid and Hazardous Wastes</i>	
<i>B. Radioactive Wastes</i>	
Financing	34
<i>A. Basic Sanitation</i>	
<i>B. Solid Wastes</i>	
<i>C. Hazardous Wastes</i>	
<i>D. Radioactive Wastes</i>	
Cooperation	35
<i>A. Basic Sanitation and Solid Wastes</i>	
<i>B. Hazardous Wastes</i>	
<i>C. Radioactive Wastes</i>	

4. HUMAN SETTLEMENTS **37**

Decision-Making	37
Programmes and Projects	37
<i>A. Providing Adequate Shelter for All</i>	
<i>B. Improving Sustainable Human Settlement Planning & Management</i>	
<i>C. Promoting Sustainable Energy and Transport Systems in Human Settlements</i>	
Status	43
Capacity-Building, Education, Training and Awareness-Raising	44
Information	45
Research and Technologies	45
Financing	46
Cooperation	47

ANNEX

Questionnaire for National Reporting to the UN CSD 12 **49**

Abbreviations

CAP	Common Agricultural Policy
CMD	Council of Ministers Decision
CHP	Cogeneration of Heat and Power
CRES	Centre for Renewable Energy Sources
CSF	Community Support Framework
DAC	Development Assistance Committee of the Organisation of Economic Cooperation and Development (OECD)
DEYATH	Thessaloniki Water and Drainage Public Utility
EC	European Community
EEA	European Environment Agency
EECCA	East Europe, Caucasus and Central Asia
EIA	Environmental Impact Assessment
EKBY	Greek Biotope Wetland Centre
EKPAA	National Centre for Environment and Sustainable Development
EU	European Union
EUWI	European Union's 'Water for Life' Initiative
EYDAP	Athens-Piraeus Water and Drainage Utility
GAEC	Greek Atomic Energy Commission
GCSL	General Chemical State Laboratory
GOK	General Building Construction Code
GSRT	General Secretariat for Research and Technology
GWP-MED	Global Water Partnership – Mediterranean
IAEA	International Atomic Energy Agency
IGME	Institute of Geology and Mineral Exploration
IWRM	Integrated Water Resources Management
JMD	Joint Ministerial Decision
MAP / UNEP	Mediterranean Action Plan / UNEP
MDGs	Millennium Development Goals
MED-EUWI	Mediterranean Component of the EUWI
MEDIES	Mediterranean Education Initiative for Environment and Sustainability
MoU	Memorandum of Understanding
NCSR 'Demokritos'	National Centre for Scientific Research 'Demokritos'
NEP	National Energy Programme
NGO	Non Governmental Organization
NSSD	National Strategy for Sustainable Development
NSWR	National Strategy for Water Resources
NOAMPOM	National Organization for Alternative Management of Packaging and other Materials
NORM	Naturally Occurring Radioactive Materials
OAMPOM	Office for Alternative Management of Packaging and Other Materials
ODA	Official Development Assistance
OEP	Operational Environmental Programme
OJG	Official Journal of the Government
OPCOM	Operational Programme 'Competitiveness'
OPE	Operational Programme for Energy
OPET	Organization for Promotion of Energy Technologies
OPRT	Operational Programme on Research and Technology
P.E.	Population equivalents
PCBs	Polychlorinated Biphenyls
PCTs	Polychlorinated Terphenyls
PPC S. A.	Public Power Corporation S. A.
P.F.	Pulverized Fuel
P/V	Photovoltaic
RAE	Regulatory Authority for Energy
RBDs	River Basin Districts
RES	Renewable Energy Sources
R&D	Research and Development
SES	Steam Electric Station
SME	Small and Medium size Enterprise
TPF	Third Party Financing
TOEV	Local Land Reclamation Board
UNCSD	United Nations Commission on Sustainable Development
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
WB	World Bank
WFD	Water Framework Directive of the European Union (Dir 2000/60)
WHO	Workers Housing Organization
WSSD	World Summit on Sustainable Development (Johannesburg, August-September 2002)
YPEHODE	Hellenic Ministry for the Environment, Physical Planning and Public Works

Signs & Notes

.	decimal point
€:	euros (on average, as of 17 March 2004, 1 euro = 1.2253 USD)
USD:	US Dollar



1. INTRODUCTION

■ Some important milestone

According to article 24 of the Greek Constitution, the protection of the physical and the cultural environment is a responsibility of the State. The Ministry for the Environment, Physical Planning and Public Works (YPEHODE) is in charge of coordinating sustainable development issues among other competent Ministries.

The Principles of Sustainable Development have been established by the case law of the 5th Section of the Supreme Administrative Court (Council of State), having jurisdiction on environmental matters, among them the principles of sustainability, carrying capacity of man-made systems and ecosystems, sustainable land development, management of fragile ecosystems, biodiversity, and others.

The first legislation concerning environmental protection dates back to the 50's, whereas in 1976 the first law on 'Regional and Environmental Planning' was adopted. In 1980, the Ministry of Environment, Housing and Physical Planning was created (Law 1032/80) in an attempt to unite in a single administrative body all competence concerning environment related issues. Five years later, the new Ministry was merged with the Ministry of Public Works (Law 1558/85) to form a single Ministry for the Environment, Physical Planning and Public Works (YPEHODE).

The bulk of environmental legislation in Greece results directly from the incorporation of European Union's Legislation (e.g. Directives, Regulations, etc) in national law, with the exception of legislation for the protection of forest ecosystems.

In 1986, Law 1650 for the Environment was adopted, establishing a framework of sanctions and liabilities for the protection of the environment. The imperative for the integration of the environmental dimension in all governmental policies, results in an important co-ordination task amongst all Ministries bearing responsibilities on specific environmental issues. In this context, in 1990, a joint ministerial resolution introduced environmental impact assessments for certain production facilities and activities.

The establishment of the National Center for Environment and Sustainable Development (EKPA), in 2000, was an important step for improving reporting on environmental issues and for raising awareness on sustainable development issues. Moreover, EKPA contributes to the collection and analysis of environmental data, the diffusion of environmental information, the provision of support to the elaboration and assessment of policies, measures and programmes on the environment and sustainable development.

The elaboration and approval of the National Strategy for Sustainable Development (NSSD) by the Ministerial Council in May 2002 has been another important step towards achieving sustainable development. YPEHODE, in collaboration with the Ministries of Foreign Affairs, Economy and Finance, Development, Agriculture, Transport and Mercantile Marine, forming an Inter-Ministerial Committee for Sustainable Development, compiled the NSSD, in view of the Johannesburg World Summit on Sustainable Development (August-September 2002). The main aim of the Strategy is the achievement of economic development, while safeguarding social cohesion and environmental quality. The main sectors of action are climate change abatement; reduction of air pollutants; reduction and rational management of solid waste; water resources management; combating desertification; protection of biodiversity and natural ecosystems; and sustainable management of forests. Relevant activities are to be promoted in social and economic sectors i.e. energy, transport, agriculture, industry, tourism and introduced in other policies such as in spatial planning and employment. Moreover, a framework for monitoring implementation progress of the NSSD is under implementation.

The 3rd Community Support Framework (CSF) 2000-2006 for Greece, co-financed by national and EU structural funds, is being implemented. In this framework, the Operational Environmental Programme (OEP), constitutes one of the 24 Operational Programmes (e.g. Competitiveness, Rural Development, Fisheries), aiming at promoting sustainability of development, focusing on the following ten priority areas: aquatic environment (water management); solid waste management; civil protection-landscape protection-marine environment protection; air quality and noise abatement; empowerment of institutions and environmental awareness; environmental activities; spatial and urban planning, management of protected areas; environmental activities in collaboration with private sector; and technical assistance.

Environmental legislation has been further enriched in the last four years as regards transposition of EU Directives. Specifically, in 2003, important enactments, have been issued to complement existing legislative and institutional context, such as: (a) Presidential Decree 165 (OJG 137/A/2003) for establishing the Special Service of Environmental Inspectors – INSPECTORATE (SSEI), thus, contributing to the effective enforcement of environmental legislation and increasing the overall credibility of environmental policy; (b) Law 3199/2003 on integrated management of water resources for the transposition of EU's Water Framework Directive into the national legislation; and (c) JMD 50910/2003 for providing measures and terms for waste management and reviewing the National and Regional Planning Management, in complete compliance with the European Waste Framework Directive.

Moreover, the Environmental Impact Assessment Framework in Greece, set by Law 1650/1986, has recently been amended by Law 3010/2002 in order to fully harmonise national legislation with EU Directives 96/61/EC and 97/11/EC. In accordance with this Law, three new Joint Ministerial Decisions (JMD) (15393/2332/2002, 11014/703/104, 37111/2021/2003) introduce new provisions for categorization of projects, environmental permitting and public participation.

In accordance with the NSSD, which envisages the reinforcement of the participatory role of the society, YPEHODE offers financial support to Non Governmental Organizations, Universities and Management Boards of Protected Areas under various national funding initiatives, such as the Programme "Voluntarism and Environmental Protection", the Programme on Environmental Protection and Sustainable Development, the Programme Protected Areas Management etc.

Awareness raising, information and capacity building are among the longstanding priorities for sustainable development, as defined in the NSSD. Seminars and special thematic sessions organized by YPEHODE, the EKPAA and the National Center of Public Administration-Institute of Training aim to raise awareness, inform and build capacities on the implementation of EU and National policy and legislation. Special themes cover, inter alia, environmental impact assessment, water and forest management, rural development, environmental education, economic instruments, sustainable production and consumption patterns, the Johannesburg commitments and the MDGs etc. Such activities (as set out by Measure 5.2: Environmental Awareness, of the OEP) are complemented by updated websites (e.g. www.minenv.gr), publication and diffusion of printed material, ad-hoc reports on the state for the environment, books and guides on natural environment and other information material for the public and for special groups (e.g. students). Furthermore, the National Environmental Information Network is an important dynamic source of environmental information. Its function has been divided into two phases: the first phase is focused on the improvement of the existing information system, aiming mainly to more friendly and flexible operation, enhanced security and data quality. The second phase aims at upgrading the technological structures of the system using web-based functions, in order to facilitate public access and international reporting. The first phase of operation has been approved and its implementation has started in the end of 2003. The second phase has been incorporated in the "Information Society" operational programme of YPEHODE and is expected to begin by the end of 2004.

The Hellenic Presidency of the European Union, during the first semester of 2003, tried to promote its political and legislative goals in accordance with (a) the Lisbon Strategy (2000) that set 10-year targets for economic development and social cohesion in EU, (b) the Göteborg Council Conclusions (2001) that added the environmental dimension into Lisbon Strategy so that EU pursues sustainable development, as well as (c) the Cardiff process (1998) for the integration of environmental aspects into all sectoral policies. In this direction the Hellenic Presidency, at the 2003 Spring European Council, promoted the setting of concrete priorities for the next year, for Sustainable Development within the EU and globally. The Hellenic Presidency has contributed to strengthening the ties of effective cooperation within an enlarged Union, with 10 new Member Countries joining the EU. Being the first EU Presidency after the WSSD-2002, it has also contributed to promoting EU's efforts, on global level, for reaching the Johannesburg targets and objectives, in a number of International Events and Conferences (e.g. UNEP's Governing Council, CSD11, the 3rd World Water Forum, the 5th Pan-European Ministerial Conference 'Environment for Europe'), adding value to international processes for promoting sustainable development.



2. FRESHWATER

■ Decision-Making

Since December 2003, a new legislative and institutional framework has been put into force in the country. It consists of Law 3199/9-12-2003 (Official Journal of the Government - OJG 280A/2003) on "water protection and the sustainable management of the water resources" with which the EU Water Framework Directive (WFD) (2000/60/EC) is transposed into the national legislation. This new framework Law foresees a radical reorientation of the respective administrative capacities in Greece and introduces an innovative and holistic approach concerning water management that recognizes explicitly the ecological function of water. It also lays emphasis on the management of water on the basis of river basins as well as on the water pricing so that it reflects its full costs. In more detail, the main objectives of the new Law include: the long-term protection of water resources, the prevention of deterioration and the protection and restoration/remediation of degraded water resources and wetlands, the reduction and, in cases, the phase out of harmful and polluting discharges, the reduction of groundwater pollution and the prevention of its further deterioration as well as the mitigation of the effects of floods and droughts. The 3199/03 Law also incorporates the 'polluter pays principle' and the objective of maintaining or reaching a 'good ecological status' for all water resources through the control of pollution by use of thresholds levels and standards. It also introduces innovative approaches concerning the protection of water quantity and the transnational cooperation for the protection of transboundary water courses and lakes.

The new legislation for the protection and the sustainable management of the water resources in Greece, provides a detailed identification of 13 River Basin Districts (RBDs) according to the administrative units of the country, the competent authorities and their respective responsibilities in water management in Greece. In this context, Regional Water Directories and Councils will be established within each River Basin District / Water Region (RBDs) and they will have the responsibility for organising and co-ordinating water policy activities (including water pricing) and specific Water Programmes and Action Plans with specific measures for each RBD. They will be in charge for implementing the WFD in the RBDs of the country and they will be supervised by the National Water Agency, a governmental authority with the overall responsibility for establishing water policy. In the new legislation there is also consideration about the most effective options for setting up legal coordination mechanisms relating to the designation and management of the River Basins that cross the Water Region borders. The appointment of the new authorities will be legally binding once it is integrated into the new legislation.

The 3199/03 Law also integrates the public participation requirements of the WFD. The active involvement of the interested parties is ensured by their representation at the National and Regional Water Councils that will be developed as a part of the new administrative framework. In order to complete the transposition of the WFD, besides this new law, further instruments, e.g. Presidential Decrees and Joint Ministerial Decisions, are under preparation, for the incorporation of the technical provisions of the Directive.

Before this new law on water was put into force, the legislative framework of the country on this issue included Law 1739/1987 on Water Resources Management, establishing the institutional framework for the management of water resources in Greece and the Environmental Protection Law 1650/1986 for the protection of surface and groundwater quality, including control of effluent discharges. The 1987 Law also provided for the design and implementation of water resources policies as a prerequisite for development that would enhance the results of production processes, balance the various competitive uses for water and contribute to the renewal-replenishment of water resources as well as to the protection of the environment through participatory processes. Despite the innovative and integrated approach introduced by this Law, its complexity made its full implementation in practice quite difficult.

The existing Legal Framework for water resources management in Greece, apart from the above mentioned new Law 3199/9-12-2003, also includes Joint Ministerial Decisions (JMD) such as JMD 46399/1352/1986 and JMD A5/288/1986 for the harmonization of the Greek legislation with EU Directives 75/440, 76/659, 76/160 and Directives 78/659, 79/869 and 80/778 respectively, as well as JMD 18186/271/1988 for measures and restrictions for the Protection of the Aquatic Environment: Determination of Limit Values for Dangerous Substances in wastewater. It also includes Council of Ministers' Decisions (CMD) such as CMD 144/1987 for the Protection of the Aquatic Environment from Pollution caused by Dangerous Substances. Moreover, concerning drinking water quality, the Sanitary Regulatory Decision A5/288/86 (OJG 53B, 379B) about "Drinking Water Quality" (which refers to the qualitative characteristics of drinking water, to the frequency of sampling and the obligations of the responsible persons), in harmonization with Directive 80/778/EEC, was valid until December 25th 2003, when the new JMD Y2/2600/01 (OJG 892/B/11/11-7-01), in harmonization with EU Directive 98/83 for the quality of water for human consumption, came into force.

Management of protected areas including wetlands, was defined in 1999 (Law 2742/99) through the establishment of administrative units (Management Bodies) and the competence of NATURA 2000 Committee, whereas in 2002, through Law 3044/02, 25 Management Bodies were established, additionally to the existing two ones. Management of the most important protected wetland sites in Greece, designated as Ramsar wetlands of international importance, is attained through the establishment of these Bodies (which are financially supported, for the time being, from the state), that will collaborate with the respective regional services to be established according to Law 3199/03, with the mandate to develop and implement regional water management plans.

Concerning the protection of the quality of water resources and of vulnerable zones, in years 2001 and 2002 the existing legislative framework was complemented by various JMDs determining protection measures for vulnerable water resources as well as threshold levels for polluting substances from various anthropogenic sources, according to relative EU Directives (described in detail under Chapter 'Programmes and Projects', C. Protection of Water Resources, Water Quality and Aquatic Ecosystems).

Finally, in 2003, a new Forest Act (3208/03) was adopted, concerning the protection and management of forest resources with emphasis on the protection of forests and their hydrological role.

■ Programmes and Projects

The targets of the National Strategy for Sustainable Development (NSSD) (2002), regarding the management of water resources, are set out in the National Strategy for Water Resources (NSWR) (2002) and aim at the sustainable use of water resources, the efficient protection of water ecosystems and the attainment of high quality standards for all surface and ground water bodies by the year 2015. The NSWR also incorporates the water targets, in line with the Johannesburg Plan of Implementation, for water supply and sanitation as well as for integrated water management and water efficiency plans.

The basic sectors of action of the NSWR are:

- Integrated approach for water management: Development of Management Plans on river basin level including transboundary water courses, based on water quality and quantity considerations and the interaction between surface and ground waters.
- Decentralization of water management authorities / bodies: Establishment of Water Managing Bodies the transposition of competencies to the regional and local levels. These Bodies will also be responsible for the elaboration of Crises Management Plans, for extreme events e.g. floods and droughts.
- Upgrading and expansion of infrastructure: This includes the promotion of specific measures and actions for meeting the demand for water supply through the expansion of existing networks as well as through the decrease of losses, the construction of new and the upgrading of existing wastewater treatment plants with emphasis on recycling, the construction of new multi-purpose reservoirs and finally, the establishment of more effective mechanisms for monitoring water quality and quantity with focus on creating an updated Data Bank.
- Incorporation of socio-economic considerations in water management: This includes measures to reinforce public participation in water management efforts as well as adaptation of pricing policies to include 'the social cost' in water services' provision.
- Protection from harmful substances: Setting of new maximum permissible levels of harmful substances' concentrations in water resources as the basis of a sound system for liabilities, water protection and promotion of remedial measures, where required.

More specifically, the NSWR contains a wide series of projects, programmes and actions, according to the requirements of the WFD that will allow meeting set targets at national, EU and international levels, by fully implementing the WFD and law 3199/03, such as:

- Participation in the process of testing the guiding and supporting documents on key aspects of the WFD (technical Guidance Documents) in several pilot river basins across Europe (integrated testing in pilot river basins). The overall objective of this integrated testing Project is to contribute to the implementation of the WFD in selected Pilot River Basins, leading in the long-term to the development of River Basin Management Plans. The specificity of the testing versus the real implementation is that the testing is a front-runner of the actual implementation. Greece is participating in this Project with Pinios Pilot River Basin (Thessaly RBD).
- Update of the National Data Bank of Hydrological and Meteorological Information and of the National Environmental Information Network.
- Identification and characterisation of the individual river basins and identification of the respective competent authorities.
- Development of a new monitoring network for inland surface, transitional, coastal and ground waters, including the development of monitoring programs for biological quality parameters and the assessment of their ecological quality.
- Intercalibration exercise in several water bodies, as a part of the intercalibration network within the European Union.
- Designation of heavily modified and artificial water bodies.
- Development of water pricing policies that enhance the sustainability of water resources.
- Continuation of construction of wastewater treatment plants.
- Analysis of the role of local authorities and citizens in securing long-term water resources conservation.
- Development of Management Plans in Water Districts for each river basin of the country.

For the implementation of Law 3199/03 and of the NSWVR, in Greece, four (4) Phases have been set aiming at accomplishing the following intermediate targets (according to the WFD requirements):

- 1st Intermediate Target (December 2004): Characterization of the RBDs in terms of pressures, impacts and economics of water uses, including a register of protected areas lying within the river basin districts.
- 2nd Intermediate Target (December 2006): Operation of the monitoring network for inland surface, transitional, coastal and ground waters and evaluation of the results of the first intercalibration exercise.
- 3rd Intermediate Target (December 2009): Production and publishing of river basin management plans for each RBD, including the designation of heavily modified water bodies.
- 4th Intermediate Target (December 2015): Implementation of the programmes of measures and achievement of the environmental objectives.

A. Integrated Water Resources Development and Management

During the first phase of the WFD implementation in Greece, the main problems encountered were related to compatibility issues with current administrative bodies and lack of information and data, especially for biological quality elements. This, consequently, has created difficulties in the definition of reference conditions and the development of classification systems. However, the passing on of Law 3199/03, the establishment of new operational monitoring networks and the testing of the technical Guidance Documents in Pinios Pilot River Basin (Pinios PRB Project), will be the best way to get through such problems related to the implementation of WFD at an early stage.

The Pinios Pilot River Basin is part of a 15 Pilot River Basin Network across Europe (integrated pilot river basins testing network). The overall aim of this PRB Project is to identify the technical and management problems that may come up in real cases of the WFD implementation in the country and to develop pragmatic solutions to these problems, to test the practicability and efficiency of the technical Guidance Documents in Greece before they are widely applied, to attain a concrete example of the application of the technical Guidance Documents and to inform the interested parties on the implementation of the WFD, through real circumstances, allowing the stakeholders (including local and regional authorities) to be involved at an early stage.

Other specific actions and programmes that have been so far promoted include:

- The elaboration of an updated "Master Plan of water resources management of the country" (January 2003) by the Ministry of Development in collaboration with the Technical University of Athens and the Institute of Geological and Mineral Explorations. This study is a first approach on water supply and demand balance for each River Basin District and of their inter-dependence.
- The elaboration of River Basin Management Plans for each river basin, compatible with the WFD. These management plans are assigned to different Consortium of Companies (2nd semester of 2003), they are funded through the 3rd Community Support Framework (CSF) and will be completed by 2007, with the involvement of the Regional Water Directories and public participation.

The promotion of these programmes will enable an integrated management of all water resources, combining surface water and groundwater bodies, wetlands and coastal water resources at a river basin scale. It will also link water quality

and water quantity considerations as well as competitive water uses, functions and values into a common policy framework, with water as a social good.

The 3rd Operational Fisheries Programme 2000-2006 also supports activities contributing to the sustainable development and the protection of natural environment. Other programmes and projects in place on integrated water resource development and management include: recharging ground water aquifers, restoration of wetlands, torrent control and management of their watershed, construction of dams and small water storage basins etc. Legislative and administrative measures are also adopted by local authorities as well as by central services for the protection of people, properties, agricultural areas and infrastructure, during extreme flood and drought conditions. To this end, the Operational Programme for Rural Development of the Ministry of Agriculture incorporates actions on integrated programmes for the reclamation of areas undergone natural disasters. Such projects also contribute to combating desertification.

The large multi-purpose reservoirs constructed by the Public Power Corporation (PPC S.A.) are contributing to the development and management of water resources. PPC S.A. operates seventeen large hydroelectric plants that serve a variety of purposes apart from power production, i.e. drinking water supply (to approximately 20% of the population), irrigation water supply, flood protection as well as preservation of existing ecosystems and creation of new ones. The reservoirs of these large hydroelectric projects have a useful storage capacity of 6.5 billion m³ at the end of the wet period. The effective management of these large reservoirs by PPC SA contributes highly to meeting the freshwater demands of the country without any impact to the groundwater bodies.

B. Water Resources Assessment

YPEHODE supervises the existing national monitoring network for water quality. This network that measures water quality systematically since 1995, relies on existing sampling stations, such as those set up since the 70s by the Ministry of Agriculture for monthly monitoring of irrigation water quality (90 sampling points in rivers, 30 sampling points in lakes plus seasonal sampling in 100 irrigation projects and 250 drillings). The network encompasses upgraded Laboratories of the General Chemical State Laboratory (GCSL), under the authority of the Ministry of Finance, as well as Municipal and Research Laboratories. Monitoring is based on 200 sampling points in lakes and rivers and samples are being analyzed for around 69 parameters (physicochemical parameters, nutrients, heavy metals and microbiological) on a trimester basis.

This Monitoring Network includes sampling points where water is analyzed for toxic substances contained in Lists I and II of the EU Directive 76/464/EC. More specifically, samples are monitored for 156 substances of Lists I (7 substances) and II (116 substances) as well as 33 priority substances, at 50 sampling points through out the country. For the transboundary rivers, 5 sampling points have been established at the entry points from the upstream neighboring countries, where 5 automatic monitoring stations have been situated at Axios, Strymonas, Nestos and Evros (2 stations) rivers. Groundwater monitoring is carried out at approximately 400 sampling points covering the whole country except for the Aegean islands. Sample analyses focus on nitrates of agricultural origin. The Institute of Geology and Mineral Exploration (IGME) has also established a national network for monitoring qualitative and quantitative properties of groundwater, collecting systematically hydrological, hydrochemical and other data (heavy metals, pollutants). Data are then incorporated in a GIS database for compiling adequate timeseries and determining evolutionary trends of groundwater according to the WFD. Pesticide residue monitoring is carried out in cooperation with the Benakion Phytopathological Institute.

A water quality monitoring programme of rivers, lakes and groundwater, including the determination of all heavy metals and pesticide residues has been executed and will be continued in cooperation with the Aristotle University of Thessaloniki in the Regions of Macedonia and Thrace, in Northern Greece.

Drinking water is analyzed for 66 sampling points in rivers and lakes, using the laboratory infrastructure of the GCSL. Further 14 sampling points for surface waters are located in specific areas, such as water supply areas. Therefore monitoring programmes for drinking water quality, specify, inter alia, the water sampling points. These programmes are submitted to the Directorate for Health of the corresponding Prefecture for approval, together with a graphical illustration of the points of water intake, which are also notified to the competent Regional Authorities.

PPC S.A. runs a hydrologic monitoring network, the hydrometric part of which is very advanced in its capacities and most valuable for data collection in the context of relevant studies. However this network is restricted in the mountainous part of Greece, where the PPC's interests are primarily focused.

In the frame of the obligations derived from Directive 91/676/EC, YPEHODE assigned to the University of Patras the elaboration of a study and the organization and operation of a Groundwater Quality Monitoring Network in the country (monitoring parameters: NO₃, NO₂, NH₄, Cl, SO₄, ions, conductivity and pH). From the conclusions of this study and according to the criteria of the Directive, vulnerable zones have been designated as regards nitrate pollution of agricultural origin and "Codes for a Good Agricultural Practice" along with Action Programs for the promotion and implementation of such Codes, have been developed in these zones.

A project for "Collection and evaluation of ecological data for rivers and lakes" of the country, according to the requirements of the WFD has been also assigned to the National Center of Marine Research. The aim of this project is to estimate the sufficiency and adequacy of existing data for the typology, the classification of ecological status, the definition of reference conditions and the inter-calibration. In addition, it will formulate proposals concerning the future steps on research to be accomplished and the monitoring systems.

Monitoring results from the above mentioned Networks are made available to the public and are also forwarded to EUROWATERNET, managed by the European Environment Agency (EEA).

The National Surface and Groundwater Quality Monitoring Networks are currently under revision and readjustment, according to the requirements of the WFD and Law 3199/03. In this context, the Operational Environmental Programme (OEP) 2000-2006 of Greece includes the development of a new, expanded and complemented National Monitoring Network (Priority Axis I, Measure I.1) for the quality of surface waters and groundwater, transboundary rivers, drinking water, and bathing waters including a central laboratory for the calibration and coordination of regional laboratories involved in the monitoring networks.

Moreover, though Measure 8.1 of Priority Axis 8 of OEP 2000-2006, monitoring parameters (biotic, abiotic) will be evaluated and selected at national level and a unique database will be compiled, together with the formulation of monitoring plans for the areas under the responsibility of the Management Bodies. Through these activities, a coherent and comprehensive overview of the chemical and ecological status within each River Basin District will be provided. This overview will enable, after assessment of the reference conditions, the classification of the surface waters into five classes, on the basis of specific quality elements and the development of national classification schemes. The establishment of this new legally binding monitoring network (under the competencies of the Regional Water Directorates and the overall supervision of the National Water Directorate) for inland surface, transitional and coastal waters is part of an overall project to be implemented in the country by 2006.

C. Protection of Water Resources, Water Quality and Aquatic Ecosystems

Measures aiming at the protection of water resources and aquatic ecosystems in Greece encompass a special 'concessions and permitting' system. Permits for building water infrastructure are issued by the relevant Ministry following an application accompanied by an assessment of the quantitative and qualitative situation of water resources before and after the execution of the project. Concessions (water use permits) are granted for 10 years by the Ministry of Development or the relevant prefect following a valid license. Permits for the discharge of effluents into rivers are granted to industries after the effluent discharge thresholds have been set and a discharge and water use permit have been issued. The Ministry of Health carries out sampling of discharged wastewater to verify compliance with permissible levels and impose sanctions if required. Other measures for protecting environmental integration and ecosystems include Environmental Impact Assessments (EIA) as a prerequisite for any water related project or infrastructure.

According to the requirements of the EU Directive 91/676/EEC (transposed into national legislation with JMD 195652/1906/1999, OJG 1575B), four (4) "vulnerable zones" towards nitrogen pollution from agricultural run-offs have been established and respective special Action Programmes have been planned and adopted, according to art.5 of the Directive, focusing on the minimization of the adverse impacts on the environment of Greece. The implementation of these programmes is obligatory for all farmers of these vulnerable zones. These Action Programmes include:

- Action programme for Thessaly plain (JMD 25638/2905/2001, OJG 1422B)
- Action programme for Kopaida plain (JMD 20417/2520, OJG 1195B)
- Action programme for Argolida plain (JMD 20416/2519, OJG 1196B)
- Action programme for Pinios basin, Prefecture of Ilia (JMD 20418/2521, OJG 1197B)

In 2001 three more areas were identified as sensitive areas (with JMD 20419/2522, OJG 1212B), completing the list with the sensitive areas, namely: Thessaloniki plain, Strimonas basin, Preveza-Arta plain. The respective Actions Plans are under publication procedures.

Moreover, under the National Programme (OJG 1866/B/12.1.03) for the reduction of toxic substances of List II of Directive 76/464/EC, a special Action Programme for the protection of Lake Vegoritida-Petron and Soulos stream has been established through JMD 15782/1849/2001 (OJG 797B) and is already being implemented.

In the above mentioned context, national legislation has been complemented in recent years with the following enactments:

- i. Transposition of Article 7 of Directive 76/464/EU regarding the determination of National Programme for reducing the disposal of hazardous substances to waters:
 - CMD 2/2001 regarding the determination of guidelines of water quality from disposals
 - JMD 4859/726/2001 regarding the determination of measures and limits for water protection
- ii. Implementation of Article 5 of Directive 91/676/EU (pollution from nitrates)

- iii. Implementation of Article 5 of Directive 91/271/EU (disposal of urban waste water):
 - JMD 48392/939/2002 (OJG 405B/3-4-2002), regarding the completion of the list with sensitive areas for the disposal of waste water.

Under Priority Axis 8 (total budget of around 193 million €), of the OEP 2000-2006, significant amounts are being invested for the protection of natural sites and wetlands. These Programmes will support the organization of a National System of Protected Areas, which are part of the NATURA 2000 list and include, inter alia, all important Ramsar wetlands, coastal and sea areas, the integrated protection and management of ecosystems, species and landscapes and the restoration of Lake Karla.

By the national legislation, 27 Management Bodies have been established in important Greek ecosystems, which include all Ramsar wetlands and important coastal and sea areas. These administrative units are formulating respective Management Plans and Action Plans, which are in line with and specify the management priorities described in their respective Specific Environmental Studies. Management Bodies are entitled with opinion giving prior to EIA procedures, assisting public authorities in the implementation of environmental legislation, elaboration of projects and specific studies, information and public awareness actions as well as implementation of eco-tourist projects. In the past, through the 2nd CSF, Programme Agreements had been signed for these areas, with the aim to put forward projects and activities that would prepare the future function of the Management Bodies. Additionally, the Greek Biotope/Wetland Centre (EKBY), founded by the Greek Government and the European Commission in 1991, constitutes an autonomous non-governmental scientific institute that assists in many cases competent authorities in the planning and implementation of conservation and sustainable development measures.

D. Drinking Water Supply and Sanitation, Water and Sustainable Urban Development

In Greece, the supply of clean and sanitarly appropriate water, from underground and surface waters, to every citizen in the country, consists one of the main responsibilities of Public Administration. The state is responsible for providing water and wastewater services to Athens and Thessaloniki and has effectively entrusted water services to two large companies: to EYDAP in Athens, which legally has private status but is supervised by YPEHODE and to DEYATH in Thessaloniki, a public sector company. In cities, over 10000 municipal companies manage water and wastewater services. In smaller towns and rural areas, communities are directly responsible. Aside from some small wastewater treatment plants installed in private properties, there is no further private sector involvement.

In 1998 more than 90% of Greek population was connected to drinking water networks and the percentage is rising. Currently, drinking water supply for the 20% of the population derives from large reservoirs managed by the PPC S.A. The most serious shortages occur in the Aegean islands, particularly during the tourist season. In some areas rain water retention works are being built. Drinking water is good for 82% of the population, satisfactory for 8% and not satisfactory for 2% due to marine water intrusion in coastal aquifers. Monitoring of drinking water quality is carried out by the Ministry of Health and its Regional Laboratories for Public Health.

Water supply prices vary considerably throughout the country and are set by municipalities, whereas in Athens are approved by YPEHODE. Water charges are based on volumetric rates and are progressive, with the price per cubic meter increasing with the level of consumption; however, a ceiling exists for large families. The areas of Athens and Thessaloniki have a combined water billing system covering both water supply and wastewater collection & treatment charges. Volumetric rates for industry are generally higher than for households with charges including also flat rate pollution charges and wastewater charges.

Four protection areas have been designated for vulnerable drinking water sources, in the framework of a programme to protect drinking water resources. Within these areas polluting activities are restricted and environmentally friendly farming is encouraged for abating nitrate pollution.

In 1998, the percentage of settlements served by sewerage systems (with population equivalent – p.e.>15.000) was 45%, and in 2000 increased to 64%. This percentage has increased even more, during the last 3 years, after the construction of additional collecting systems. Regarding the operation of the urban wastewater treatment plants in Greece, the percentage of served population of settlements with p.e.> 10.000, with plants discharging in sensitive areas has increased from 16% in 1998 to 42% in 2000. For settlements with p.e.> 15.000 that discharge into normal areas, the percentage has increased from 27% to 43% in 2000. This percentage has further increased in 2001, with the total number of municipal wastewater treatment plants amounting to 290, whereas projections show that in 2005 the number will reach 475, covering 94,8% of Greek population, giving emphasis to secondary and tertiary treatment. The operation of a significant number of existing treatment plants is a responsibility of the Municipal Services for Water Supply and of EYDAP and DEYATH for Athens (where the secondary treatment plant of Psytalia is in operation) and Thessaloniki respectively.

OEP 2000-2006 is promoting, under Measures 1.1, 1.2, 1.3 and 6.2, the development of a National Management Scheme for urban and industrial wastewater, the construction of tertiary treatment facilities in sensitive regions and the implementation of innovative and adjusted technologies for the treatment of urban and industrial wastewater in selected areas.

E. Water for Sustainable Food Production and Rural Development

The agricultural sector consumes around 75% of water withdrawals in Greece with the surface of irrigated areas rising in recent years. Farmers are not charged for irrigation water supplied by individual projects but they pay only a small fee per hectare of cultivated area served by collective irrigation projects to the Local Land Reclamation Board (TOEV). Water provided by the Public Power Corporation (PPC S.A.) to farmers from large dams to cover irrigational needs is not charged.

The programmes promoted in line with the Amended Common Agricultural Policy (CAP) since the mid 90s focus, inter alia, on streamlining economic, ecological, social and alimentary needs, increasing the 'multi-functionality' of the agricultural sector as well as promoting an integrated and sustainable development of rural areas. In the context of the NSSD, a Scheme for the Agricultural Development has been promoted. The Scheme includes specific programmes and actions such as: promotion of best agricultural practices and more sustainable production patterns, rational use of water aiming at resources' conservation and desertification abatement, promotion of an integrated approach for the development of agricultural land, gradual reform of state support to the sector and of market distorting mechanisms, promotion of adequate economic instruments for internalizing external costs, promotion of programmes for biological agriculture, fallow and biodiversity protection in hot spot areas of increased ecological value, promotion of information and awareness raising campaigns among farmers, upgrade farmers' social status and development of an integrated fisheries policy. These actions are also included in the Operational Programme of the Ministry of Agriculture 'Operational Programme for Rural Development 2000-2006'.

In this context, the programmes promoted by the Ministry of Agriculture have resulted in the development of more sustainable irrigation systems, the promotion of ecological products (without chemicals and pesticides), the decrease in per hectare consumption of fertilizers by discontinuing subsidies as well as the decrease of total agrochemicals' use through awareness raising. For this purpose, the Ministry of Agriculture has established and published "Codes of Good Agricultural Practices" for the management of agricultural areas, of grazing lands, of water resources and of biodiversity. The Ministry of Agriculture is also promoting the implementation of a Programme for the Integrated Pest Management (IPM) that is aiming at "Application of Alternative methods of Integrated Pest Management and Disease Control" in different crops at the country level.

F. Impacts of Climate Change on Water Resources

The recent National Action Plans to Combat Climate Change (2002) and Desertification (2002) include projects, programmes and actions on water resources, as a priority area for protection. The Ministry of Agriculture has promoted the implementation of an Action Plan, of approximately 450 million € total budget, through: construction of small dams, reservoirs for rain water in threatened areas and artificial water recharging, torrents' watershed management, control and reduction of irrational use of irrigation water and of water losses by modernizing irrigation networks, reduction of nitrogen pollution of agricultural origin in groundwater, protection of mountainous watersheds with terraces, and development of coastal and inland karstic water resources. Water recycling and re-usage is implemented through the projects promoted by the Land Reclamation Directorate of Ministry of Agriculture and by the TOEVs. Other ongoing land reclamation projects for facing drought also include promotion of new drillings where the groundwater table permits it, and harvesting of spring water. YPEHODE and the Ministry of Development have contributed to the above mentioned Action Plan by taking measures in the same direction, for protecting water systems from salinization and erosion. These activities, complemented by a reinforced component on research, exchange of information and training, as well as establishment of appropriate monitoring mechanisms, are intensified in 2000-2006. The refilling of artificially drained lakes planned under OEP 2000-2006 and the planned diversion of the Acheloos River will also contribute to address desertification problems in the threatened plains of Central Greece.

By now almost 10% of power production is coming from renewable sources, a large proportion of which, in terms of installed capacity, are large hydroelectric plants. Greece has been committed to meeting the target of 20.1% power generated by renewable sources. Hydroelectric power generation contributes substantially to meeting the target of reduction of greenhouse gas emissions and hydropower development is one of the measures included in the National Action Plan for the abatement of Climate Change.

■ Status

Freshwater resources-water quantity:

Greece is generously endowed with freshwater resources. Mean annual precipitation in Greece is about 700 mm, nearly half of which is lost to evapotranspiration. However, freshwater resources are unevenly distributed throughout the country, due to the climatic conditions and the rugged geographic relief of Greece. Precipitation ranges from around 400 mm in the Aegean islands and Athens to more than 900 mm in the North West and the Ionian islands with the island of

Kerkyra presenting maximum precipitation levels. On the contrary, parts of the southern and central mainland, the Aegean islands and Crete are in danger of desertification. Water distribution is also uneven in time. Peak periods for water demand and consumption are reported during the summer dry period when the population in certain areas (mainly coastal) is multiple due to tourist arrivals. During the dry period, water demand is also maximized for irrigational purposes. Therefore water is not always available where and when it is mostly demanded. Water redistribution, storage and saving and a sound demand side management are therefore indispensable priorities for water policy in Greece.

The mean annual surface run-off of Greece's mainland rivers is 35 billion cubic meters. More than 80% of the surface flows originates in eight major river basins: the Acheloos (Central Greece), Axios, Strimonas and Aliakmonas (Macedonia), Evros and Nestos (Thrace) and Arachtos and Kalamas (Epirus). Nine rivers flow over 100 kilometers within Greece: the Aliakmonas, Acheloos, Pinios, Evros, Nestos, Strimonas, Kalamas, Alfios and Arachtos. Four major rivers originate in neighboring countries: Evros (Turkey), Nestos and Strymonas (Bulgaria) and Axios (FYROM); total inflow from upstream neighboring countries amounts to 12 billion cubic meters.

Some 41 natural lakes (19 with an area over five km²) occupy more than 600000 hectares or 0.5% of the country's total area. The largest are lakes Trichonida, Volvi and Vegoritida. Lake Prespa is on the borders with Albania and FYROM. The number of Greek wetlands according to the inventory of EKBV, rises to about 400 with 10 of them designated as Ramsar wetlands of international importance. The 14 artificial lakes (ten with an area over five km²) occupy 26000 hectares.

Some 80-85% of freshwater resources are in the form of surface water and the rest are groundwater. Per capita consumption of water is around 830 m³ with peaks recorded during heat wave days and days of intensive snow fall. Around 75% of total freshwater withdrawals are for agriculture with irrigated areas representing a third of total cultivated areas. Uneven rainfall distribution results in scarcity of water resources during peak period for irrigation, a period similarly crucial for other uses such as tourism. Therefore, about half of irrigation water is pumped from aquifers. A considerable portion of irrigation water comes from large multi-purpose reservoirs owned by PPC S.A. Households account for about 10-15% of total freshwater withdrawals. Water supply to the Metropolitan area of Athens is provided mainly from surface water stored in dams several hundred kilometres away and transferred to the city. Other big coastal cities usually extract groundwater, even though salinization problems have caused other solutions to be sought such as spring and surface water collection in reservoirs.

Water quality:

The national water quality standards for various uses (drinking, aquatic life etc) have been harmonized with the relevant legislation (Directives) of the European Union (EU). Human economic and industrial activity in Greece is concentrated in river basins where additional pressures occur due to agricultural activity. Surface run-offs and wastewater discharges create intense point pressures on the quality of water resources. However, the situation has been enhanced over recent years due to the massive construction of municipal wastewater treatment plants for most of the country's human settlements.

Greek rivers are generally of very good quality. They host some 78 indigenous fish species half of which are endemic. Mean annual nutrient concentration as well as the heavy metals' concentrations low and in most cases below maximum permissible limits for drinking water. Only in some cases in downstream river locations, in urban areas or in areas of intensive agricultural and industrial activity, the levels of phosphorus, nitrites, ammonium and dissolved solids might be rather higher than the standards. High nutrient concentrations, phosphorus concentrations slightly exceeding thresholds, as well as heavy metals are found in certain lakes, mainly in the northern part of the country, indicating human influence (from agricultural run-off, municipal and industrial wastewater discharges) leading, in certain cases, to eutrophication. Groundwater quality, even though generally good, is threatened by uncontrolled wastewater disposal and salinization caused from over-extraction due to seawater intrusion at coastal areas. High concentrations of nitrates, deriving from nitrogenous fertilizers and the use of livestock manure, as well as pesticide residues have been detected in northern and western parts of the country but do not always exceed maximum permissible values.

The implementation of recent Law 3199/2003 for the protection and management of water resources (see Chapter 'Decision Making') will give new impetus to sustainable and integrated water management in Greece, by giving emphasis on the ecological function of water and by introducing an integrated water resources management (IWRM) approach on river basin level as well as a pricing policy so that it reflects water's full costs.

■ **Capacity-Building, Education, Training and Awareness-Raising**

The Ministry of National Education and Religious Affairs organizes, funds and supports a big variety of environmental projects every year in all classes of primary and secondary schools. During the school period 2002-2003, around 5700 projects were executed by 11000 teachers and 157000 pupils, a considerable number of which was related to freshwater

issues. Greek Schools' curricula include various programmes and projects related either to "management of natural resources" or to critical environmental issues, such as water pollution and water management. Moreover, Greek Schools participate in many regional, national and international thematic networks such as "The River" aiming at awareness raising from an early age, the "Water fountains", the "Lakes", etc. The importance of freshwater in environmental education is also highlighted by the fact that 14 of the 17 official "Centres of Environmental Education" established by the Ministry of Education throughout the country execute freshwater related programs, in which hundreds of pupils and teachers participate every year.

Training on the sustainable use of soil and water resources is also provided by related University Departments. Greek Universities (e.g. the National Technical University of Athens, National and Kapodistrian University of Athens, Aristotle University of Thessaloniki, University of Thessaly, Democritus University of Thrace) participate actively in a number of initiatives related to the impacts' assessment of climate change, floods and droughts on water resources management throughout the EU and other critical water issues, via workshops and research programmes.

On 5 June 2002, YPEHODE started an extended 'do your bit' campaign that covered the whole country, focusing on awareness raising of all ages, with emphasis on providing school children with practical information for protecting the environment, the natural and water resources, in everyday life, through dissemination of leaflets and educational material, questionnaires, interactive dialogues etc. This campaign is repeated on a yearly basis. Moreover, in the framework of OEP 2000-2006, funds have been bound for environmental awareness raising programmes, with a total budget of 2.8 million €.

In the Athens area, information campaigns, during peak consumption periods, combined with economic incentives succeeded to curb the wasteful use of water and to severe reductions in drinking water reserves.

For the optimum operation of the existing Urban Wastewater Treatment Plants and the personnel training, the Union of Municipal Services for Water Supply and Sewerage has undertaken significant initiatives, such as the implementation of a project called 'Equal', promoted by the Ministry of Labour. The objective of this project is the development of educational mechanisms on environmental practises, particularly on the operation of the treatment plants.

In the agricultural sector, programmes have been promoted for the awareness raising of farmers (e.g. publication of 'Codes of good Agricultural Practices') to adopt well balanced agricultural and fishery practices which decrease the adverse effects on the natural environment and to support organic farming and fallow.

The WFD aspects and other general information concerning its implementation have been shared among interested parties and stakeholders. Information has been disseminated also to the general public. Activities at regional level, e.g. in the Pinios Pilot River Basin have established the basis for the public involvement. On the long-run, there will be public involvement in formulating the content of the River Basin Management Plans, whereas at present, a series of public seminars and workshops are organised, in order to raise awareness and to foster discussions on social considerations. The publication of information leaflets for activities related to the implementation of the WFD (e.g. for Pinios Pilot River Basin Project) and the use of the internet as an information platform will ensure transparency and provide the framework for an applied and fruitful public participation.

Awareness raising and education has also been the key objective of type II initiatives that are being implemented, with emphasis on water resources. MEDIES, a partnership initiative on Education for Environment and Sustainability, launched at the WSSD, for the implementation of Agenda 21 and the MDGs, has already produced an Educational Package for school children 'Water in the Mediterranean' in several languages. Two widely attended training seminars have also been organised in Athens (15.12.02 and 25-26.10.03) on the methodologies and teaching methods of education for environment and sustainability, and an interactive webpage (www.medies.net) has been set up.

■ Information

The access to Internet, the world wide web and other websites about sustainable development and state of the environment helps Greek citizens to acquire knowledge on policies, programmes and legislation on freshwater management. Data on the quality of surface water can be found at www.thisavros.gr whereas information on the WFD and the Pinios River Basin Pilot Project can be found at www.minenv.gr/pinios_river.html. On YPEHODE's website (www.minenv.gr) the national annual report on surface water quality is also posted as well as other related national reports.

The National Data Bank of Hydrological and Meteorological Information (NDBHMI) provides the required hydrological and environmental information for the development of the Master Plan and specific regional management plans for the inland waters in Greece. The Programme is based on a major environmental network and data base consisting of hydrological and meteorological information at the national scale. The Ministry of Health and Welfare collects relevant data and cooperates with the Ministry of Internal Affairs and Decentralization for its evaluation and the measures to be taken for the protection of Public Health. The Ministry for Health and Welfare sends required data to the Commission of the European Union, by drawing up a Report, every three years. The elaboration of data under the NDBHMI

contributes considerably to integrated water management and addressing adverse impacts of droughts, floods and forest fires. Currently, the update of the National Data Bank of Hydrological and Meteorological Information is underway, to include new data, and thus, adapting to the new extended National Network of Environmental Information in order to improve the information exchange and information management mechanisms on water resources in Greece.

Publication and diffusion of information material as well as information exchange through related activities, including websites' keeping, is also carried out by the National Centre for Environment and Sustainable Development (EKPA) and several NGOs and Institutes throughout the country.

■ Research and Technologies

In the framework of the 3rd CSF, OEP 2000-2006 encompasses several research projects that will complement activities for the implementation of WFD in Greece, inter alia:

- The EVALUWET project aiming at an harmonized approach and functional evaluation methodology, at catchment scale, amongst European environment agencies and stakeholders;
- The IT Framework-HarmoniIT project for the development and implementation of a European Open Modeling Interface and Environment for strategic planning;
- The SHYLOC project for the development of adequate software for monitoring surface water storage and wet width of natural and man-made ditches; and
- The WWI project for the assessment of existing water management policies and river basin management measures, according to the WFD model and the integrated river basin management principles, aiming at measuring progress and effectiveness of their implementation.

Other related research projects such as the Harmoni-CA, a tool for sustainable management and quality of water, have been supported under the 5th Framework Programme of the Directorate-General for Research of the European Commission.

The 8th Priority of the 6th Framework Programme of the European Commission promotes activities in support of the development and implementation of EU policies. Among the main objectives of this Priority, section 3.1.5 is dealing with "environmental assessment (soil, water, air, noise, including the effects of chemical substances)". In this frame, the proposed research intends to contribute, inter alia, to the implementation of the CIS of the WFD. One of the topics relevant to water policies deals with the identification of groundwater pollutant's threshold values for the evaluation of the chemical status of groundwater bodies. The main objective of the BRIDGE (Background cRiteria for the IDentification of GRoundwater thresholds) research programme, in which Greece is actively participating, is to set out criteria for the assessment of the chemical status of groundwater, which is based on existing Community quality standards (nitrates, pesticides and biocides) and on the requirement for Member States to identify pollutants (substances that may occur from both natural and anthropogenic sources, and synthetic pollutants) and threshold values that are representative of groundwater bodies found as being at risk, in accordance with the analysis of pressures and impacts carried out under the WFD.

The Operational Programme 'Competitiveness' (OPCOM) 2000-2006 of the Ministry of Development has also included an applied research programme for the development of systems, tools and methodological approaches for addressing hydrological, hydrogeological and environmental issues in order to draw up Integrated Water Resources Management (IWRM) Plans for 4 major RBDs. In the same context, the implementation of various research projects through public-private partnerships has been approved by the Ministry of Development for 2000-2006, aiming at exploring innovative approaches to water management, through advanced technological methods. Such projects include the development of optimized irrigation systems, the protection of aquifers through recharge with treated industrial wastewater, the innovative use of telematics and GIS for mapping water resources etc.

Greece is an active member of the EURAQUA Forum of Governmental Institutions on water resources, an organization involved with the implementation and promotion of research programmes regarding climate change, integration of information technology in water resources and management, etc.

In addition, several University Departments together with the Department of Forest Hydrology of the Forest Research Institute of Athens carry out research on hydrological aspects of natural ecosystems and on mountainous hydromorphology.

■ Financing

A number of economic instruments are used in Greece, among them Municipal, Industrial and Irrigation water supply charges (see also Chapter 'Programmes and Projects', D). The Environmental Protection Law 1650/86 includes the "polluter pays principle" (Article 29) and provides for the levying of waste and water user charges. The development of water pricing policies that enhance the sustainability of water resources is also foreseen by Law 3199/03 (see also Chapters 'Decision Making' and 'Programmes and Projects').

OEP 2000-2006 includes several Measures and respective budget lines for the promotion of integrated water management, protection of water resources and water supply and sanitation. For the implementation of the WFD and Law 3199/03 in Greece, the funds that will be disbursed by the Greek Government up to 2006 will be about 19.3 million € and additional funds will be allocated, if needed. Other Operational Programmes (e.g. Competitiveness, Rural Development, Fisheries etc) also include Measures (see Chapters 'Programmes and Projects' and 'Research and Technology') with respective budget lines related to water resources. At Regional level, financial support for the protection and management of natural resources, with emphasis on water resources, and of significant ecosystems is provided by the Regional Operational Programmes, for each Administrative Region of Greece, under the framework of the CSF. Additional activities concerning development of infrastructure in Greece are also partially financed by the EU Cohesion Fund.

■ Cooperation

Major rivers (Evros, Nestos, Axios, Strimonas) in Greece originate in upstream countries. Lakes Doirani and Prespa are also transboundary. Therefore, international cooperation concerning the management of shared natural resources is an important issue for Greece.

Greece ratified the Helsinki Convention (1992) on the protection and use of transboundary watercourses and international lakes (Law 2425/1996, OJG 148/4.07.1996), the Barcelona Convention (law 855/1978, OJG 235/A/23-12-78) including its latest amendments of 1995 (law 3022/2002, OJG 144/A/19.06.2002), and the Ramsar Convention (1971) on wetlands of international importance as the waterfowl habitat (Decree 191/1974, OJG 350/20.11.74), among others. Furthermore, Greece has signed all – and ratified most of - the Protocols of the Barcelona Convention. In May 2003, during the 5th Ministerial Conference 'Environment for Europe' in Kiev, Greece signed the Protocol on 'Civil liability and compensation for damage caused by the transboundary effects of industrial accidents on transboundary waters' to the 1992 Helsinki Conventions on the 'Protection and Use of Transboundary Watercourses and International Lakes' and on the 'Transboundary Effects of Industrial Accidents'.

Bilateral Agreements have been signed between Greece and Bulgaria, for the river Nestos in 1996, regarding issues of water sharing and for the river Ardas, regarding the amount of water used annually by the Greek side for irrigation purposes. Greece has also signed an Agreement of Understanding with Bulgaria covering, inter alia, issues of possible bilateral cooperation on integrated monitoring of water quality and application of the necessary measures for water protection. Agreements and initiatives have also been launched between Greece and FYROM for the protection of Lakes Megali Prespa and Doirani and between Greece, Albania and FYROM for the establishment of a transboundary National Park and of a Permanent Tri-lateral Commission on Transboundary Freshwater issues, aiming at protecting the Prespa Lakes shared among these three countries, following a Joint Declaration by the 3 Prime Ministers in February 2001. Greece has also signed and ratified (Law 2902/2001, OJG 77/A/2001) a Memorandum of Understanding (MoU) with Turkey that has already entered into force (30.6.01) that covers issues of possible bilateral cooperation on transboundary water resources (Evros river) and a MoU with Cyprus (Law 2424/1996, OJG 147/A/1996), covering, inter alia, issues of possible bilateral cooperation related to the protection of waters and soils, as well as to the protection of the marine environment.

Furthermore, Greece has signed (but not yet ratified) MoU's with Georgia, FYROM and Albania, covering issues related to, inter alia, the sustainable management of transboundary waters, the monitoring of water pollution and the protection of the marine environment. Regarding monitoring of the quality of shared waters, control stations have been established at the entry points of transboundary rivers from other countries (see Chapter 'Programmes and Projects', B. Water Resources Assessment).

Since 1999 and in the framework of OECD's Development Assistance Committee (DAC), Greece has funded the implementation of several projects on water resources management and protection, in partner countries. Through the Bilateral Programme of Development Assistance and Cooperation in the field of Environment and Sustainable Development of YPEHODE, the water resources related projects funded in 1999 were 9, with a total budget of around 77164 € whereas in 2000 they were 12 of total budget of around 2.8 million €. These projects were implemented through Universities, Research Institutes and NGOs in Greece and recipient countries of South East Europe, the Mediterranean and East Europe, Caucasus and Central Asia (EECCA). Projects laid emphasis on transboundary water quality and capacity building issues as well as protection of wetlands. In 2001, the implementation of a project for the construction of a wastewater treatment plant in the city of Strumica in FYROM for the protection of water resources was initiated. In the context of the National Bilateral Programme of Development assistance and Cooperation "Hellenic Aid" for the years 2000-2001, the total budget allocated to the implementation of water related projects in partner countries was around 0.56 million USD, whereas for year 2002 the allocated budget was around 0.665 million USD. The implementation of these aid projects contribute to the MDGs/WSSD targets for sustainable development and poverty reduction. A representative example of a project to this direction is the construction of a dam as well as a

water reservoir in the Damte region in Ethiopia aiming at drinking and irrigational water supply in the area. The sums already allocated are 130000 € whereas the overall estimated budget rises to 500000 €.

At WSSD in 2002, the Greek Government participated together with other partners (e.g GWP-Med, Mediterranean Information Office for Environment, Culture and Sustainable Development, UNESCO, UNEP/MAP, Governments of other Mediterranean and SE European countries, Research Institutes, Local Authorities etc) in the launching of 3 type II partnership initiatives focusing on water resources protection and management: the 'MEDIES initiative' (see also Chapter 'Capacity-Building, Education, Training and Awareness-Raising'), the 'Euro-Mediterranean Water-Poverty Facility' and the 'Sustainable water management in the Balkan and SE Mediterranean area'. Greek Government has provided a start up budget of around 160000 € in support of these partnerships.

Since WSSD, the Greek Government has also taken up the responsibility of leading the Mediterranean Component of the EU Water Initiative (MED EUWI) that was launched in Johannesburg. The MED EUWI gives particular emphasis to Mediterranean priorities, according to needs and strategies defined in partnership with governments, the European Commission and stakeholders. The Components' Secretariat is served by GWP-Med.

The MED EUWI aims to assist design of better, demand-driven and output-oriented water programmes in the region, to facilitate better coordination of water programmes and projects, targeting more effective use of existing funds, through identification of gaps and mobilization, where required, of new financial resources and to enhanced cooperation for their proper implementation, based on peer review and strategic assessment. The focus themes of MED EUWI are: (i) water supply and sanitation, with emphasis on the poorest part of the societies, (ii) integrated water resources management, with emphasis on management of transboundary water bodies, (iii) water, food and environment interaction, with emphasis on fragile ecosystems, (iv) non-conventional water resources as well as (v) horizontal issues such as transfer of technology, transfer of know how, capacity building, training and education. The Component is currently running its Preparatory Phase: its Operation Plan was produced in July 2003 and its detailed Activity Plan was elaborated by end of March 2004.

On EU level, the Hellenic Presidency of the EU (1st semester of 2003) in its political agenda gave particular emphasis and prioritised water issues especially in the Mediterranean Region and South East Europe, in a number of international events; inter alia:

- 3rd World Water Forum (Kyoto, 16-23.3.03): The EUWI with all its Components was extensively presented, whereas EU's key positions on the water-related WSSD targets and MDGs were reflected in the adopted Ministerial Declaration.
- EU Informal Council of Environment Ministers (Lagonissi, 3-4.5.03): Effective water resources management in SE Europe and common work on transboundary waters, as a catalyst for peace and conflict prevention in the Region were some of the main issues discussed. The Meeting was attended by Ministers of Environment of the enlarged EU (25 countries) and SE European countries.
- International Conference on "Sustainable Development for Lasting Peace: Shared Water, Shared Future, Shared Knowledge" (Vouliagmeni, 6-7.5.03), organised by Greece and the World Bank (WB): Co-operation for the management of transboundary water bodies and aquifers in the SE Europe and the Mediterranean was the priority theme of the Conference, aiming to assess opportunities and constraints and formulate recommendations for regional sustainable development, peace and stability. The 'Vouliagmeni process' has been systematically pursued since the Conference by both Greece and the WB.
- Hellenic Water Week (Athens, 17-20.6.03), organised by Greece and the EU Commission: The event focused on the implementation of the WFD especially in the Mediterranean, as well as the elaboration of the different themes of the MED EUWI, through the suggestion of concrete actions (building blocks, demonstrations projects) and development of synergies by different players.



3. SANITATION

■ Decision-Making

Greece, within the framework of the European Union (EU) policy for waste management, is planning its policy regarding solid waste aiming at the protection of human health and the preservation of natural environment. Specifically, Greece has developed a comprehensive legislative system harmonized with the European legal framework and various actions and measures have already been put in place for the integrated management of waste, based on three principles: waste prevention; recycling and reuse; and improving final disposal and monitoring.

In 1986, Law 1650 for the Environment established a framework of sanctions and liabilities for the protection of the environment. This Law set the waste management issue under the jurisdiction of Local Authorities. In 1990, two Joint Ministerial Decisions: JMD 69269/5387/90 (Official Journal of the Government – OJG 678B/1990) and JMD 73508/5512/90 (OJG 691B/1990) introduced environmental impact assessments for certain projects and activities. Recently, the environmental impact assessment framework in Greece set by Law 1650/1986 has been amended by Law 3010/2002 in order to fully harmonize national legislation with EU Directives 96/61/EC and 97/11/EC. In accordance with this Law, three new Joint Ministerial Decisions (JMDs 15393/2332/2002, 11014/703/104 and 37111/2021/2003) introduce new provisions for categorization of projects, environmental permitting and public participation.

Determination and in-detail specification of the competent bodies for waste management in Greece, i.e. the Local Boards, the Administration of each Prefecture and, in specific cases, the Regional Administration, is provided under JMD 69728/824/96. In 1996, Local Authorities started the elaboration of Prefectural solid waste management schemes, in accordance with JMD 69728/824/96. For the achievement of an integrated approach to the waste management issues and for the homogeneity and delineation of the waste management schemes developed by Local Authorities, JMD 114218/1997 was issued, which sets the framework of technical specifications and general programmes for the management of solid wastes. Together with the latter, JDM 113944/101/97 was also issued for the specification of general guidelines of the solid waste management policy and for setting out the bases for National Planning.

In order to implement the existing legal framework and to develop a sound action plan for waste management at the national level, the 1st 'National Planning for the Integrated and Alternative Management of Solid Waste' was elaborated during 1997-1999, so as to ensure the sound use of natural resources, the protection of environmental quality and thus the sustainable development in Greece. The establishment of such an approach was an obligation deriving not only from the Greek Constitution and Law 1650/86 for the "protection of the Environment" but also from the obligations of Greece as a European Union Member State. The National Planning took into account all the existing management schemes on Regional and Prefectural level as well as the works that have already been implemented in the framework of national and European funding. The Planning of a uniform national strategy for waste management was based on the following main principles, as set by JMD 113944/101/97:

- Prevention or minimization of waste production (quantitative minimization) as well as the minimization of the waste content in hazardous substances (qualitative minimization);
- Utilization of waste (recycling and energy recovering);
- Safe final disposal of residues;
- Proximity of disposal sites to the sites/sources of waste generation;
- Rehabilitation of disposal sites so that they could easily be incorporated, after the termination of their use, into the surrounding natural environment;

- The “polluter pays” principle.

The subsequent JMD 14312/1302/2000 (OJG 723B/2000) provided an explicit determination and interpretation of JMD 113944/1016/97 and outlined the National Waste Management Strategy (for both solid and hazardous wastes), which constituted the National Waste Management Planning.

In 2002, YPEHODE initiated the update of the National Planning, with the aim to:

- Review the Prefectural Schemes according to the Regional Schemes that were elaborated for promoting integrated solid waste management plans at regional level and the clustering of programmes;
- Elaborate integrated solid waste management systems for the 13 Administrative Regions of Greece;
- Control the operation of non-engineered dump sites and take action for their gradual elimination;
- Develop modern sanitary landfills, covering the whole country by the end of 2008.

During 2001-2003, YPEHODE has focused in the transposition of the community legislation on the waste management, into the national legal system. Based on the recent institutional framework and the review process of the 1st National Planning, YPEHODE issued in 2003 JMD 50910/2727/2003 (OJG 1909/2003), on measures and terms for solid waste management, comprising of the following basic axes:

- Adaptation and approval of the National Solid Waste Management Planning so as to incorporate the major principles, goals, policies and actions for the rational management of urban wastes, according to the community legal framework and arising national obligations;
- Establishment of the Regional Solid Waste Management Schemes as the executive action plans in the area of solid waste management, with specifications and goals in consistency with those of the National Planning.

In the future, the Hellenic national legislation will continue to be harmonized with the EU Regulations and Directives on waste management, sharing the ambition for a significant cut in the amount of the generated wastes, through new waste prevention initiatives, better use of resources, and through encouraging a shift to more sustainable consumption patterns. Specific EU targets include the reduction of the quantity of wastes going to ‘final disposal’ by 20% from 2000 to 2010, and by 50% by 2050, with special emphasis on cutting hazardous waste. In this context, Greece has been actively involved with the other EU member-states, in the preparation of the EU Directive 2002/96/EC on waste electrical and electronic equipment (adopted on 27 January 2003) and continues today its contribution in the preparation of:

- The proposal for a Regulation of the European Parliament and of the Council on shipments of waste;
- The proposal for a Directive of the European Parliament and of the Council on the management of waste from the extractive industries;
- The proposal for a Council Directive (Euratom) on the management of spent nuclear fuel and radioactive waste.

A. Basic Sanitation

The existing legal framework for the wastewater management includes the following provisions:

- JMD 5673/400/1997 (OJG 192B/1997) for the collection, treatment and discharge of urban waste water and treatment of residual sludge (transposition of the EU Urban Waste Water Treatment Directive 91/271/EEC);
- JMD 80568/4225/1991 (OJG 641B/1991) that defines the measures, terms and limitations for the use of sludge in the agriculture (harmonization with the EU Directive 86/278/EEC);
- JMD 3418/2002 that defines the measures and terms for harbour installations delivering wastes produced in ships and shipments residues.

B. Solid Wastes

The management of non-hazardous wastes falls under the provisions of JMD 69728/824/96 on “Measures and conditions for solid waste management”. This JMD defines the relevant withdrawal procedures for the end-of-life vehicles, which constitute the 0.6-0.8% of the total number of vehicles in use. The following legislative framework for solid wastes determines the general lines on which the municipal solid waste management policy is based, the framework of technical specifications and programmes for their management, as well as certain provisions concerning their disposal sites or their reuse:

- JMD 31784/954/1990 (OJG 251B/1990) for packaging materials;
- JMD 82805/2224/1993 (OJG 699B/1993) for the incineration of municipal solid wastes;
- JMD 58751/2370/1993 (OJG 264B/1993) and JMD 76802/1033/1996 (OJG 596B/1996) for incineration plants;
- JMD 113944/1016/97, for defining and specifying the main policy guidelines for the National Waste Management Planning;
- JMD 114218/1016/97 on “Elaboration of a specifications framework and of the general programmes for the management of solid wastes”;

- JMD 14312/1302/2000 (OJG 723B/2000), for providing an explicit interpretation of JMD 113944/1016/97 and for setting out the National Waste Management Strategy (for both solid and hazardous wastes), which constitutes the National Waste Management Planning;
- Law 2939/2001 (OJG 179A/2001), for “Packages and the Alternative Management of Packaging and other Materials – Establishment of the National Organization for Alternative Management of Packaging and other Materials (NOAMPOM)”. This law (harmonization with the EU Directive 94/62/EEC), constitutes the general legal framework for the alternative management of packaging waste, with priorities on the prevention, reuse, recycling and energy recovery without polluting;
- JMD 29407/3508/2002 (OJG 1572B/2002) on measures and terms for sanitary disposal (harmonization with the EU Directive 99/31/EC);
- JMD 50910/2727/2003 (OJG 1909/2003) providing measures and terms for solid waste management – National and Regional Planning Management, in complete compliance with the European Waste Framework Directive 91/156/EEC.

The transboundary transportation of non-hazardous wastes is based on the European Regulation 259/93/EEC. The competent authority for control and monitoring of these transportations is YPEHODE.

C. Hazardous Wastes

JMD 72751/3054/1985 on toxic and dangerous wastes, issued in compliance with EU Directive 78/319/EEC, provided measures for the prevention of such wastes, their recycling and reuse. National legislation provides for the planning and management of toxic and dangerous waste, procedures for the transport of dangerous wastes, special permits for the disposal and storage of dangerous wastes, and measures for building facilities for toxic residues at ports. Activities producing dangerous wastes and facilities for disposal of dangerous wastes require an environmental impact assessment and special permit.

JMD 19396/1546/97 (harmonization with the EU Directive 91/689/EEC on ‘Hazardous Waste’) provides for the necessary measures and conditions for hazardous waste management, including volume reduction, waste utilization, recovery of useful materials, recycling and remediation of polluted sites and promotion of clean technologies. It classifies the hazardous wastes and lists the appropriate management practices. The management of infectious waste falls under the provisions of the same JMD. The National Planning for hazardous waste management, according to this JMD, is determined by YPEHODE in cooperation with the competent Ministries. The adopted principles include: reduction of risk for the environment and public health; the ‘polluter pays’ principle; and the producer’s obligation to keep detailed records and provide them to the competent Local Authorities. JMD 14312/1302/2000 (OJG 723B/2000) provides an explicit determination and interpretation of JMD 113944/1016/97 and constitutes the National Waste Management Planning (for both solid and hazardous wastes).

The existing legal framework for used mineral oils management has incorporated the EU legislation into the national legal system. Specifically, JMD 98012/2001/96 on measures and conditions for the management of used mineral oils (harmonization with the EU Directive 75/439/EEC), provides for the elaboration of a National Planning Scheme for the management of used mineral oils, under the responsibility of YPEHODE, in cooperation with other competent Ministries and after consultation with the Central Union of Municipalities and Communities of Greece and the Union of Prefectural Authorities of Greece.

The management and disposal of accumulators and batteries is regulated legally by JMD 73537/1438/95 (OJG 781B/1995), which specifies the general requirements for planning and programme implementation for the safe and environmentally sound management of used batteries and accumulators (harmonization with the Directive 91/157/EEC).

Certain categories of particularly hazardous wastes, such as polychlorinated biphenyls (PCBs), polychlorinated terphenyls (PCTs), pesticides etc, are exported to EU countries for final disposal, in accordance with the EU Regulation 259/93/EEC, while considerable amounts of inorganic hazardous wastes, such as ashes and silts from metallurgic processes are being exported for recovery of contained metals. According to the Decision of the Hellenic Chemicals Committee 1310/86, the supply-purchase of devices containing PCBs has been banned in Greece. JMD 7589/723/2000 (OJG 514B/2000) specifies measures and terms for the management of PCBs and PCTs (harmonisation with the EU Directive 96/59/EC). Pursuant to the latter, JMD 18083/1098/2003 (OJG 606B/2003), was recently issued, with provisions for general guidelines regarding the reporting, collection and disposal (retraction) of the devices and wastes containing PCBs. It specifically specifies the basic requirements for the registration, labelling and the respective required management action of the devices and material containing PCBs, depending on the volume and the PCBs content in liquid devices.

The application field of Law 2939/2001 (harmonization with the EU Directive 94/62/EEC) on “Packages and the Alternative Management of Packaging and other Materials” extends to packaging wastes, end-of-life vehicles, waste

batteries and accumulators, catalysts, used tyres, waste from electrical and electronic equipment, oils and waste oils and demolition and construction waste. For the above waste streams, the following Presidential Decrees have been issued:

- Alternative management of oil wastes –Programme for their alternative management (Presidential Decree 82/ OJG 64A/02-03-2004);
- Used batteries and accumulators (Presidential Decree 115 / OJG 80A/05-03-2004);
- Vehicle tyres (Presidential Decree 109 / OJG 75A/05-03-2004);
- Used electric and electronic equipment (Presidential Decree 117 / OJG 82A/05-03-2004);
- End-of-life road vehicles (Presidential Decree 116 / OJG 81A/05-03-2004);
- Excavation, construction and demolition wastes (Presidential Decree under publication).

The Law obligates the economic actors (producers, importers) to organize or participate in collective (or individual) systems of alternative waste management (i.e. return, collection, transportation and recovery systems) in order to achieve specific quantitative targets. Pursuant to Law 2939/2001, the Ministerial Decisions 106453/2003 (OJG 391B/2003) and 105857/2003 (OJG 391B/2003) approved the operation of two nationwide systems for the collective alternative management of packaging wastes.

The national legislative framework that is applied for the transboundary transportation of hazardous wastes is based on Law 2203/94 (OJG 58A/1994) – issued for the ratification of the Basel Convention on the transboundary movements of hazardous waste and their disposal; the EU Regulation 259/93/EEC on the monitoring and control of waste transportation inside the European Community as well as during their import or export – and JMD 19396/1546/97 on “Measures and conditions for the management of hazardous wastes”. The competent authority is YPEHODE, but the Prefectures also play an important role especially for the issuing of waste management permits.

D. Radioactive Wastes

The Greek Atomic Energy Commission (GAEC) was first established in 1958 as the authority responsible for planning, application and supervision of radiation protection measures, and as the competent authority for Nuclear Energy & Technology and Radiation Protection. GAEC was re-established in 1987 as an independent Civil Service under the Minister of Development, and is the competent authority for Nuclear Energy & Technology and Radiation Protection.

The main responsibilities of GAEC in the field of radiation protection are the introduction of regulations and the monitoring of their implementation, as well as the introduction and implementation of radiation protection measures. The main functions of GAEC related to ionizing radiation, are:

- Licensing (for import, export, transport, storage, use, disposal of radioactive and fissionable materials and radiation producing equipment, applications for research and training, non-medical applications).
- Safety Evaluation and Inspections
- Personnel Dosimetry Service
- Monitoring of Environmental Radioactivity
- Emergency Planning and Response
- Secondary Standard Dosimetry
- Education and Training in Radiation Protection.

The Institute of Nuclear Technology and Radiation (INTR) of the National Centre for Scientific Research ‘Demokritos’ was founded in 1987, following the gradual merging of the Divisions of Nuclear Technology, Radiation Protection and Environmental Radioactivity Monitoring of the former Nuclear Research Centre ‘Demokritos’. Its research activities started in the late 50ies and since the establishment of GAEC as an independent body, the regulatory and licensing activities have been gradually transferred from INTR to GAEC. The principal objective of the Institute is to maintain a certain level of know-how on nuclear technology by research and development on selected topics. Particular emphasis is placed on radiation protection through the activities of the laboratories of Health Physics & Environmental Hygiene, Environmental Radioactivity, Environmental Research, Radioactive Waste Management and Systems Reliability and Industrial Safety. The Institute is scientific advisor to the Greek Government on matters of Nuclear Technology and Radiation Protection, it provides scientific and operational support for the radioactive waste management of the government and it also participates in the National Emergency Plan in case of a Major Radiological Accident.

In 2001, JMD 1014/2001 on “Radiation Protection Regulations” entered into force, incorporating the relevant EU Directives and the IAEA Basic Safety Standards into the national legal system. This JMD provides specific requirements and demands for radiation protection and includes, inter alia, regulations for the disposal and management of radioactive wastes, as well for the transfer of radioactive materials.

■ Programmes and Projects

The Operational Environmental Programme (OEP) of Greece aims at resolving one of the major environmental problems of Greece, namely the management (collection, treatment, and disposal) of solid and hazardous wastes. The Programme promotes the required actions for the implementation of the new directive for landfills, and gives considerable weight to the cleaning of coastal areas and swimming sites. Specific actions under the Programme include: development of an integrated National programme for waste management and restoration of abandoned landfill sites and construction of new landfills. Also it aims at the development of extended recycling programmes; construction of composting plants; implementation of innovative techniques for the collection, treatment, and disposal of wastes; elaboration of studies on the implementation of the packaging directive; and coastal zone cleaning with emphasis on tourist sites.

A. Basic Sanitation

Wastewater processing thresholds are being established in a large number of coastal towns. OEP 2000-2006 is promoting, under Measures 1.1, 1.2, 1.3 and 6.2, the development of a National Management Scheme for urban and industrial wastewater, the construction of tertiary treatment facilities in sensitive regions and the implementation of innovative and adjusted technologies for the treatment of urban and industrial wastewater in selected areas.

The number of population served by wastewater treatment plants in 1997 was 5953000 (55% of the Greek population). The goals set by JMD 5673/400/97 include the construction of sewerage network for all settlements with equivalent population (p.e.) >2000 inhabitants and the treatment of municipal wastewater before disposal to any aquatic receiver.

All the laboratories of the General Chemical State Laboratory (GCSL) are involved in the systematic monitoring of drinking surface and ground water regarding toxic and other dangerous undesirable substances; foodstuffs regarding contaminants; seawater oil spill identification; and dangerous and industrial wastes regarding their disposal at the environment.

B. Solid Wastes

The municipal solid wastes management in Greece presents different features compared to that of most EU countries. The quantity of waste continues to be somehow lower than in other European countries, reflecting a less intense consumption pattern. Their composition is also different, having as principal characteristics the high content in fermentative materials and the relatively low content in packaging materials. These positive characteristics are counter-balanced by certain delays in the waste management sector. The high number of open dumping sites constitutes the most negative element, while the percentages of useful material recovery are also low. With regard to the final disposal data, 40% of the disposed waste is dumped in non-engineered sites, whereas 51% is disposed in sanitary landfills.

Dealing with the solid waste management issue, the main policy orientations are the following:

- The rapid implementation of the National Waste Management Planning, emphasizing on the construction and operation of new sanitary landfills, upgrading of the existing ones so as to ensure their safe discharge, restoration of old landfills, recycling programmes, equipment, coastal zone cleaning programmes, and construction of sites for the disposal and treatment of agricultural products, hazardous wastes, and hospital wastes;
- The maximization of material recovery through the extension of collection systems at the source in all the big municipalities of the country, in addition to the construction of modern plants for mechanical separation.

For the implementation of the National Waste Management Planning, funds of approximately 322.8 million € were invested up to 1999, at Regional and Prefectural level and for the two larger urban cities of Greece, namely Athens and Thessaloniki. These funds derived from both national and community funds (Cohesion Fund, Structural Funds etc.). Early studies estimated that for the implementation of the National Planning for the period 2000-2006 funds of around 1.115 billion € would be required. The goals of the National Waste Management Planning, as well as the specific actions and measures to be taken include:

- The termination of all non-engineered landfill sites / uncontrolled land filling as well as the launching of projects for their quick rehabilitation;
- The establishment of innovative, modern and integrated plants for the final disposal of municipal solid waste, coupled with material recovery facilities and sanitary landfill sites;
- The promotion of Waste Transfer Station networks for the environmentally and economically sound transportation of municipal solid waste;
- The promotion of programmes for waste separation at the source;
- The creation of separate sites for the exclusive disposal of toxic waste;
- The promotion of an integrated communication strategy that will supplement and assist the addressing of the problem of municipal solid waste management;

- The continuous and scientifically based information and awareness raising of the citizens, which consists a highly essential requirement for the effective implementation of any planning scheme.

The Greek coastline of 16000 km receives all kinds of waste. For the protection and cleaning of coasts, a number of programs, co-funded by national and EU funds are implemented by YPEHODE, in cooperation with Local Authorities.

The implementation of integrated recycling programmes is one of the main strategic aims of YPEHODE. A paper recycling programme (segregation at source) is being implemented in the Athens region since 1994, in which 52 municipalities and communities participate today, encompassing a population of 2 million inhabitants. In the area of Thessaloniki a similar programme involves 18 municipalities and 55 communities of a total population 1 million inhabitants. The new recycle-at-the-source programme, as specified according to Law 2939/2001, sets out the following quantitative goals to be implemented by the end of 2005: Utilisation of 50-65% per weight of the package wastes; recycle of 25-45% per weight of the package wastes; and recycle of at least 15% per package material. For the implementation of these goals by 2005, new material recovery facilities and composting facilities are constructed in various municipalities all over the country.

YPEHODE has promoted and funded through the OEP several other projects on recycling, such as:

- Elaboration of public awareness programs in the framework of environmental education, since 1989. During this time more than 2500 schools have participated in these projects;
- Construction of Material Recovery Facilities using hand-sorting methods in the island of Zakynthos, the Region of Attica (Maroussi, and Ano Liosia) and the cities of Larissa and Patra.

Within the framework of the municipal solid waste management policy implementation, a large number of Sanitary Landfills are under construction, some of the works at the bidding phase or at the phase of approval of environmental terms. The main goal is the gradual phasing out of the non-engineered and uncontrolled dumping sites until the end of 2007. Today, 12 projects have been completed for the restoration of non-engineered disposal sites, as well as 5 projects for the rehabilitation of large-capacity disposal sites that served big urban centres (Schisto, Ano Liosia, Thessaloniki, Irakleio and Serres). Already approved and under construction/implementation are the following projects:

- Construction of 5 new Waste Transfer Stations in the Region of Attica;
- Construction of Material Recovery Facilities using both mechanical separation and hand-sorting methods in several municipalities of the country (East Attica, Thessaloniki, Patra, Chania);
- Rehabilitation of 5 central non-engineered dumping sites (in East and West Samos, Thessaloniki, Ileia and West Kerkyra);
- Programmes for the separation of materials at the source in many municipalities that correspond to the 30% of the total Greek population.

C. Hazardous Wastes

The main source of hazardous wastes is the industry. YPEHODE, through national and community funds, has assigned the reform of the existing legislation on hazardous wastes, as well as the elaboration of the 'National Management Planning' and of the 'Technical Management Specifications' for hazardous wastes.

During 1999-2001, a national inventory programme was elaborated on a representative sample of approximately 1000 industrial units. The inventory covered all forms of wastes (air emissions, effluents and solid wastes), including the hazardous wastes produced from these industries.

Pursuant to Law 2939/2001, the Ministerial Decision 106453/2003 (OJG 391B/2003) approved the operation of a nationwide system for the collective alternative management of packaging wastes, covering a wide range of packaging materials. Furthermore, the Ministerial Decision 105857/2003 (OJG 391B/2003) approved the operation of a system for the collective alternative management of the packaging of lubricants. Both programmes are operating since March 2003.

The highest percentage of polychlorinated biphenyls (PCBs) in Greece, as well as their containing devices, is under the property of the Public Power Corporation S.A. (PPC S.A.), which has designed and is currently implementing a programme for the gradual retraction of the possessed PCB devices.

D. Radioactive Wastes

Several programmes and projects on radioactive waste management are currently under implementation, inter alia:

- A programme for the construction of a radioactive waste management facility in the National Centre for Scientific Research 'Demokritos', under the management of the Greek Atomic Energy Commission (GAEC) and with a budget of 150000 €;

- A programme for the collection of all spent and disused sources imported into the country before 1990. These sources are collected at the National Centre for Scientific Research 'Demokritos', waiting exportation for refurbishment to a country with the appropriate relevant infrastructure. This project is managed by GAEC and funded with 1.3 million €;
- A project is being financed by the National Bank of Greece for restoring the area of a closed fertilizers' facility from NORM (naturally occurring radioactive materials) waste concentrations (e.g. uranium and radium). The budget of the radiation protection project, under the management of GAEC, is 200000 €, whereas the total budget is 1 million €.

Since 1991, GAEC approves the waste management practices of medical and research radioisotopes laboratories through licensing procedures. Furthermore, GAEC has been involved with the Athens Olympic Games 2004 preparations, within the framework of its competencies, and in particular:

- Participates in the Plan for Encountering Radiological-Biological-Chemical-Nuclear Threat, which is organized by the Olympic Games Security Directorate;
- Monitors the project for upgrading the natural protection of the main radiological facilities in the country, so as to hinder any sabotage with potential radiological impacts, in cooperation with IAEA and the US Department of Energy;
- Monitors the project for the enforcement of the country's entry points (airports, ports, borders) with contemporary detectors of radioactive materials, so as to avoid the illegal import of radioactive or nuclear material, in cooperation with IAEA and the US Department of Energy.

■ Status

Greece encompasses more than 3500 islands, has particular geomorphology (rough vertical relief) and intense tourism development. These characteristics create a complex waste management problem, linked to the creation of numerous non-engineered landfill sites. Thus, priority has been given to the abatement of such 'uncontrolled' landfills and to the establishment of soundly designed and wholly engineered/integrated sanitary landfill sites. Having achieved to a great extent these first two goals, Greece is now proceeding to the Planning of an integrated infrastructure for the effective management of solid waste, through the establishment of improved waste collection systems, the effective transportation and temporary storage of waste, the establishment of material recovery facilities and the introduction of new recycling systems and techniques.

A. Basic Sanitation

Untreated sewage, industrial effluents and agricultural activities have been the main sources of marine pollution. During recent years, the situation has been substantially improved due to the establishment and the operation of urban sewage treatment plants in almost all-coastal cities and of industrial treatment plants. New wastewater treatment plants (56) are currently under construction. These units are designed to serve a p.e. of 1524800 inhabitants. Another 22 are already planned to serve a population of 400000 inhabitants. The sludge production from these plants is estimated to be 25000 and 21000 tons respectively.

Up to now, sludge is disposed in landfills, in the premises of treatment plants and a small percentage is used in agriculture. Research projects for sludge utilization in certain cultivations are underway. The main goal of the National Planning regarding sludge is its utilization. For this purpose, a Composting Unit combined with mechanical separation has been constructed and operates in Kalamata city, with an annual capacity of 3650 tons. The same method, at industrial scale, is applied at the Mechanical Separation and Composting Unit of Attica (Ano Liosia) for the treatment of the organic fraction of municipal solid wastes, with an annual capacity of 495000 tons of mixed municipal wastes and 110000 tons of sludge deriving from the wastewater treatment plant of Psytalia (Attica).

B. Solid Wastes

In Greece, land disposal is the predominant method for municipal waste management. From the total amount of municipal solid wastes, approximately 8% is recycled at the source and the remaining 92% is disposed of without prior treatment in Sanitary Landfills or in non-engineered dumping sites. With regard to the final disposal data 40% of the amount of disposed waste is dumped in non-engineered sites, whereas the rest 51% is disposed in sanitary landfills. Organized collection and transportation of municipal waste is applied for the 85% per weight of the generated waste, while the rest 15% corresponds to low-populated rural and mountainous areas.

The first-level Local Authorities, i.e. Municipalities, are responsible for the collection, the temporary storage, and the treatment/recycling/reuse as well as for the final disposal of the municipal solid wastes. For the improvement of the

transportation and final disposal of waste, 15 Waste Transfer Stations, covering 23.4% of the generated municipal wastes, have been constructed up today, as well as 5 Material Recovery Facilities and 1 Mechanical Separation and Composting Facility. Several uncontrolled dumping sites have been reclaimed and 43 Sanitary Landfills have been constructed, serving 55 % of the Greek population (35 already in operation today). 19 Sanitary Landfills are in the implementation phase today, estimated to serve another 19% of the Greek population combined with the expansion of 3 existing facilities (in Larissa, in the island of Kefallonia and in West Attica). Proposals for the construction of 32 new Sanitary Landfills have been submitted and some of them have already been approved for co-funding from national funds and the Cohesion Fund II, in the Administrative Regions of South Aegean, Crete and Thessaly. The implementation of the proposed facilities could serve an additional 21% of the Greek population.

Today, the quantity of the municipal solid wastes generated at national level is approximately 4.6 million tons (mainly from domestic and partly from commercial activities), increased by 50% in comparison to the quantity levels in 1990. Despite the rapid increase of the municipal solid waste quantity in Greece, this quantity is still significantly below the average EU quantity. The Region of Attica contributes to 39% of the annual municipal waste production at national level, followed by the Region of Central Macedonia (16%) and the County of Thessaloniki (9%). The average qualitative content of the produced municipal solid wastes is calculated to be 47% fermentable, 20% paper, 8.5% plastic, 4.5% metal, 4.5% glass and 15.5% other wastes. The high percentage of biodegradable wastes impedes the application of incineration and mechanical sorting methods.

The quantity of recyclable materials is estimated to be 1.5 million tons, corresponding to 37.5% per weight of the municipal solid wastes. The percentage of plastic material recycled is estimated to be 5%, 0.5-1% of which comes from domestic households. Packaging material corresponds to approximately 21% of the annual produced quantity of municipal solid wastes, or, in absolute terms, around 974500 tons.

The recycling of packaging in Greece for the years 2000-2001 is presented in the following table:

	2000			2001		
	Produced packaging waste (tn)	Recycled packaging waste (tn)	%	Produced packaging waste (tn)	Recycled packaging waste (tn)	%
Paper & cardboard	356000	240000	67.4	374000	253000	67.6
Plastics	260000	8000	3.1	270000	8000	3.0
Glass	180000	43000	23.9	180000	44000	24.4
Aluminum	15500	5100	32.9	15500	5300	34.2
Other metals	78000	5000	6.4	90000	5000	5.6
Wood	45000	10000	22.2	45000	10000	22.2
Total	934500	311100	33.3	974500	325300	33.4

Beaches are cleaned by special machinery acquired by municipalities in coastal areas.

C. Hazardous Wastes

Hazardous waste management options include storage in safe and well-controlled sites, recycling and treatment with stabilisation, while a small percent is transferred abroad for recycling or final disposal. The quantity of hazardous wastes produced in 1998 was 280000 tons (about 33% lower than in 1988). In Greece there is a small number of industries (approximately 20) with high production rates, which mainly deal with the production of chemicals, fertilizers, crude oil refining etc. These industrial units are responsible for the production of 90% per weight of the total hazardous waste quantities in Greece. There is also a large number of small- and medium-size industries that produce hazardous wastes in small quantities. Shipyards also produce hazardous wastes (1000 tons in 1998).

For the polychlorinated biphenyls (PCBs), the only option is safe storage after authorization by the competent Prefectural Authorities and export to countries with specialized treatment facilities, following the requirements and specifications of the EU Directive 259/93 for the transboundary transportation of hazardous wastes. The highest percentage of PCBs in Greece, as well as their containing devices, is under the property of the Public Power Corporation (PPC S.A.). In order to ensure the continuous monitoring of the PCBs quantities and that of their containers, all holders, users and handlers of PCBs and containing devices are obligated under JMD 72751/3054/85 to keep detailed records regarding their quantitative and qualitative characteristics as well as their management practices. These records are forwarded to the Environmental Departments of the competent Prefecture and to YPEHODE. The future goals on PCBs and PCBs containing devices derive from EU Directive 96/59. Specifically, under this Directive, by year 2010, all PCBs containing

devices should be destroyed, except for devices with low PCB content which are in excellent operational condition and which should be destroyed after their end of life.

The quantity of generated waste oils and lubricants is 85000 tons, from which 30000 tons are regenerated. The used accumulators are 36000 tons, from which 23500 tons are recycled. The quantity of wastes from electric and electronic equipment is estimated to be around 170000 tons. The annual quantity of end-of-life vehicles is about 35000 tons, 75% of which is recycled. Finally, the annual quantity of old tyres is 50000 tons, 14% of which is recycled and 3% is recovered in the form of fuel for the cement industry.

The quantity of infectious waste produced at national level is estimated to be 14000 tonnes per annum, 53% of which is produced in the Region of Attica and 14% in the area of Thessaloniki. The collection and management of these wastes presents a major problem since only 37% of hospitals have the necessary furnaces for the incineration of infectious waste. Consequently, the management in many cases is performed outside the hospital area. In Attica there is a pyrolytic incinerator operating under the Association of Communities and Municipalities of Attica. It has a capacity of 0.5 tons/day but still cannot cover Attica's needs. To address this problem, the plan "Management of infectious waste from hospitals" has been put together, aiming at the integrated sustainable management of these wastes. This will be done through the treatment of the infectious waste by sterilization, thermal treatment and other methods that destroy micro-organisms. Furthermore, the plan provides for the establishment and operation of the "Infectious and Hospital Waste Treatment Centres" for further waste management outside the hospitals. In this framework, a Thermal Treatment Incineration Unit is being constructed in Attica, with a capacity of 30 tons/day, destined to cover the future needs of the region. A similar plan has already been approved for Thessaloniki. These two centres will cover 75% per weight of the annually nationwide produced infectious waste.

The national policy for the transboundary transportation of hazardous waste is considered effective, since no accidents have ever occurred in Greece during hazardous wastes transboundary transportations. This is due to the implementation of a strict legislative framework (see Decision-making) that provides for the implementation of monitoring and controls in the whole hazardous waste management network as well the keeping of relevant records for the transports.

D. Radioactive Wastes

No nuclear power plants exist in Greece. Spent fuel management is therefore relevant only in connection with the operation of the 5MW open-pool research reactor GRR-I of the National Centre for Scientific Research 'Demokritos'. The policy and practice applied for the management of the research reactor spent fuel is the temporary storage of the fuel elements in storage facilities after irradiation, awaiting transfer to USA by May 2009, according to an agreement with the US Department of Energy.

Radioactive wastes in Greece originate from medicine, research and industrial activities. The management of radioactive wastes is carried out at the site of origin. The national policy for the radioactive waste produced in research and medical applications is the decay storage and discharge. Since 1990, according to Greek legislation, an import license for a radioactive sealed source is only granted by the regulatory authority (Greek Atomic Energy Commission), upon the condition that the foreign supplier certifies to take back the source when it is disused.

■ Capacity-Building, Education, Training and Awareness-Raising

Since 1993, YPEHODE has worked extensively on the acquisition of the necessary knowledge of environmental affairs. A team of experts was created in order to help citizens understand this difficult subject. Dozens of executives travelled around Greece to spread information on how to protect the Environment and diminish pollution, focusing most of their efforts on the youth and students. Funds were made available to school units, classrooms or groups of teachers and students, in order to set up and complete environmental programmes: recycling programmes, programmes that protect Greece's natural wealth, programmes for the creation of awareness among students and general public, programmes that transcend the school's premises or even the country's borders. This led to the founding of more than 200 "registered" Non-Governmental Environmental and Ecological Organizations in Greece, whose members are often either teachers or former students who had the chance to participate in one of the Environmental Education programmes during their schooling years.

During the WSSD (Johannesburg, August-September 2002), a TYPE II initiative was launched called MEDIES (Mediterranean Education Initiative for Environment and Sustainability), with emphasis on water and waste, led by the Hellenic Government, UNESCO, UNEP/MAP and MIO-ECSDE. This initiative/partnership facilitates the educational community and students, through the successful application of innovative Educational Programmes in countries around the Mediterranean basin. These Programmes are based on cross-cutting themes such as water and wastes and in this framework:

- The education package on household wastes, entitled "Wastes in our lives" has been produced.
- MEDIES interactive webpage was launched at the beginning of 2003 and it is already fully operational serving as an interactive point of sharing information on issues relevant to Education for Environment and Sustainability.
- Regional and national Educational Seminars, Conferences and other meetings are being organised for capacity building and assisting the educators' work.

A. Basic Sanitation

The Ministry of National Education and Religious Affairs organizes, finances and supports every school year a big variety of environmental projects in all classes of primary and secondary schools. During the school period 2002-2003, 5700 projects were executed by 11000 teachers and 157000 pupils. A considerable number of these projects deal with different aspects of sanitation.

B. Solid Wastes

Schools in Greece are involved in recycling programmes. Encouragement is given to initiatives by local government organizations of specific autonomous geographic units (for example islands) to collaborate in the collection, disposal, and recycling of waste. The "curriculum" of the school projects is diverse. However the most common and most developed programmes and projects are related either to "management of natural resources" or to critical environmental issues, such as water pollution, water management, recycle of materials, etc.

C. Hazardous Wastes

A plethora of workshops, seminars and presentations are organized, as well as publications and information leaflets are produced by the state competent bodies, for the information and awareness raising of the public and all interested parties on alternative waste management issues. Moreover, a prerequisite for the approval of the alternative waste management systems is the implementation of a coherent public information and awareness raising program, addressed to citizens and all economic actors involved. The Office for Alternative Management of Packaging and Other Materials (OAMPOM) that was established in 2002 in YPEHODE for collecting data and managing the operating systems for packaging and other materials in Greece is responsible for the implementation monitoring of this program. The web site of OAMPOM is currently under construction.

D. Radioactive Wastes

The Greek Atomic Energy Commission (GAEC) is responsible for the education and training of workers in the field of ionizing radiation, and of qualified experts and advisors in the field of radiation protection. Furthermore, GAEC organizes seminars and workshops addressed to the scientific and technical personnel of medical, industrial, research and other ionizing radiation laboratories.

In the educational programmes due consideration is given to training on radioactive waste management. The major post-graduate programmes are:

- The Inter-University Course of the Universities of Athens, Ioannina, Thessaloniki, Crete and Thrace and of the National Centre for Scientific Research "Democritus", operated by GAEC. This is a five semester's post-graduate course leading to a M.Sc. degree in Medical Radiation Physics.
- The Post-Graduate Educational Course in Radiation Protection and the Safety of Radiation Sources, organized by GAEC and IAEA, in collaboration with major Greek Institutions. This is a Regional Center in Europe and Eastern Mediterranean region, for training scientists from the countries of that region in the field of radiation protection.

■ Information

An important structural intervention is the establishment of the Environmental Inspectorate of YPEHODE (harmonization with the EU Directive 2001/331/EC) thus providing a new data pool of measurements regarding inspected activities. The National Centre for the Environment and Sustainable Development (EKPAE) has already produced a number of assessments and reports, such as the National Strategy for Sustainable Development for the Johannesburg Summit and recently a Signals Report based on up to 2000 updated data. The National Environment Information Network has been an important dynamic source of environmental information in Greece.

The MEDIES Network, which is the basis of the Initiative (see also Chapter "Capacity-Building, Education, Training and Awareness-Raising") consists of individual educators from the Mediterranean, engaged in Education for Environment

and Sustainability. The partners-members supply the network with all relevant information regarding the educational and/or environmental issues in their country, and undertake the dissemination of the supplied information and the promotion of education for environment and sustainability in their schools or NGOs.

A. Basic Sanitation

The Programme NDBHMI (National Data Bank of Hydrological and Meteorological Information) provides the required environmental information for the development of the Master Plan and specific regional management plans for the inland waters in Greece. The Programme is based on a major environmental network and a data base consisting of hydrological and meteorological information at national scale.

B. Solid and Hazardous Wastes

In terms of waste data, registration of the municipal waste production and management has started and is under development. Moreover, two studies are being implemented to update the national planning for the dangerous and non-dangerous wastes. These studies will also produce primary data about quantities and methods of waste management. Another study on the management of solid wastes not deposited to landfills is under way.

A specialized structure has been established since 2002 in YPEHODE, under the title "Office for Alternative Management of Packaging and Other Materials (OAMPOM)", in order to collect data and manage the operating systems for packaging and other materials in Greece. The objective of OAMPOM is to promote the maximization of recycled materials in compliance with various relevant EU Directives. Up to now several systems have been evaluated and approved (packaging, end-of-life-vehicles, waste tyres, waste oils, batteries). Within this framework, relevant databases will be developed containing information about the current situation for each waste stream (quantities, activities/companies producing relevant materials/waste sources, recycling rates etc). In this context, the following studies will be assigned by OAMPOM in the near future, to ensure a close monitoring and an assessment of the current situation:

- "Inventory of packaging and packaging waste – Establishment of a data Bank";
- "Inventory of electrical and electronic equipment and their waste – Establishment of a data Bank";
- "Collection of waste data from construction, demolition and excavation works and their destinations – Establishment of a data Bank".

The OAMPOM's web page on the alternative waste management is under construction. Moreover, every year, the alternative management systems submit a report for assessment of the last year activities (including the recycled quantities) as well as for planning the system development and expansion.

C. Radioactive Wastes

The Greek Atomic Energy Commission (GAEC) is the official link to information databases of the International Atomic Energy Agency (IAEA), to the European Commission and the National Competent Authorities of other countries.

■ Research and Technologies

The General Secretariat for Research and Technology (GSRT) of the Ministry of Development, through the Operational Programme "Competitiveness" (OPCOM) 2000-2006, supports the research activities of both the country's scientific research institutes and those of its productive industry, focusing on areas that are important for the national economy and for the improvement of the quality of life. Furthermore, it promotes the transfer and dissemination of advanced technologies throughout the country's productive sector and encourages activities aimed at raising awareness of the general public about research and technology issues. In this context, GSRT has completed a study on "Environmentally Sound Technologies in Greece: Progress of Research and Technology, Economic and Social Impacts".

A. Solid and Hazardous Wastes

The promotion of schemes such as EMAS (EU Eco-Management and Audit Scheme), ISO 14000, Integrated Product Policy and Integrated Pollution and Prevention Control (EU Directive 96/61/EC incorporated in the national legislation with Law 3010/2002, OJG 91A/2002) in the business sector, assists efforts for waste reduction, reuse and recycling. Such activities are promoted, inter alia, under the Priority Axis 2 "Support and Encouragement of Business Initiatives" of OPCOM 2000-2006:

- Measure 2.5 'Technological and Organizational Modernization of Business' gives special emphasis on the introduction of ecologically friendly production methods and clean technologies in small and medium size

enterprises (SMEs) as well as on covering gaps in infrastructure for the recycling and recovery and utilization of waste products in Greece.

- Measure 2.9 "Support for Business Initiatives in the Environmental Sector" also supports the collaboration among businesses with other bodies for improved management and utilization of industrial wastes or other special material flows (e.g. electronic equipment, vehicle catalysers, used tyres, scrap vehicles hospital waste etc). Under this Measure, particular emphasis is also given on materials' recovering and recycling, on processing and disposal of hazardous wastes and on supportive actions (e.g. training, registers' creation, promotion of voluntary agreements) for the adaptation of industry to the new environmental institutional and legislative framework.

For the implementation of these Measures, various actions and research projects are being promoted through public-private partnerships, aiming at exploring innovative approaches and application of advanced technological methods for waste management.

Greece, through the GSRT is participating in the 6th Framework Programme of the Directorate-General for Research of the European Commission with research and applied activities for industry as well as with research and training activities in the field of nuclear energy and nuclear waste management.

B. Radioactive Wastes

New technologies for the management of radioactive waste are developed in the laboratories of the Greek Atomic Energy Commission (GAEC), in collaboration with the National Centre for Scientific Research 'Demokritos'. In addition, GAEC applies new technologies for the management of radioactive wastes produced from NORM (naturally occurring radioactive materials) industries.

■ Financing

Up today, Greece has invested on waste management the total amount of 542 million €, comprising of national funds and various financing schemes (Cohesion Fund, Operational Environmental Programmes, Regional Operational Programmes, etc). In particular, for the elaboration of waste management studies, the construction of sanitary landfills, waste transfer stations and treatment plants, the restoration and rehabilitation of disposal sites and the collection equipment and recycling equipment programmes, approximately 322.8 million € were invested during 1993-1999. In the current funding period (2000-2003), 233 million € have been allocated, including the recently approved and in progress studies and projects. For addressing the remaining needs, YPEHODE has bound from national and community resources, the total amount of 293 million € for additional waste management projects.

With a view to achieving sustainable development, the Operational Environmental Programme of Greece for the period 2000-2006 (OEP 2000-2006), focuses on investments in infrastructure needed to guarantee rational management of environmental resources, for example in the waste management sectors. Among its priorities is the improvement of the quality of life, that encompasses specific action programmes for the protection of the environment, namely in the domains of water, and solid and hazardous wastes.

A. Basic Sanitation

Substantial progress has been made over recent years with the collection and treatment of wastewater. OEP 1994-1999, set up the framework for the design and construction of wastewater treatment systems and sewerage networks. The elaborated projects were co-funded by Greece and community structural funds. The infrastructure development continues with OEP 2000-2006, financially supported also by national and community structural funds. Once projects from OEP 1994-1999 are completed, around 45% of the Greek population will be connected to waste water treatment systems. OEP 2000-2006 (Measure 1.3, of Priority Axis 1) includes programmes on sanitation related infrastructure with a budget of around 38 million €. By 2006, 75% of the Greek population is expected to be connected to wastewater treatment systems.

B. Solid Wastes

OEP 2000-2006 includes projects on solid waste management with an overall budget of approximately 8.5 million € (Measure 2.1, of Priority Axis 2). Other Operational Programmes, such as OPCOM 2000-2006 also include relative Measures (see Chapters 'Programmes and Projects' and 'Research and Technology') with respective budget lines related to waste management. At Regional level, financial support for waste management is provided by the

Regional Operational Programmes, for each Administrative Region of Greece, under the framework of the 3rd Community Support Framework (CSF).

C. Hazardous Wastes

Economic instruments have been instituted by the Law 2601/98, supporting national policies for the reduction and management of hazardous wastes, in the form of subsidies provided to producers who adopt the use of clean technologies and appropriate treatment systems. Funding derives from national aid and, in case of co-funding, from other EU funding frameworks (e.g. RETEX). The new development Law 3220/2004 has a specific provision for the tax exemption of the reserve funds from the alternative waste management systems, so as to be invented on the whole in the following years.

OEP 2000-2006 includes projects on hazardous waste management with an overall budget of approximately 13 million € (Measure 2.2, of Priority Axis 2). OPCOM 2000-2006 provides financial support (national and community structural funds) to SMEs for the elaboration of environmental Plans (recycle and recovery of wastes), with a total budget of 60 million € (Action 2.9.4, Measure 2.9 of Priority Axis 2). Financial support is also provided through OPCOM, for the formation of environmental clusters, with a total budget of 40 million € (Action 2.9.3, Measure 2.9, of Priority axis 2).

D. Radioactive Wastes

The Greek Atomic Energy Commission (GAEC) is currently implementing a programme financed by the Government of Greece, with the scope to return all the old (imported before 1990) radioactive sealed sources to a foreign waste management facility for refurbishment.

The National Bank of Greece finances a project for restoring the area of a closed fertilizers' facility where NORM (naturally occurring radioactive materials) waste concentrations (e.g. uranium and radium) have been detected. The budget of the radiation protection project, under the management of GAEC, is 200000 €, whereas the total budget is 1 million €.

■ Cooperation

A. Basic Sanitation and Solid Wastes

International cooperation related to sanitation and waste management issues is an important concern for Greece. Since 1999 and in the framework of OECD's Development Assistance Committee (DAC), Greece has funded the implementation of several projects on sanitation in partner countries. Through the Bilateral Programme of Development Assistance and Cooperation in the field of Environment and Sustainable Development of YPEHODE, sanitation and waste management related projects funded in 1999 were 3 with a total budget of around 234952 €, whereas in 2000 they were 12 of total budget of around 1.45 million €. These projects were implemented through Universities, Research Institutes and NGOs in Greece. The recipient countries were countries from South East Europe, the Mediterranean and East Europe, Caucasus and Central Asia (EECCA). Projects laid emphasis on waste water and solid waste management and capacity building issues. In 2001, the implementation of a project for the construction of a wastewater treatment plant in the city of Strumica in FYROM was initiated.

In the context of the National Bilateral Programme of Development Assistance and Cooperation "Hellenic Aid" for the year 2000-2001, the total budgets allocated to the implementation of sanitation and waste management/disposal in partner countries were around 0.24 million USD and 0.47 million USD, correspondingly. For the year 2002 the total budgets allocated to the implementation of sanitation and waste management /disposal in partner countries were around 0.195 and 0.13 million USD, correspondingly. The implementation of these aid projects contribute to the Millennium Development Goals (MDGs) and WSSD targets for sustainable development and poverty reduction.

Greece has signed and ratified the Protocol of the Barcelona Convention on the Protection of the Mediterranean Sea against Pollution from Land Based Sources, including its latest amendments of 1996 (Law 3022/2002, OJG 144A/2002). Greece has also signed and ratified a Memorandum of Understanding (MoU) / collaboration Protocol with Turkey (Law 2902/2001, OJG 77A/2001), as well as a MoU with Cyprus (Law 2424/1996, OJG 147A/1996), both covering issues of possible bilateral cooperation on waste disposal and other related issues. Furthermore Greece has signed (but not yet ratified) MoUs with Georgia, FYROM and Albania and an Agreement of Understanding with Bulgaria, all of them covering issues closely related to waste management and disposal.

B. Hazardous Wastes

Greece signed and ratified in 1994 the Basel Convention (1989) on transboundary movements of hazardous waste and their disposal (Law 2203/1994, OJG 58A/1994). It has also signed the Protocol (1996) of the Barcelona Convention on pollution by transboundary movements of hazardous wastes and their disposal.

C. Radioactive Wastes

The transboundary movement of radioactive waste is regulated by the National Radiation Protection Regulation, which incorporates into the national legal system the Council Directive 93/3/EURATOM/1992 on "Supervision and Control of Shipments of Radioactive Waste between Member States and into and out of the Community".



4. HUMAN SETTLEMENTS

■ Decision-making

The Ministry for the Environment, Physical Planning and Public Works, (YPEHODE), is responsible for the environmental protection and the implementation of sustainable human settlements development in Greece. Within YPEHODE, the Directorates of Regional Planning and Environmental Planning are responsible for planning and management of land resources for spatial structure planning and sustainable spatial development of the country. Special Organisations for Planning and Environmental Protection have been established for the Metropolitan Areas of the country (Athens and Thessaloniki).

The Ministry of Development is the decision making authority on energy and industry issues in general. Environmental concerns and dimensions have been incorporated into the main stream of the Ministry's National Energy Policy and promoted within the framework of its political priorities.

YPEHODE and the Ministry of Transportation and Communications, are also involved in decision-making process on air quality issues related to energy use and transportation. Moreover, YPEHODE is responsible for the improvement of infrastructure for monitoring air pollution. YPEHODE's competencies also encompass decision-making regarding the transportation systems.

As a result of the 1997 administrative reform, many responsibilities have been transferred from the central services of Ministry of Development to the administration of the 13 Regions and 52 Prefectures of the country, through a Presidential Decree.

Urban and land-use planning:

In the early 1980s, the urban planning legislation was mainly based on the Urban Development Law (1983) that introduced "urban controlled zones" to direct urban development, safeguarded sensitive areas and restrained unplanned construction and sprawl. This Law also entailed provisions adapting the town-planning legislation according to sustainable development principles, for the expansion of newly developed areas and the improvement of the institutional framework and procedures.

In 1997, this Law was updated with the Sustainable Urban Development Law 2508/97 that introduced improved guiding principles and procedures on urban planning for the balanced and sustainable development of cities and smaller settlements. Apart from the general improvement in planning procedures and institutions, the new legislation introduced for the first time a comprehensive organizational framework for all kind of urban renewal, emphasizing on urban renewal projects of a social nature, as well as on new provisions permitting organized housing development in the outskirts of cities and in areas of secondary and vacation home development.

In 1999, a new land-use planning framework at the national and regional level was established in Greece, through the Law for "Spatial Planning and Sustainable Development" (Law 2742/1999). Based on this Law, the national plan, known as the General Framework for Spatial Planning and Sustainable Development, set specific goals concerning conflicting issues in land use management, which aim at the sustainable use of land and the minimization of negative environmental impacts. The administrative mechanisms for controlling the spatial location of activities that have adverse environmental impacts is strengthened and expanded through environmental impact assessments. The General Framework also provides for the improvement of the regulatory framework regarding the determination of the environment's carrying capacity concerning specific human activities.

The General Framework is supplemented by Special Frameworks containing provisions for particular categories of land (e.g. coastal zones or mountainous areas) or for sectoral issues of spatial importance.

The 1984 Regional Plans of Districts/Administrative Regions that provided for land-use organization, infrastructure planning, and environmental protection, have been superseded today by a new generation of spatial plans, the so-called Regional Frameworks for Spatial Planning and Sustainable Development. These plans provide the spatial development framework for 12 administrative regions and contain guidance for the development of all 52 prefectures. Only the region of Attica, effectively the Athens metropolitan area, is dealt with separately.

Structural Plans have been developed for the metropolitan areas of Athens and Thessaloniki, and the establishment of Metropolitan Governance is in process. Special Regional Studies, that were carried out in the 1980s and 90s to address environmental problems in sensitive areas, have also been superseded today by the regional plans and a new type of environmental studies. Legislative and administrative measures have been adopted for the protection of people living in disaster-prone industrial areas. A number of earthquake vulnerability studies have been elaborated for urban areas in seismic risk zones.

Public participation is required within the approval procedures of the spatial and urban plans according to the planning level. Law 2742/1999 has established an advisory Council, the opinion of which is required for the approval of the General Framework for Spatial Planning and Sustainable Development as well as for the Special Frameworks, above mentioned. This Council consists of representatives from major stakeholders of the public and private sector.

The General Building Construction Code (GOK) establishes standards related to the quality and safety of construction and stipulates allowance ratios of built surface area to land area. Subsequent Ministerial Decisions have established regulations about buildings' design and construction, including standards related to heating, cooling, ventilation, light and insulation.

Regarding urban forests and parks, the Greek Forest Legislation enforces the incorporation of a significant percentage in new city plans and includes provisions concerning their protection and conservation.

Energy:

The exploitation of renewable energy sources (RES) and the promotion of combined heat and power generation (CHP) were initially regulated by Law 1559/85 "Regulation of alternative forms of energy issues and specific issues of power production from conventional fuels". Following assessment of its implementation effectiveness, this Law was substituted by Law 2244/1994 "Regulation of power generation issues from renewable energy sources and conventional fuels". Law 2364/1995 "Establishment of Board for Energy Planning and Control – Import, transportation, distribution and trade of natural gas", constituted the framework for providing financial incentives to promote the use of natural gas and RES for domestic and residential appliances, until the end of 2002. Law 2773/1999 entailed provisions for the liberalization of the energy market and regulation of energy policy issues, without touching upon the provisions of Law 2244/94 on the feed-in tariffs for electricity produced by RES and Cogeneration of Heat and Power (CHP). Under the provision of this Law, the Regulatory Authority for Energy (RAE) was established, in 2000. Most recently, Law 3175/2003 "Exploitation of geothermal potential, district heating and other provisions" entered into force to accelerate the energy market liberalization process and to reflect most of the modifications portended in Directive 2003/54/EC.

The Centre for Renewable Energy Sources (CRES) was established according to Law 1514/85 "Promotion of scientific and technological research", with the scope of promoting use of RES, energy saving and the rational use of energy.

Greek legislation has been harmonized with the EU SAVE Directive (93/76/EC) for the stabilization of carbon dioxide (CO₂) emissions and energy efficiency of buildings. The Ministerial Decision 21425/4707/98 on "Reduction of carbon dioxide emissions through setting of measures and terms aiming at the energy efficiency improvement of buildings", mandates the development of new regulations for energy efficiency and conservation of buildings and calls for the creation of a certification system, whereby new buildings have to take an energy efficiency test in order to acquire the "energy and environment" certificate.

Furthermore, the new Code of Energy Efficiency and Energy Saving for all buildings is currently under preparation within the framework of GOK and in compliance with the EU Directive 2002/91/EC on energy performance of buildings.

Air-quality:

Under the authorization of the Framework Law 1650/86 "For the protection of the Environment", legislation has been put in place for the reduction of air pollution from vehicles, heating systems of buildings, industries and other polluting activities. Law 2244/94 on "Auto production, Co-generation and Creation of Public Power Corporation's Affiliate Companies" applies to atmospheric protection.

Greece has incorporated into national legislation many EU Directives for the protection of the atmosphere (Directives 88/609/EC, 92/72/EC, 96/62/EC, Daughter Directive 99/30/EC and EU Frame Directive 96/61/EC). In addition, many EU Regulations have also been incorporated into the national legal system, which are directly applicable and binding (e.g. Regulation on substances that deplete the ozone layer). Harmonization with the recent Directive 2003/87/EC is under way, for establishing a scheme for greenhouse gas emission allowance trading within the European Community.

The most important Joint Ministerial Decisions (JMD) for the reduction of vehicle emissions include: "The form and content of exhaust emissions Inspection Card", which introduced the exhaust gas emission inspection programme for road vehicles; "Determination of measuring method and permitted values (limits) of carbon monoxide (CO) and hydrocarbons (HC) in exhaust gases of gasoline and LPG powered vehicles" and "Determination of measuring method and permitted values (limits) of the opacity of exhaust gases from diesel powered vehicles".

Poverty:

Decision-making is undertaken by YPEHODE (Directorate of Housing and Shelter), Ministry of Foreign Affairs (National Foundation of Emigrants), Ministry of Health and Welfare as well as the Workers Housing Organization (WHO). In addition, Decree 57/1973 addresses Measures for the Social Protection of Economically Needy People. Legislation on minimum pensions and mixed social pensions has also been issued.

■ Programmes and Projects

A. Providing Adequate Shelter for All

Housing policy in Greece is mainly active in the following areas:

- Provision of financial assistance for first residence, through tax benefits and interest rate subsidies.
- Direct provision of low-cost housing to workers and money allowances to renters, through the Workers Housing Organization (WHO).
- Improvement of old and new residential areas through urban and regional planning, building control and selective environmental upgrade projects.
- Public housing support for natural disaster victims (e.g. earthquakes) and special categories (e.g. Greek repatriates, refugees, immigrants, Greek ROM etc.).

The broader objectives of Greek policy include the facilitation of improved housing supply and the provision of owner-occupied housing, mainly through credit, tax subsidies and a set of building codes and planning policies in relation to urban land development and the improvement of buildings and the urban environment.

For social groups with particularly urgent housing needs, these broad policies are complemented through three main programmes:

i. Program for Housing Rehabilitation of the ROM population

Since 1996, a policy framework has been implemented to address the serious problems that Greek ROM face regarding health, education, vocational training, social insurance and housing. In the housing sector, this framework was implemented through actions for improvement of living conditions and for immediate relief of residents of existing tent camps. In April 2001, the need for further action led to an Integrated Action Program for the Social Integration of ROM, which focuses on solving the housing problems of ROM that live in camps, either through improvement interventions, or through development of new settlement areas.

ii. Housing Rehabilitation of the Greek Repatriates

Since the 80's, about 148000 Greek repatriates, mainly from the former Soviet Union, came to Greece for permanent settlement. The National Foundation for the Admission and Rehabilitation of Greek Repatriates, established in 1990, initiated an integration program which provided for provisional accommodation and social integration of the repatriates. Following the first transitional period, Law 2790/2000 set the conditions for rehabilitation and permanent housing. Based on that Law, an Integrated Action Program that aims at a more integrated housing rehabilitation policy (free plots, supply of loans and subsidies etc) is under way.

iii. Program for accommodation of the victims of the recent earthquake in Athens

The consequences of the earthquake, that struck Athens on 7 September 1999, were disastrous for a number of municipalities within the broader urban complex of Athens. There was serious and extensive damage to the housing stock and about 90000 citizens were rendered homeless, in a total of 100 municipalities and communes declared as Earthquake Disaster Areas. As part of the restoration programme, the following measures were put into effect :

- Rehousing of the rendered homeless, through special grants for repair or reconstruction of their houses.
- Redesignation of land use in the affected areas, on the basis of special geological studies.
- Quality improvement of the building construction industry and of the Seismic Design Code of 1995.

B. Improving Sustainable Human Settlement Planning and Management

YPEHODE, in close cooperation with the local authorities, is implementing interventions for urban improvement throughout Greece, aiming at upgrading the urban environment, revitalizing urban areas, and promoting the cultural heritage in significant urban areas, in regard to their building stock. This activity is based on the "Urban Reorganization" programme, implemented since 1983.

In 1996 and in conjunction with the second UN Conference on Human Settlements, the National Commission on Sustainable Development of Settlements and Housing was established and produced the National Action Plan for Cities and Housing (1996-2000). The National Action Plan's fundamental aim is the best possible response of Greece to two main objectives: the creation of cities which provide safe, healthy, equal and sustainable living conditions and the guarantee of adequate housing for all. Policies and measures under this plan are suggesting the reorganisation of the system of housing subsidies; social and economic integration and housing for refugees and economic immigrants; projects for community development and upgrading according to the model introduced by the EU pilot programmes to combat poverty; and provision of housing for special disadvantaged categories of people.

The Operational Environmental Programme (OEP) is one of the 24 Operational Programmes of the Community Support Framework (CSF) being implemented in Greece that aims at addressing key environmental issues. OEP 1994-1999, under the 2nd CSF, promoted actions, inter alia, for the improvement of existing urban plans in light of modifications in the urban structure and the functions of the city, for the development of urban plans for estates located in ecologically sensitive areas, coastal zones and islands, as well as the improvement of urban conditions in selected Greek cities, traditional settlements and tourist sites, in order to improve the quality of life, living and working conditions. This Programme constituted part of a broader National Programme for the restoration of the urban environment in selected Greek cities.

Special Programmes under OEP 1994-1999 included the programme "ATTICA-SOS", aiming at making «Athens a sustainable city», through improvement of the general quality of life and environmental conditions in the Attica region. The programme included interventions at local and regional level in the thematic areas of air, water, waste, traffic, noise, land planning, urban development, environmental awareness and legislation. Extensive pedestrian areas (archaeological, shopping and green areas) have been created in central Athens and further actions for the rehabilitation of several historic districts are under way. In Thessaloniki, the second largest city of Greece, major urban renewal projects have been carried out through the "THESSALONIKI SOS" Programme.

OEP 2000-2006, under the 3rd CSF, aims at a more integrated environmental intervention for implementing the targets of sustainable development and comprises of seven Priority Axes. Axis 7 refers to "Planning-Town Planning-Renewal and Rehabilitation" and encompasses the following Measures:

- Measure 7.1 on "Physical and Town Planning" supporting interventions in regional and town planning and aiming at the organization of urban and regional areas based on new technologies, the development of monitoring networks, the development of plans at national and regional level, the implementation of pilot and specific local interventions as well as the development of Metropolitan Areas Plans (Attica and Thessaloniki).
- Measure 7.2 on "Renewal and Rehabilitation" supporting the protection and rehabilitation of historic and traditional sites of unique or national importance, such as specific archaeological and cultural sites in the cities of Athens, Pireaus and Thessalonik as well as the protection of areas of particular natural beauty and biodiversity etc.

Under the auspices of the European Union's Initiative "URBAN", the Programmes "Urban-Hellas" aim at the improvement of environment, infrastructure and equipment of Greek urban centers that are characterized by high rates of de-industrialization, unemployment and degradation of living and environmental quality. Under the Programme "Urban II-Hellas" 1994-1999, 6 sub-programmes were implemented in 11 Greek Municipalities. Each one of these sub-programmes covered a coherent geographical area with a high degree of homogeneity in terms of its functional and geographical problems and characteristics. The Programme "Urban II-Hellas" 2000-2006, promotes an innovative approach to urban development in Greece. While retaining an integrated approach to social, economic and environmental issues, the main target of the programme is the promotion of innovative actions and more effective development policies, through the identification and designation of specific problematic areas. "Urban II" promoted programmes for the rehabilitation of the building stock, the creation of labour places, mainly through Information Technologies as well as the improvement of transportation and communications. Three urban areas have been selected as intervention areas for "Urban II-Hellas" (Perama in Attica, Komotini in Thrace and Iraklion in Crete).

In relation to the implementation of "Habitat Agenda", YPEHODE, recognizing the vital role of participation of the local authorities as the most effective approach to the successful implementation of interventions at local level, initiated in 2002, a pilot programme to draw up and implement "Local Habitat Agendas" in selected municipalities of the country. The basic targets of the programme include the adoption of an integrated strategic planning policy in order to confront the complex contemporary problems of cities and settlements as well as the encouragement of local initiative and participation.

The elaboration of the National Cadastre Project, initiated in 1997, is well advanced today and its imminent operation is expected to contribute significantly to regulating land development in Greece, through identification of land ownership and control of trespassing and illegal construction. It gives priority to districts near large urban areas or tourist destinations, since these face higher risks for illegal construction. The completion of the National Cadastre is also expected to be instrumental for the implementation of land-use plans and for the effective enforcement of legislation in case of illegal land development.

The City of Athens will host the Olympic Games of 2004. The Olympic Games offer a great opportunity not only to tackle structural problems in the organization of the city, but also to improve the quality of life and environment in the wider region, through efficient use of the Olympic infrastructure. In this context, planning and implementation of the Olympic projects focus on the following objectives:

- Improvement of existing urban infrastructure and addition of new for upgrading life quality.
- Ensure that new infrastructure will not create additional 'burdens' for the urban grid, neither exceed public needs in the post-Games period.
- Minimization of the environmental impact of new Olympic infrastructures.
- Improvement of the city's image and of its historic and cultural profile.

The preparations for the Olympic Games in Athens have required a holistic horizontal inter-governmental response. Delivering the Olympic Games to the required standard has resulted in the effective co-operation between Ministries, several levels of governance and the private sector and thus a positive framework for the future has been established.

C. Promoting Sustainable Energy and transport Systems in Human Settlements

Energy:

In 1995, YPEHODE elaborated the first National Action Plan for the Abatement of Carbon Dioxide (CO₂) and other Greenhouse Gas Emissions. The Plan is based on a drastic energy conservation policy in all sectors of final consumption (industry, transport, commercial, and domestic sectors), the use of natural gas and the promotion of renewable energy sources.

The Ministry of Development has launched three programmes with measures and actions to promote the dissemination and development of clean production technologies: the National Energy Programme (NEP), the Operational Programme for Energy (OPE) and the Operational Programme for Competitiveness (OPCOM).

NEP promotes energy efficiency, rational use of energy, use of RES and the use of natural gas. OPE was launched under the 2nd CSF in 1994 and continued until the end of 2001. Through its allocated actions and economic incentives, it contributed to the implementation of important projects of the power production sector, enforced investments in the field of rational use of energy and energy efficiency as well as promoted the use of renewable and other indigenous energy sources. In the framework of OPE, a special study was conducted in September 2000 by the National Observatory of Athens on the "Optimal incorporation of environmental requirements, resulted from Kyoto Protocol, into the planning of national actions in the next decade in the energy sector". The study provides an Action Plan with alternative policies and tools, mainly at national level, for achieving the Kyoto targets. OPE and the Operational Programme for Natural Gas (1994-1999) promoted sustainable energy, energy efficiency and rational use of energy, use of RES, use of environmentally friendly energy sources as well as use of natural gas through the promotion of financial support for RES and energy efficiency projects.

OPCOM 2000-2006 was launched under the 3rd CSF and applies not only to the energy sector but also to a variety of other economic activities. The Measures of OPCOM concern support and encouragement of entrepreneurship, promotion of excellence in enterprises, security of energy supply and promotion of liberalised energy markets and reinforcement of energy infrastructure to promote electricity generation from RES and sustainability.

Greece intends to introduce innovative measures for demand side-management in the industrial sector such as voluntary agreements, which have been identified under OPCOM. These projects include measures of energy management (employment of energy managers and energy auditors, application of monitoring and targeting), upgrading of old production and/or installation of new production and energy equipment, application of tested clean technologies as well as substitution of conventional fuels with natural gas. The involvement of the public sector is necessary due to the large existing potential for energy conservation in government and public administration buildings as well as in

buildings of public benefit such as hospitals, schools and existing sports premises. To this end, actions will be implemented by the Energy Service Companies using the 'third party financing', by extending existing legislation so that certain issues pertaining to the public sector financing are addressed.

Concerning promotion of Voluntary Agreements for reducing air pollution, an agreement between the government, the local population and the Public Power Corporation S.A. (PPC S.A) has been contracted, aiming at the exploitation of a thermal station in Athens with fuel switch from heavy fuel oil to natural gas.

PPC S.A. is applying specific policies and programmes for environmental protection, improvement of energy efficiency, development of the country's hydro potential and exploitation of RES (wind, geothermal and solar energy). The Company's environmental policy includes a programme for upgrading its thermal Units in order to increase their energy efficiency and to contribute to overall measures for rational use of energy. These interventions focus on upgrading steam turbines, cooling towers, boilers and auxiliary systems. Recently completed projects include, inter alia:

- The upgrading of two steam turbines in the Kardia lignite-fired Steam Electric Station (SES), Units III and IV, 2x325MW, resulting in reducing the total emissions in these Units about 4-5%.
- The upgrading of three cooling towers in the Ptolemaida and Kardia lignite fired SES, resulting in reducing the total emissions in these Units about 1,3%.
- Various other upgrading projects (e.g. the reconstruction of the boiler in the Ptolemaida lignite fired SES, Unit II) have also been executed.

Additionally, six more projects applying to lignite-fired SESs for improvement of energy efficiency (upgrading of 7 cooling towers and 2 steam turbines as well as installation of informative systems for the on-line monitoring of the efficiency and operational control of the units), which have been incorporated in the OPCOM 2000-2006, under the 3rd CSF, are already under execution.

PPC S.A. has also initiated the implementation of a combined heat and power programme, by converting its lignite-fired power plants for supplying hot water to several district heating networks in Western Macedonia (northern Greece). Presently, 5 district heating systems with a total capacity of 285 MW thermal, are in operation in 3 large cities of northern Greece, neighboring to existing power plants. An additional heating system is under evaluation for supplying further 70 MW thermal in Western Macedonia. The heating system in the area of Megalopolis in Peloponnesus (southern Greece) is in operation with a capacity of 20 MW thermal. PPC S.A has also installed 8 hydroelectric power units with a total capacity of 534 MW during 1997-2002, while is planning the construction of 14 hydroelectric power units with a total capacity of 603 MW for the period 2002-2007. The completion of the abovementioned projects are expected to contribute substantially to further reduction of air emissions and, thus, reaching national targets under the Kyoto Protocol.

The National Action Plan for Energy Conservation in the Built Environment, namely "Energy 2001", is the main action taken to comply with Directive 76/93/EC (SAVE Directive). It was prepared under the auspices of YPEHODE and with the cooperation of the Ministry of Development, by a joint scientific committee co-ordinated by CRES. It constituted an integrated plan intending to change existing production and consumption patterns through the promotion of innovative building construction techniques and services and aims at energy conservation and the integration of renewable energy technologies.

Several pilot projects are underway by YPEHODE, in urban areas and buildings, to promote energy efficiency, use of RES and sustainable materials (ecological planning and design), in partnership with local authorities and NGOs. Moreover, pilot environmental education programmes are promoted, such as the implementation of photovoltaic (PV) systems in 50 school buildings so as to raise awareness on positive environmental impacts of the use of Solar Technologies, in partnership with the Ministry of Education and Greenpeace.

Bioclimatic-energy design of buildings and settlements, as well as the use of RES, are being systematically promoted. Other complementary activities include the training of energy managers in matters of sustainable use and conservation of energy, education of engineers as well as environmental education in schools. Training objectives are met through the voluntary employment of young people in projects using traditional construction materials and techniques, in various regions of Greece.

Transportation:

The main policies to reduce energy use in the transport sector include:

- Renewal of the fleet of private and public cars, buses, coaches and trucks ;
- Use of alternative fuels in vehicles ;
- Technical inspection of vehicles ;
- Improvement of infrastructure for means of public transportation (buses, railways, trolley buses, metro etc).

In the early 1990s reduced consumer taxes and vehicle circulation fees were used to encourage replacement of old vehicles with new, cleaner, vehicles; some 380000 were collected and scrapped through a "scrapping programme". To reduce emissions from road vehicles, a wide range of actions has been taken. Since 1990, exhaust emission regulations have, de facto, required new gasoline-fuelled cars to be equipped with three way catalytic converters. Since 1995, exhaust gas emission inspection programmes for in-use vehicles have been instituted in 30 Prefectures and air pollution fines are imposed on the cars owners not conforming to emission standards. Furthermore, the implementation of the recent Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport is expected to reduce more emissions from road vehicles.

Road congestion in urban areas has been addressed by a range of policy measures.

- In Athens, infrastructure improvements aiming to alleviate congestion include expansion of the urban ring road, construction of a number of flyovers, improvement of the traffic light system and creation of restricted access areas in the city centre. The odd and even plate numbers' system for the restriction of the circulation of cars in the Athens city center, on odd and even days alternately, the renewal of the bus and taxi fleet, the economic incentives for the replacement of old cars with new catalytic ones and the operation of the Athens metro, have curbed traffic-related emissions. Reductions in fuel sulfur content, programmes on domestic heating regulation and maintenance as well as the refurbishment of industrial plants with filters have reduced sulfur dioxide concentration in ambient air.
- In Piraeus, computerised systems facilitate management of road traffic generated by seaport activities.
- In Thessaloniki, a new coastal road diverts transit traffic from the centre.
- Other cities have established ring roads to alleviate central congestion. Traffic management planning has been carried out in certain areas, especially those near major tourist attractions.

Priority Axis 4 of OEP 2000-2006 aims at improving air quality in the urban area of Athens. It consists of Measures 4.1 and 4.2 that provide for actions for the improvement of urban traffic management, development of infrastructure for fuel control and reduction of urban noise.

Moreover, during recent years, the following measures have been applied for the improvement of means of public transportation which include both new measures and follow-up of existing activities:

- Creation of two new metro lines in Athens (lines 2 and 3) with 18 stations. 80 million passengers were transported in the first year of operation of the new lines, which resulted in gaining of significant quantities of fuels, due to the reduction in the use of private cars. Development of Athens Suburban Railways up to Korinthos, Chalkis and Athens International Airport at Spata, with double line, electrified, modern signaling and telecommanding systems, of a total cost of more than 190 million € ;
- 750 new anti-pollutant buses have been put into circulation in Athens (of a total cost of more than 1.76 million €), 224 hybrid trolley buses (of a total cost of more than 88 million €), 295 Compressed Natural Gas (CNG) buses (of a total cost of more than 73 million €) and 6 new coaches in the old metro line (line 1). A corresponding number of new means of public transportation were put into circulation in Thessaloniki and other Greek cities ;
- Development of 2 tramway lines in Athens of a total cost of more than 300 million €.

In the railways, a double line has been constructed in the greatest part of the line Athens - Thessaloniki, with electrification in some sections, modern signaling systems, telecommanding and purchase of new rolling stock. This project was co-financed by national funds, the 2nd CSF and the Cohesion Fund.

■ Status

Land-use:

The land territory of Greece totals 130800 km². The mainland accounts for 80% of the land area, with the remaining 20% divided among nearly 3000 islands. Two thirds of the land is hilly or mountainous, with the typical landscape being rugged. Approximately 30% of the land is cultivated, 40% has permanent grassland, 20% is covered by forests or woodlands and 4% is urbanized. Greece's extensive coastline (around 13700 km) is equally distributed between the mainland and the islands. Ten of the 15 largest urban centers are coastal, most of them having important harbours, while almost the entire tourist infrastructure is divided among islands and the coastal mainland. Greece is relatively urbanised, with 60% of the population living in settlements with more than 10000 inhabitants. Over 30% of the national population (approximately 11 million) lives in Athens and 10% in Thessaloniki.

The rate of urban growth has slowed significantly in recent years, compared to its impressive boost in the 1970s. Due to the large number of villages and small towns in Greece, the control of urban expansion is of great priority. The systematic implementation of the regional and urban planning policies started in the early '60s, in order to

counteract city sprawling, unplanned urbanization, illegal construction and landscape degradation. In the period 1950-1980, almost the totality of the areas that were being incorporated in city plans were areas of illegal and unplanned development and urban sprawl. The relevant percentage in the period 1980-1993 was 81.6%. Since the beginning of the '90s, however, some new trends became apparent. Major elements of these changes include the significant increase in public environmental investment and the creation of a whole new legal framework for planning (see also Chapter "Decision Making"). Among the recent positive developments is the inclusion of the improvement of the urban environment among the priorities of YPEHODE, in line with the EU priorities in this domain.

Energy:

Greece's geography and climate provide a large potential for the exploitation of all types of RES. According to the two Greek National Action Plans for the Abatement of Carbon Dioxide (CO₂) and other Greenhouse Gas Emissions (in 1995 and 2002), the largest future contributions are likely to come from wind energy, solar, biomass for district heating and electricity generation and hydro installations.

The electricity generation system in Greece consists of the interconnected mainland system, the systems of the islands of Crete and Rhodes and the independent power stations of smaller islands. PPC S.A., with its integrated existing and planned energy infrastructure (mines, generation, transmission and distribution) can cover effectively the electricity needs of Greek citizens by responding continuously to the increase of demand.

Greece's abundant sunshine has the potential to provide a greater contribution to energy supply, mainly through water heating. There are positive developments in solar energy for water heating, where Greece rates first in the EU, with a total installation area of over 2.7 million m². Greece also has a strong industry of solar systems. Furthermore, there is a rapid increase in the domain of wind energy as there are many windy sites suitable for wind generators, especially on the islands in the Aegean Sea. The total capacity of the existent wind-energy parks is 350 MW and is expected to rise up to 1700 MW. P/V systems can also be implemented to provide cost-effective electricity in distant areas, while grid-connected central stations could support the weak grids of the islands in the Aegean Sea. The market potential for PVs in Greece is mainly related to stand-alone systems in remote areas for electrification and agricultural use. New geothermal energy investments, of 350 MW, in Aegean and Trace, are underway. Interest for biomass power is also progressively raising. Over 35 projects of overall 350 MW are related to the exploitation of forest and agricultural biomass. As for geothermal energy, PPC S.A plans to exploit the most important geothermal energy sources in the country.

Air quality and Transportation:

The major modes of passenger transport in Greece are road (64%) and air (19%). Public transportation accounts for 13% of passenger-kilometers traveled. The use of private cars for passenger transport has tripled since the early 1990s. The road vehicle fleet consists of some 3.5 million vehicles with four or more wheels and 550000 motorcycles. Public transport in Athens consists of buses and three subway (metro) lines. Some 1600 diesel buses serve about 420 million passengers per year. An additional 400 electric trolley-buses serve about 62 million passengers per year. The recently expanded subway system totals 44 km. The expansion project has been coordinated with the bus and trolley-bus systems and with car parking areas.

Greek motor vehicle fuels comply with EU standards, as leaded fuel is being progressively phased out and special restrictions have been set regarding the content of aromatic compounds in gasoline. However, further reduction of the sulphur content in diesel fuel is required. In 1997, road transport was estimated to contribute 19% of total CO₂ emissions from fuel combustion in Greece. Also road transport accounts for the majority of NO_x, CO and NMVOC emissions, signalling the need to control two-stroke engines and to eliminate old vehicles without adequate control systems.

Capacity Building, Education, Training and Awareness raising

The Government supports the involvement of local groups and organizations in the sector of social and cultural services and welfare at the local community level. This includes encouragement of local authorities' initiatives for the improvement of social infrastructure and transport systems, support of relevant local initiatives by non-governmental bodies for the implementation of the National Action Plan, training of local government officials and awareness raising of the interest of the local population for the promotion of the National Action Plan.

YPEHODE supports awareness raising efforts, giving priority to information, education and training programmes, which are primarily directed towards younger generation and aimed at enriching their education on environmental issues. It also conducts formal public education campaigns to raise public awareness of development-related environmental

issues. To present the programme “Energy 2001” and educate both the general public and experts on energy issues, YPEHODE has organised a series of seminars and conferences and has sponsored a number of important and successful pilot projects, in cooperation with various institutions.

For the preparation of the National Report submitted to “Habitat II”, capacity-building and technology issues were supported by an open dialogue between agencies and the public as well as information dissemination through professional journals, the press and informative leaflets. A nationwide competition “for models of policy and programme implementation for improving the quality of the local urban environment and housing through specific projects” was used as a method of publicizing the activity of the National Committee and prepare the country for its participation in the Habitat II Conference. Additionally, the pilot programme “Local Habitat Agendas”, launched by YPEHODE in 2002, for the local implementation of Habitat II Agenda, is based on cooperation with and participation of the local authorities.

Under the auspices of Ministry of Development, CRES plays an important role in implementing Government programmes in energy efficiency and renewable energy sources, as well as in collecting and processing data relating to energy efficiency. CRES has laboratories for certification of RES technologies, carries out studies for the determination of the physical, technical and economical potential of RES and participates effectively in the evaluation and monitoring of investments implemented in the energy sector.

PPC S.A also places great emphasis on communication and information dissemination; it launches media campaigns (mainly TV spots) for promotion of energy saving, energy conservation and rational use of energy, establishment of specialized customer service offices, introduction of a multi-zonal tariffs’ structure in the industry sector as well as distribution of advertising leaflets.

■ Information

Through the General Framework for Spatial Planning and Sustainable Development, an information network system for spatial planning has been established as an integrator of geographical information, digital analysis of telescopic images and data base on planning issues. This information system collects and analyzes information from various sources, in order to measure spatial transformations and changes in the framework of the national goals for national and regional development. Suitable regional indicators are being established, aiming at evaluating the implementation results of regional planning and development towards sustainability and the reduction of the environmental impact from the trends of urbanization within coastal zones and urban system. Moreover, the establishment of a “Spatial Planning Observatory” is in process, so as to serve as a mechanism for information and monitoring of the spatial evolution and changes in Greece.

CRES collects and analyses primary energy data as well as socio-economic and technical data pertaining to energy use. It has a complementary role as the national co-coordinating body for the EU Project on Energy Efficiency Indicators under the SAVE programme. This project aims at harmonizing data collection, development and implementation of a common method for analyzing energy efficiency at the international level, and comparison of results among EU Member countries. In the context of the programmes PHARE, the Division for Renewable Energy Sources and Rational Use of Energy of CRES has also implemented various seminars at EU level, campaigns, market studies, compilation of databases with dispatching information material etc.

Dissemination of information concerning actions and policies of YPEHODE is available through the Ministry’s website: www.minenv.gr. Information on recent developments in major environmental programmes, such as OEP and “URBAN Hellas”, is available at the respective websites www.epper.gr and www.urban.gr. Information on energy and energy-related issues is collected by the competent Ministries (YPEHODE and Ministry of Development, with website: www.ypan.gr) and by CRES and is disseminated at both domestic and international levels mainly through government publications.

Furthermore, PPC S.A complies with JMDs 75308/5512/90 and 37111/2021/03, concerning public information in the context of conduction of Environmental Impact Assessment studies of all company’s projects and activities.

■ Research and Technologies

The Information Network System for spatial planning and the Spatial Planning Observatory are expected to provide a solid basis for further research on spatial and regional planning in Greece. Several research projects concerning energy efficiency (e.g. Environmental Energy map of Attica – Household sector, Integration of solar systems into traditional buildings and settlements in North, Central and South Aegean) have been assigned from YPEHODE to academic institutions.

Clean and environmentally sound technologies are promoted and applied in production through incentives foreseen under Development Law 2601/1998 and the OPE. Moreover, other legislation related to the promotion of sustainable production patterns addresses several issues such as: the use of natural gas for electricity generation, both in converted

oil-fired stations and new combined-cycle gas turbine power plants (PPC S.A. has constructed and operates 5 large natural gas fired units of a total capacity of 1595 MW in the period 1997-2002 and is planning the construction of another combined cycle gas turbine unit at Lavrion with a total capacity of 380MW, which is expected to be in operation in 2006); the use of natural gas for industrial heating processes; district heating from PPC S.A power plants or from independent thermal stations to satisfy heating and cooling needs of local municipalities; energy saving measures in the industrial and building sectors; wind power plants; small hydropower plants; utilization of solar technology (mainly for water heating and cooling); bio-mass use for power production; use of gas-domestic equipment etc.

OPCOM 2000-2006, launched by the Ministry of Development, includes Priority Axis 7 on "Technological Innovation and Research", which consists of five Measures aimed at supporting, inter alia, public awareness of new technologies, formulation and management of R&T information and co-operatives for research and technological development in sectors of national priority.

The Operational Programme of Research and Technology (OPRT), 2000-2006, of the Ministry of Development, includes measures to promote environmentally friendly technologies and forms of energy, improved materials and new production and manufacturing methods. The Programme also promotes cooperation between research and production institutes as well as transfer and introduction of environmentally friendly technologies.

CRES is a member of the Organization for Promotion of Energy Technologies (OPET). The OPET network created under the framework of the THERMIE programme is aiming at the promotion of innovative energy efficient technologies for environmental protection. In addition, the General Secretariat of Research and Technology (GSRT) of the Ministry of Development has completed a study on "Environmentally Sound Technologies in Greece: Progress of Research and Technology, Economic and Social Impacts".

PPC S.A is actively involved in the research and installation of P/V units. PPC's S.A. policy focuses on the application of the best available techniques to both new and existing generation units, with the least possible emissions. Additionally, the installation of advanced pulverized fuel (PF) technology has been applied in the new Florina power station (Northern-Greece). PPC S.A. is also participating in Research and Development EU Projects (IPs and NOE) that aim at developing and validating all innovative technologies for capturing, transporting and storing of CO₂ as well as for developing other advanced generation technologies.

■ Financing

The fiscal priorities for the housing policy in Greece aim at reforming of the system of subsidies, supporting of innovative efforts to reduce the cost of new housing, reforming the system of financing (public investment, subsidies, local taxes) for infrastructure works and securing public spaces in newly built-up areas as well as providing financial incentives to promote new technologies and systems of application of soft forms of energy.

Other special financing programmes include: loans to civil servants, local government, and public organizations; special programmes of WHO for the provision of subsidized housing for low and middle-income workers; special housing programmes for immigrants of Greek origin from the former Soviet Union (see Programmes and Projects, A. Providing Adequate Shelter for all) and special assistance for housing of families with more than three children.

Under OEP 2000-2006, an indicative budget of around 118 million € has been allocated to Priority Axis 7, (Measures 7.1 and 7.2) on physical and urban planning and related interventions. At Regional level, financial support is provided by the Regional Operational Programmes, for each Administrative Region of Greece, under the framework of the CSF. Additional activities concerning development of infrastructure in Greece are also partially financed by the EU Cohesion Fund.

Energy:

Promotion of energy related activities is supported through incentives such as the grant and interest subsidy and/or leasing subsidy as well as the tax allowance and interest subsidy.

Economic instruments in force in Greece are encompassed within the OPCOM, OPRT II, the Development Law 2601/98, the mechanism of Third Party Financing (TPF) etc. Greece applies a policy of differentiated excise duties on mineral oils, with exemptions on RES and the biofuels. Around 92 million € per year, equal to 5-7 per cent of the total revenue collected from motor fuel taxation (0,015 € per liter) is channeled to YPEHODE for environmental purposes. Moreover, fiscal incentives are applied for the construction of gas co-generation plants, the modifications for the introduction of gas in operating units of the secondary sector, subsidized by national and EU funds. A percentage of 75% of the purchase and installation cost of the domestic natural gas equipment is also deductible from the taxable income of natural and legal persons whereas gas is exempted from any excise tax up to 2010 and bears a decreased V.A.T rate (8%).

Transportation:

A revised set of sales' taxes on vehicles which passed into law in 1999 sets increasing sales taxes in proportion to engine capacity as well as higher rates for vehicles lacking pollution control equipment. Rates for passenger cars range from 0 for hybrid and electric vehicles to 346 per cent of the wholesale price for large vehicles without catalytic converters. The ranges within classes of cars incorporating pollution control technology are much smaller. Motorcycles that represent a rapidly increasing portion of the Greek vehicle fleet, are also included under this measure. Tax incentives to replace old vehicles with new ones were introduced in November 1990 but suspended shortly thereafter for budgetary reasons. Consideration is being given to reintroducing this scheme. About 380000 old cars were removed during the two years of operation of this scheme, at an average cost per vehicle of 3000 €. Concerning motor fuels, natural gas for vehicles does not receive a preferential tax treatment but is taxed at the LPG rate, in accordance with EU Directives. The only motor vehicles supplied with natural gas today in Greece are 300 buses used in local public transports and in this case natural gas is exempted from the excise duty, as Greece has a derogation (procedure of article 8.4 of the 92/81/ EC Directive) for vehicles used in local public transports.

■ Cooperation

Regarding regional and international cooperation, Greece participates in the EU groups and programmes, in the OECD working groups (in particular for the territorial review of the effects of the Olympic Games in the development of Athens) as well as in committees and working groups of the UN, e.g. the Center for Human Settlements and the Committee for Housing, Building and Planning of the Economic Commission for Europe. In cooperation with the UN Committee of Human Settlements, a Colloquium on Urban Management was held in 1995. In the same year, a seminar was held on Sustainable Development of Human Settlements. The Greek National Committee, set up by YPEHODE, prepared the National Report submitted to the Habitat II Conference (June 1996).

Greece has also participated at: (a) the European Ministerial Conferences for Sustainable Housing (Copenhagen-1996, Amsterdam-1997, Genval-2002), (b) the European Architectural Competition Programme (EUROPAN) which had as a theme the current problems of urban areas and the promotion of sustainable solutions, (c) the International Council for Local Environmental Initiatives (ICLEI) and (d) the two European Conferences for Sustainable Cities and Towns. The Organization for Planning and Environmental Protection of Athens has been an associate member of "Metropolis", the World Association of the Major Metropolises, and is still a member of the European Metropolitan Regions Network (METREX's Interim Management Committee).

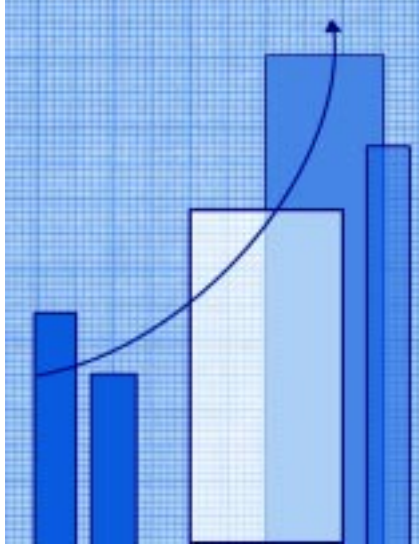
In relation to international cooperation, Greece has signed and ratified most major international conventions related to human settlements, including among others the Rio Convention (1992) on Biological Diversity (Law 2204/1994, OJG 59/A/1994) and the Paris Convention (1994) on Combating Desertification (Law 2468/1997, OJG 32/A/1997). Greece has also signed the European Landscape Convention (2000).

Greece has signed and ratified a Memorandum of Understanding (MoU)/collaboration Protocol with Turkey (Law 2902/2001, OJG 77/A/2001) that has already entered into force (30-6-01), covering issues of possible bilateral cooperation related to human settlements, such as desertification and antiseismic code studies. Greece has also signed and ratified an MoU with Cyprus (Law 2424/1996, OJG 147/A/1996) covering issues of possible bilateral cooperation related to human settlements such as coastal zone management. Furthermore Greece has signed (but not yet ratified) MoU's with Georgia, FYROM and Albania and an Agreement of Understanding with Bulgaria, covering issues such as sustainable human settlements and buildings, spatial planning, land use planning, coastal zone management and desertification.

In December of 1999, Greece became an official member of the OECD's Development Assistance Committee (DAC). In this context, and based on the requirements set out by Law 2731/5-7-99, the Bilateral Programme of Development Assistance and Cooperation in the field of Environment and Sustainable Development of YPEHODE was initiated. With regard to human settlements, the Bilateral Programme includes three thematic areas, amongst which is the spatial planning and ekistic development, divided into three sub-sectors: (a) Strategic spatial planning and priorities of spatial development, (b) Institutions and administration - management of spatial planning development and organization, and (c) Establishment of mechanisms and agencies collecting information and data. Through this Programme several projects were funded, with emphasis on integrated spatial planning policy and capacity building issues in partner countries. Specifically, six projects were funded in 1999, with a total budget of around 516507.7 € and six more in 2000, with a total budget of around 119736 €. These projects were implemented through Universities and Research Institutes in Greece. The recipient countries were countries from South East Europe, the Mediterranean and East Europe, Caucasus and Central Asia (EECCA). In the context of the National Bilateral Programme of DAC "Hellenic Aid" for the year 2002, the total budget allocated to the implementation of housing policy projects in partner countries was around 0.33 million USD. The implementation of these aid projects contribute to the MDGs/WSSD targets for sustainable development and poverty reduction.

Energy:

PPC S.A has a long tradition of co-operation with European electricity companies. The main area of co-operation with the Balkan countries has been the study and construction of interconnections among the electricity systems of various countries, followed by the development of commercial relations through the exchange and the buying/selling of electric power. Electricity interconnections exist in the interconnected system with Albania, Buglaria, FYROM and Italy (under commissioning). Moreover PPC S.A has ratified Agreements of Co-operation with electricity companies in other countries. PPC S.A.'s proactive efforts towards sustainable development and climate change are demonstrated through participation in the "Energy Wisdom Programme", a Programme of co-operation between the association of EU electricity companies (EURELECTRIC) and the European Commission (DGXVII/DGXVI). Greece cooperates with the other EU Member States in the dissemination and promotion of RES and energy efficiency projects. Furthermore, the Ministry of Development aims at incorporating and promoting EU Programmes such as Intelligent Energy – Europe (2003-2006), ALTENER, SAVE, JOULE-THERMIE, SYNERGY, TACIS, PHARE, R&D Programmes as well as new policies such as MEDA and the Energy Charter.



ANNEX

Questionnaire for National Reporting to the 12th Session of the Commission on Sustainable Development of the United Nations

■ PART I: Information on National Focal Points for Sustainable Development

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■ PART II: Guidelines for Reporting on National Sustainable Development Strategies

1. Does your country have a National Development Strategy on Sustainable Development?

Yes, the NSDS 2000-2010 was approved by the Ministerial Council in May 2002.

2. How is your NSDS being implemented? Give specific actions/activities undertaken for this purpose.

The NSDS is implemented through an 'Operational Programme for Sustainable Development' launched in October 2002 under the coordination of the Hellenic Ministry for the Environment, Physical Planning and Public Works. Many of the activities under this Operational Programme are part of the 3rd Community Support Framework, partly financed by the EU and the Hellenic Government. The Operational Programme for SD, which is an 'umbrella programme' also encompasses activities which are included under other sectoral Operational Programmes which are implemented by other Ministries.

The NSDS Operational Programme, aligned with the general priorities of the NSSD, has proposed measures to be taken for various sectors: energy, agriculture, industry, land use, regional and urban planning. It also addresses the main environmental issues for which measures should be promoted such as climate change, air quality, solid waste management, water management, desertification combating, biodiversity, sustainable management of forests.

The sectoral Operational Programmes that constitute the overall Operational Programme for Sustainable Development include:

- the Operational Programme for Environment (2000-2006),
- the OP of Competitiveness (2000-2006) that encompasses the Sub-OPs for Research and Development, for Manufacture, for Tourism and for Energy, that cover activities in the field of sustainable production and consumption, EMS, eco-tourism, promotion of RES etc ,
- the OP for Transport that includes actions for 'greening' the transport sector,
- the OP for Agriculture and Rural Development that includes actions for the promotion of organic farming and products as well as the sustainable development of rural areas,
- the OP for Education and Labor that includes actions for environmental education and awareness raising as well as activities for promoting healthy working environments, indoor air etc.

Additional to that there are the 13 Regional Operational Programmes that include actions for the sustainable development at regional and local levels based on the Local Agenda 21 principles.

3. Has your NSDS been evaluated and if so, when and how?

The NSDS has not yet undergone an evaluation process as such. The official evaluation process is scheduled to take place at 2010 with interim ad-hoc evaluations.

However, the compilation of the NSSD has been a collective effort that was conducted through the cooperation of all members of the Interministerial Committee for Sustainable Development (ICSD) (see below question no 6) and thus all competent authorities. Therefore the evaluation process has been taking place, indirectly, so far, has been parallel to the implementation process that is an on-going and long-term process. Additionally, the implementation of the NSSD has been evaluated through the evaluation of the implementation of the respective sectoral Operational Programmes it encompasses.

4. Do you have, and if so, what are the other relevant strategies in place supporting the NSDS?

Yes, a large number of Operational Programmes are in place with their respective Operational Strategies (e.g. OP for Environment, OP Energy, OP Rural Development etc) (see above question no 2).

Additionally to these, the following Strategies are also in place:

Water:

National Strategy for Water Resources Protection and Management (Law 3199, OJG 280/9.12.03).

Human Settlements:

- Law 2508/97 about sustainable housing development of cities and settlements

- Law 2742/99 about Master Planning and Sustainable Development.
- Action Plan (under preparation by the Ministry for the Environment, Planning and Public Works) based on the strategy of integrated development, which has the following main axes :
 - General National Framework on Spatial Planning and Sustainable Development.
 - Special Frameworks on Planning and Sustainable Development (for special geographical areas such as islands).
 - Regional Frameworks on Planning and Sustainable Development (for all the regions of the country).

Other Strategies include:

- National and Regional Planning for solid waste management (January 2004)
- 2nd National Programme for the Reduction of Greenhouse Gas Emissions and Climate Change Abatement Strategy, 2000-2010 (March 2002)
- 2nd National Action Plan to Combat Desertification (2002)

5. Have multi-stakeholder consultations training or workshops for NSDS development been undertaken?

There is a constant/on-going consultation process with other competent Ministries through the ICSD and ICGSD (see below question no 6). Moreover, several workshops have been organized with the participation of NGOs, Academia and Local Authorities for the presentation of the NSSD (July 2002) and the Johannesburg-WSSD outcomes and targets (October 2002), for the compilation of the National Strategy for Water Resources Protection and Management and its pilot projects (2002-2003), for information and awareness raising on sustainable consumption and production patterns and IPP (March 2003) etc.

6. Do you have a national coordination body for NSDS established?

The Interministerial Committee for Sustainable Development (ICSD), established in January 2002 and comprising all the Secretary-Generals from all co-competent Ministries, that gives political guidance and oversees the implementation of the NSSD. There is also the Interministerial Coordination Group for Sustainable Development (ICGSD) that comprises representatives from the respective Ministries and authorities. In this Group representatives from Academia, NGOs and Institutes participate on an ad-hoc basis.

■ PART III: Guidelines for Reporting on Indicators for Sustainable Development at the National Level

1. Do you have a national programme or initiative to develop and/or use indicators for sustainable development?

The Hellenic Ministry for the Environment, Physical Planning and Public Works is the competent authority in Greece for activities concerning environmental indicators.

A National Programme for developing and using Indicators for Sustainable Development has been launched. In this context, the Ministry for the Environment, Planning and Public Works assigned National Center for Environment and Sustainable Development to develop the national set of indicators on environment and sustainable development.

i. When it was established?

In January 2003

ii. What is the name of the programme or initiative?

It is a report on SD indicators, entitled "Environmental Signals- Sustainability Indicators Report, Greece, March 2003".

iii. What are the specific areas of sustainable development for which your country is developing or monitoring indicators?

The abovementioned report proposes a number of 70 indicators covering main environmental issues, such as, climate change, air pollution, water and marine environment, solid waste management, nature and biodiversity, as well as sectoral issues such as energy, transport, agriculture –stockbreeding -fisheries, industry and tourism.

iv. Have you developed a set of indicators of sustainable development in your country?

Yes

If yes, please describe the status:

The first full report has been issued in April 2003 (agreed set of indicators).

The report will soon be available in English in the beginning of 2004 (printed format).

The development of the set of indicators for SD is an on-going process and will be pursued to adapt indicators to better reflect developments and requirements, mainly on EU level.

2. Is there an established coordination mechanism in the country at the national level for indicators for sustainable development?

The Hellenic Ministry for the Environment, Physical Planning and Public Works / Bureau of National Programme of Environmental Informatics and EEA is the coordinator, at national level, for the collection, processing and reporting on sustainable development issues addressing at national, european and international levels as well as for communication with other competent services at country level (e.g. National Statistics Service of Greece), the EU and International Organisations.

3. Do you participate in any regional or international programmes on indicators of sustainable development?

Yes

Name of the programme:

- Indicators for Sustainable Development for the Mediterranean, UNEP/MAP/Blue Plan:

The Ministry for the Environment, Physical Planning and Public Works has collaborated with the Universities of Athens and Aegean for developing SD indicators in the framework of the Mediterranean Action Plan initiative (MAP).

In the framework of the programme, a number of 100 -out of 130 proposed- indicators were calculated, covering mainly the following sectors: population and society (demography, employment, education etc.), lands and areas (urban systems, rural areas, forests, sea etc.), economic activities (economy, agriculture, fisheries, industry, services, energy, transport, tourism etc.), environment (freshwater, soil, biodiversity, waste, air quality etc).

Other programmes and Initiatives that Greece participates to concerning indicators and mainly indicators for sustainable development include:

- participation at the work of the EU regarding structural indicators to monitor the Lisbon process including the environmental aspects of the EUSDS from the Gothenburg Summit, 2001,

- the programme of the European Environment Agency / EIONET for environmental indicators' data collection and measuring,
- the joint EUROSTAT / OECD programme for responding to questionnaires on environmental indicators
- the UN Habitat Agenda programme

4. What are the three most difficult problem areas in the establishment of indicators of sustainable development in your country? Please indicate in order of priority

- Communication with other agencies responsible for indicators Communication with other agencies responsible for indicators
- Human resources
- Other/ Fragmentation of competencies: a large number of competent agencies are responsible for specific issues and for data collection as well as the lack of continuity in raw data provision.

5. Please provide the name of a contact person responsible for indicators of sustainable development

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■ PART IV:

Guidelines for a Case Study on Commitments - Related Best Practice or Lessons Learned in Either Water, Sanitation and Human Settlements (or Combination)

1. Which specific WSSD or Agenda 21 commitment does your case study address?

i. Agenda 21

The **Olympic Movement** considers the environment as the third pillar of Olympism, after sport and culture. This concept is in full accord with the philosophy of Olympism, which places sport at the service of the harmonious development of man.

The **Olympic Charter** was amended in 1996 to include the following paragraph on the role of the International Olympic Committee (IOC) in the promotion of sustainable development according to the provisions of Agenda 21: '...The IOC sees that the Olympic Games are held in conditions which demonstrate a responsible concern for environmental issues and encourages the Olympic Movement to demonstrate a responsible concern for environmental issues, takes measures to reflect such concern in its activities and educates all those connected with the Olympic Movement as to the importance of sustainable development.'

The Olympic Movement's Agenda 21 is an instrument setting out the general actions needed in the fields in which the Olympic Movement can bring an effective contribution to sustainable development. All the members of the Olympic Movement should be urged to integrate sustainable development into their policies and activities based on above Agenda 21; they should also encourage all individuals that are linked to them to behave in such a way as to ensure that their sporting activities and their lifestyles play a part in sustainable development.

ii. WSSD

UNEP's Governing Council in its Decisions according to the Plan of Implementation and the Political Declaration set out in the Johannesburg World Summit on Sustainable Development, promotes a long-term strategy for sport and the environment and 'encourages Governments to provide extra budgetary support to the United Nations Environment Program's work on sports and the environment...for supporting organizers of major sport events such as the Olympic Games to fully integrate environmental issues in their preparations and staging of the events'.

2. Please briefly describe the essential characteristics of the case study you wish to share including the nature of activities undertaken.

The Athens Organising Committee for the **Olympic Games ATHENS 2004** (ATHOC) and the Government bodies that are taking part in the Olympic preparations are to ensure that the organizing and hosting of the Games will be undertaken in the most environment-friendly and that the Olympic and Paralympic Games of 2004 can leave a significant environmental legacy for future generations; increased environmental awareness and concern regarding environmental issues as well as a cleaner and healthier natural environment.

To this end, the following projects have been implemented:

Unification of archaeological sites

An extensive program is being implemented for the creation of an archaeological park in the centre of Athens. Visitors to the city will be able to experience the Acropolis, the Agora, the Roman Forum and other unique monuments through a network of pedestrian zones, squares and parks that recapture the feel of the ancient city.

Faliron Coastal Zone Project

An ambitious land reclamation and rehabilitation program is being implemented, which will create 100 acres of land for urban recreational uses, including an ecological park of 33 acres and reconnect the urban space of Athens to the sea.

Schinias Rowing and Canoeing Centre

The area has been established as a National Park thus ensuring the management of an environmentally sensitive area and promoting the practice of low impact sport activities such as rowing in combination with recreation and environmental awareness. The Schinias Rowing and Canoeing Centre is not only a sporting venue but also a tool for the regeneration of the adjacent degraded wetland.

Transport Infrastructure

The public transport infrastructure is being enhanced and upgraded.

- over 210 km of ring roads and highways are being constructed or improved
- a new light rail, 25 km long, will connect the city centre to the coastal front
- a new suburban rail, now in its final stage of construction will span over 150 km
- two new metro lines are being extended, doubling the present capacity and serving up to a million passengers a day
- the original metro line is being renovated and its capacity increased

These works have an indirect impact on the improvement of the atmospheric quality of the greater Athens area, as

they contribute to the promotion of more efficient, cleaner public transport thus eliminating the use of private cars.

Olympic Green areas

The goal is to ensure adequate implementation of good landscape architecture practices in Olympic competition and non-competition sites, the greater Athens area, and in other locations in Greece by respecting the original landscape and using natural resources rationally.

The Olympic Village meets in great extend the principles of sustainable development and bioclimatic architecture, which stresses the factors of correct orientation, good natural ventilation, interpenetration with park and garden areas, and circulation of natural air.

All green spaces will be designed and constructed so as to contain plants compatible with the Mediterranean climate and have minimum irrigation requirements. The economy of water will therefore be promoted. Recycling methods for the use of water and advanced river flow techniques will reinforce the rational use of water. With the contribution of donators and other stakeholders, for example Greeks from abroad, thematic gardens will be developed.

Public Green Procurement

The mission is the improvement of environmental performance of sponsors and licensees before, during, and after the Games. This generally involves improving the corporate image of sponsors and licensees, by considerably changing the usual Greek and international corporate approach regarding environmental issues, and educating the general public.

To achieve this, ATHOC assists in developing products or installations in compliance with acknowledged environmental certification systems (ISO, EMAS, ECO-LABEL); it funds and financially supports events and environmental activities as signature events; it submits tenders for sponsoring and licensing to address environmental considerations in relation to product manufacture, use, and disposal.

Environmental awareness raising and education

The overall purpose is to ensure that all the people involved in the Olympic Games are willing and able to include environmental considerations in their day-to-day activities. This principle applies to all participants in the planning, preparation, and holding of the Olympic Games (spectators, Olympic Family, athletes etc).

Two raising awareness campaigns concerning water conservation and antilittering are planned. Venue-specific and sport-specific environmental information material is being developed for dissemination at Games-time.

3. Please explain the nature and characteristics of particular challenges and constraints faced, if any.

Athens is a city with intense signs of environmental degradation, suffocation of urban planning and deficiencies in fundamental infrastructures. The centralization of administration in Athens, the bureaucracy and the mentality and behavioral patterns of citizens are also significant constraints that were taken into consideration in the implementation of the Environment Programme.

Furthermore, the inefficiency of the market to adjust to new practices, new products and technologies as well as the very strict national and European legislation for the design and development of works, change of land use, expropriations, permissions etc. were some of the confronting challenges.

4. What are the lessons learned in the process, positive and negative?

The Olympic Games comprise a tool and an opportunity for the environmental upgrade of the organizing city; a tool, because they can facilitate the implementation of rehabilitation interventions in crucial areas of the city, and an opportunity, because they can provide the background for expression, creativity and business growth for a considerable part of the society. Today, in the context of the Olympic Games preparations, major changes are being made, which will dramatically influence the quality of the environment (natural and built-up environment) in the Attica basin as well as the living standards of millions of people.

According to past Olympic Games experience of other cities, such as Sidney, this positive influence does not terminate after the completion of the Games. The most valuable lesson learned is that many of the initiatives, ideas and disputes are sometimes concluded even after the Games. This will probably be the case for the 2004 Olympic Games as well. Some wishful positive measures that cannot be implemented in time, could be intensified on the occasion of the Olympic Games and eventually be materialized directly afterwards, since a dynamic of such sort will have been formed.

5. What has been the impact of such a case in the area(s) concerned?

With regard to the conservation of water resources, the scheduled water conservation awareness raising campaign is an essential tool. The improvement in the areas of transportation and urban environment including landscaping are preconditions for sustainable human settlements.

HELLENIC REPUBLIC

MINISTRY FOR THE ENVIRONMENT,
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