

MINISTRY OF AGRICULTURE,
NATURAL RESOURCES AND ENVIRONMENT

WATER DEVELOPMENT DEPARTMENT

ANNUAL REPORT 2011

V. WATER DEVELOPMENT DEPARTMENT

1. INTRODUCTION

1.1. The Water Development Department (WDD) is responsible for implementing the water policy of the Ministry of Agriculture, Natural Resources and Environment with the aim of providing effective protection, rational development and sustainable management of the water resources in Cyprus.

The enforcement of the Integrated Water Management Law (79(I)/2010) on 15 November 2010, opened new horizons but also presented new challenges for the Department. According to the Law, the integrated management of water is assigned to the WDD, in the framework of the Government general Water Policy, as determined by the Council of Ministers.

The passing of the above Law by the House of Representatives constitutes a historical development, as it brings to an end the fragmentation of responsibilities and powers relating to water among the various Departments, which resulted in waste, isolated handling of problems and ultimately in the inability to exercise an integrated, rational and effective management of all water resources. For example, under the provisions of the Law, all powers regarding water management that were exercised by the District Officers and the Department of Town Planning and Housing, such as the issuing of permits for groundwater abstraction, are transferred to WDD.

In this context, the competences of the Department cover a wide and varied range, including the following:

- a) Collection, processing, classification and recording of hydrological, hydro-geological, geotechnical and other data, which are necessary for the study, maintenance and safety of development projects.
- b) Feasibility studies, design, implementation, operation and maintenance of infrastructure projects, such as dams, ponds, irrigation, water supply and sewerage networks, water refineries, plants for the treatment and reuse of wastewater, as well as desalination plants.
- c) Protection of water resources from environmental pollution and contamination.
- d) Cultivation of water saving awareness among consumers.

1.2 The main pylons of the Water Policy in 2011 was to secure sufficient quantities of water for the benefit of both the island's inhabitants and the environment, through a viable management of water resources.

In more detail the Department focused its efforts on the following priorities:

- a) Addressing the problems of water shortage due to droughts and the increased of water supply demand, mainly in the big urban centres.
- b) Reinforcement of the water balance in Cyprus through the use of other non-conventional water sources, such as recycled water, water produced by the desalination method or brackish groundwater, as well as rain water. The aim is to completely eliminate the dependence of water supply on weather conditions in all urban centres.
- c) Intensification of water awareness efforts, with the aim of conserving water for all uses.
- d) Harmonisation with the European acquis for the protection and rational management of water resources.

1.3 The Water situation in 2011 was worse than previous year, this is due to the reduced rainfall, followed by reduced amounts of water inflow to the dams.

The maximum water storage in the dams during May 2011 was 182.2 mcm while during 2010 was 195.5 mcm. The rainfall reached 464 mm or 92% of the normal. The inflow to the dams from Jan to Dec. 2011 was only 65.5 mcm.

The water storage in the dams on 1/1/2011 was 139.3 mcm or 48% of the total storage capacity while on 1/1/2012 was 124.9 mcm or 43% of the total storage capacity. Details are shown in Table 9 of the Annex.

During 2011, restrictions were made for irrigation purposes in the Southern Conveyor Project area as follows:

For the permanent plantations the quantities given, represented an areas of 75% of their needs, and for green houses the 85% of their needs. For seasonal plantations the quantities given represented areas 40% of their needs and for potatoes 42%.

The activities of the Department per thematic unity during 2011 were as follows:

2. MONITORING OF WATER RESOURCES/DATA PROCESSING

2.1 The collection and processing of hydrological and hydrogeological data for groundwater and surface water resources was continued, as was the study of hydrological topics for the planning and implementation of water projects, the control of groundwater abstraction, the monitoring of water pollution and the provision of advice on water use.

2.2 With respect to the monitoring of surface water quantity, the activities in the field of stream flow monitoring included measurements at 52 hydrometric stations equipped with automatic water level recorders. Regarding the quantitative groundwater monitoring, groundwater level measurements continued on more than 1100 observation wells. The measuring frequency ranges from twice a year to twice a month.

With respect to spring flow monitoring, 5 springs were added to the relevant monitoring network during 2011, which now includes 50 springs. The spring discharges are measured with a frequency of once per month. For an additional numbering 70 springs, sporadic measurements were taken.

2.3 Regarding water quality monitoring, the implementation of the monitoring program (rivers, lakes / reservoirs, underground water) in accordance with of Art. 8 of the Water Framework Directive 2000/60/EC was continued. In the framework of this program, 45 sites on rivers, 13 water reservoirs and 88 wells were systematically monitored.

2.4 The National Monitoring Program of the small reservoirs continued in 2011 as well, in collaboration with the District Offices of the Department. In 2011 one dam was added to the relevant monitoring network which now includes 22 water reservoirs. All of these reservoirs were sampled for physicochemical parameters with a frequency of three times a year.

In the ten largest water reservoirs of the island, regular measurements (twice/week) of surface water temperature were continued, in collaboration with the District Offices of the Department, with the aim of early detection of stratification development in the water reservoirs.

2.5 Within the framework of both the national programmes and the programmes under Directive 2000/60EC for qualitative and quantitative monitoring of groundwater, the evaluation, revision and proportional modification (including the location, organization and coordination of drilling 7 new boreholes) of monitoring networks continued where considered necessary.

2.6 Regarding hazardous substances (e.g. pesticides, insecticides, heavy metals, etc.), the concentration of an average of 60 substances from 29 rivers sites and from 12 water reservoirs was examined and evaluated. All data were submitted to the EU in the form of a report through the WISE system.

2.7 More than 3100 applications for permits to sink wells were examined nationwide, of which about 1900 were for permits legalizing already existing wells that had been sunk without permit. As regards the Nicosia District, 1139 new applications were received, of which over 300 were for permits legalizing already existing wells. Furthermore, a large number of files relating to the licensing of boreholes were received from the District Officers. Many of these files were pending. All applications are being entered into a dedicated database. In addition water meters were inspected at a number of wells, while 78 applications for subsidies for the drilling of boreholes for domestic use were examined nationwide.

2.8 Within the framework of consultations with the Department of Environment, which is responsible for waste discharge permits for the implementation of the Soil and Water Pollution Control Law, applications concerning waste management were examined.

2.9 Monitoring of the water quality of wells used for public water supply of communities was continued.

2.10 In the context of the participation of the Department in the Intercalibration Exercise of the EU, the biological classification of water bodies of rivers and

reservoirs of Cyprus was continued. In this framework, the Department coordinates since 2009 a contract for expert services on the biological quality element "macrophytes in rivers," and since 2010 a second contract with experts on the biological quality element "macroinvertebrates in rivers." In 2011, a third contract was signed with respect the biological quality element "fish in rivers." For the participation of Cyprus in the Intercalibration Exercise, large amounts of data, information and clarification was provided to the EU.

2.11 All the results of both quantitative and qualitative monitoring of rivers, reservoirs, groundwater and springs are imported into the database CYMOS. Monitoring results are also submitted to the Eionet-WISE network of the European Environment Agency.

2.12 The pilot project for the recording of licensed and non licensed boreholes in the Central and Western Mesaoria area was completed, with the final aim of its nationwide extension.

2.13 During 2011, 91 applications to pursue the profession of well drilling were examined nationwide.

2.14 The representation of the Department in the Commission for Environmental Impact Assessments was continued for various projects, as well the representation of the Department in the Committee for Quarry Licensing.

2.15 The study on the isotopic composition in rain and groundwater of Cyprus in relation to climate change, which had been awarded to the Greek National Center of Scientific Research "Demokritos" in the context of a contract, was completed. The study concerns the area of the Troodos aquifer and the results were presented in December 2011 in Cyprus.

2.16 The delineation of protection zones for water supply wells was also continued. Specifically, out of the approximately 450 existing water supply wells, so far around 140 protection zones have been established by Decree of the Minister while 201 protection zones were delineated within the framework of adjustment to town planning zones.

2.17 Work on the delineation of protection zones for water supply reservoirs continued, in accordance with the Water Protection and Management Law N13(I)2004. The protection zones of the Kourris and Arminou dams have been completed. A decree on the protection zones was drafted and sent to different interested bodies for comments (Article 23 of Law 13(I)/2004), and 67(i)/2009).

2.18 Thematic maps concerning the activities of the Department, those of other Departments, Organisations and Consultant Engineers were prepared, e.g. maps for the positioning of water projects, networks and monitoring stations for ground and surface water bodies etc.

2.19 Isopiezometric digital maps (groundwater levels) were prepared for the coastal aquifers of Paramali and Avdimou for the month of April, of Kiti-Pervolia for the months of January, March, July and September, of Kokkinokhoria for the months of March, June and September, and of Akrotiri

for the periods February-March and June-July. These maps can be viewed on the Department's website.

2.20 20 hydrological/hydraulic and flood studies sent to WDD for evaluation and comments by District Offices, local authorities, other government departments etc. were reviewed and evaluation reports on them were prepared.

3. IMPLEMENTING THE EUROPEAN ACQUIS

3.1 Throughout 2011, important work has been carried out on the harmonization and monitoring of various obligations and requirements of the European Union

Directive 2000/60/EC

3.2 In the context of implementing the Water Framework Directive 2000/60/EC (WFD) in Cyprus (articles 11, 13 and 15), the River Basin Management Plan was carried out, which was approved by the Council of Ministers on 9th June 2011 and subsequently submitted to the European Union. The evaluation of the Plan by the European Union is expected to take place early in 2012, along with the Plans of other four European countries.

Essentially, the River Basin Management Plan is the key planning tool for safeguarding water resources sustainability. It consists of a main document and nine Annexes which include:

Annex I: Detailed River Basin Management Plan

Annex II: Detailed Program of Measures

Annex III: Measures derived from the implementation of other EU Directives

Annex IV: Actions to deliver objectives per each water body

Annex V: Cost effectiveness analysis

Annex VI: Summary table of measures

Annex VII: Water resources strategy

Annex VIII: Drought management plan

Annex IX: Final report on consultation results

In the aforementioned Plan consists of 153 measures, 97 of which are basic and 56 are supplementary measures, to be implemented by 2015.

3.3 For the time being, every effort is made by the Water Development Department to implement the Programme of Measures effectively and in time.

3.4 During 2011, the legal framework for the implementation of Article 9 of the Water Framework Directive 2000/60/EK which is related to the water pricing policies that must be applied in accordance with the Directive, was completed.

Directive 91/271/EEC

3.5 During 2011 the implementation of the National Implementation Programme for the Directive 91/271/EEC was continued for Urban Wastewater Treatment in settlements with equivalent population over 2,000. Analytical:

3.6 The required reports were prepared and submitted to the European Investment Bank (EIB) and as a result of the submission the first disbursement was received as part of the Financing Agreement of the rural sewerage works.

3.7 The drawing up of a feasibility study and a techno - economical study for the Pissouri community was continued.

3.8 Continuation of the implementation programme for sewerage projects in suburban agglomerations with population equivalent greater than 2000 by the Urban Sewerage Boards on behalf of Water Development Department. Follow up of the Contracts and payments for the sewerage works executed by the Urban Sewerage Boards under the approved governmental budget.

3.9 Also continued to provide technical advice in relation to sewerage and wastewater treatment problems in rural communities with a population equivalent of less than 2000.

Directive 2007/60/EC

3.10 Work on the implementation of the European Directive on Floods, 2007/60/EC, and the corresponding Cyprus Law, 70(I)/2010 continued. The preliminary floods risk assessment has been completed and the study has identified 19 areas for which there are potential significant floods risks.

Community Initiatives

3.11 Within the framework of the co-financing of water projects using European Union funds, the co-financing procedures were continued for the Project: "Studies for the implementation of Articles 9, 11, 13, 14 and 15 of the European Water Framework Directive 2000/60/EC", under the Priority Axis "Basic Infrastructure in Environment and Energy" of the Operational Programme "Sustainable Development and Competitiveness 2007-2013".

3.12 Likewise, in the context of Co-funding Sewerage Projects through European Community Resources, it was submitted to the EU the Application of Major Project for co-funding by the Cohesion Fund for the sewerage projects of Kokkinochoria Complex

3.13 The implementation and management was continued (including time and financial planning, preparation of budgets and absorption forecasts, progress monitoring and preparation of reports, observing procedures and regulations, personnel training) of four (4) co-funded sewerage projects, namely the Astromeritis-Peristerona-Akaki Cluster, Athienou Municipality, Solea Complex and Kokkinochoria Complex.

3.14 The preparations towards the Cyprus Presidency of the Council of the European Union, during the second half of 2012, continued.

4. ANNOUNCEMENT OF COMPETITIONS

4.1 Tender Documents were prepared and Competitions were announced for the Supply of Materials and Fittings used in various projects of the Department, such as, ductile iron pipes and fittings, stainless steel pipes and fittings, gate valves, butterfly valves and air valves, sodium chloride for the Department's Water Treatment Plants, and Lease of Machinery for the execution of projects by the District Offices of the Department.

4.2 Tender Documents were prepared and Competitions were announced for the supply and installation of two mobile water treatment plants for Tamasos Dam and two for Klirou-Akaki-Malounta Dam.

4.3 Tender Documents were prepared and Competitions were announced for Engineering and Technical Engineering Services for participation in the supervision group for the construction of the project "Sewerage System of Kokkinochoria Agglomeration" and "Sewerage System of Solea Agglomeration - Phase A", etc. and Engineering Services for sampling and carrying out chemical and microbiological analyses

4.4 Prepared documents and invitation of tenders for Construction of recycled water storage tank in Vathia Gonia, as well as upgrading and / or Operation and Maintenance of Wastewater Treatment Plants in Communities Kakopetria Platres, Agros, Kyperounta, Palaichori, Alassa, Skarinou and Military Camp of Troodos.

4.5 Tender Documents were prepared and Competitions were announced for Renovation and Operation of the Permanent Larnaca Desalination Plant.

5. STUDIES AND EXECUTION OF WATER PROJECTS

Projects completed in 2011

5.1 The Contracts for the Provision of Consulting Services for the design of Kammitsis and Archangelos dams in Aradhippou and Idalion dam on Yialia River have been completed.

5.2 The Contract for the Provision of Consulting Services for the design of Vathia Gonia reservoir, for the storage of recycled water has been completed.

5.3 The study for widening of Achna Dam crest road has been completed.

5.4 A study for the preliminary evaluation of environmental impact for Tembria irrigation network has been completed.

5.5 The final design for the Vasilikos Desalination Pipeline – Branch to Limassol and connection to Southern Conveyor Project has been completed, material quantities have been estimated, bill of quantities and technical specifications have been prepared for the procurement of material.

5.6 A Memorandum of Understanding between the Water Development Department and the Intelligence Systems and Networks Research Centre “Kios” of the University of Cyprus was signed, with the aim of the exchanging know-how and scientific cooperation.

5.7 There was completion of the Agreement for the supply of Consultancy Services for the exploration of the possibility of hydroelectric energy production from existing dams.

5.8 There was design of the Infrastructure Works and of the Pumping Stations which will support the installation of Fast Water Treatment Plants at the communities of the Tamassos and Klirou area.

5.9 A study and design was made for the creation of two pumping stations at the Ypsonas tank (desalination) for the purposes of transporting Water to the Southern Conveyor and to communities of the area.

5.10 There was execution of works for the installation of electromechanical equipment to over 28 government and community projects of water supply and irrigation. Also, there was execution of works for the installation of systems of liquid chlorination at eight water supply projects of Municipalities, Community Councils and units of the National Guard five of which were powered by photovoltaic units.

5.11 There was completion of the first phase of the renovation of the existing Pumping Station at Vathia Gonia for the covering of the irrigation needs of the Geri, Potamia and Idalion areas.

5.12 There were studies and installations of systems for the correction of power factor at various pumping stations for the purpose of saving energy and there was installation of new electric Panels at the Yermasoyia, Athienou and Vathia Gonia Pumping Stations, and installations of systems of wireless communication

5.13 There were installations of ultra sound systems with supply of energy from photovoltaic frames at the recycled water tank of the Larnaca Sewage Council with the purpose of fighting Algae.

5.14 In relation to facing the energy crisis after the Mari accident there was concession and /or installation of many generator sets to many government and communal projects and to Water Supply Councils and generators 500kVA which were conceded by EAC.

5.15 The "Strategic Environmental Assessment of Environmental Impact from Desalinations Plans" was completed in September 2011 with a positive opinion of the Environmental Authority.

5.16 The "Preliminary Study of Environmental Impact Assessment" for the distribution of desalinated water from the desalination plant in Vasilikos was submitted in October 2011 to the Environmental Authority. The opinion is expected.

5.17 The feasibility study of the project for the "Use of recycled water from Limassol Sewage» was completed in August 2011.

5.18 The feasibility Study for the Supply of Eastern communities of Limassol district and Western ones of Larnaca district, from Vasilikos desalination plant (EAC) was completed.

5.19 The study "Investigation of Use of Rainwater" was completed and meetings were held with stakeholders and the public authorities for the sustainable management of rainwater.

5.20 During 2011 the construction of the sewerage collection network at the complex of communities of Astromeritis, Peristerona, Akaki and the Municipality of Athienou and community of Xylophagou was continued and completed.

5.21 The Preliminary Environmental Impact Assessment was submitted to Environmental Authority, for the use of recycled water from the Sewage Treatment Plant at "Vathia Gonia". The opinion is expected

Projects in progress

5.22 The Environmental Impact Study of the "Use of Recycled Water from Larnaca Sewerage System" was continued. The Water Development Department funded a special study prepared on behalf of Meneou-Pervolia local authorities. The aim of the study was to comment on the results of the

Feasibility and Environmental Impact Study of the use of Recycled Water from Larnaca Sewage, for the disposal of brine from further processing (desalination) of recycled water.

5.23 The Preliminary Feasibility Study for the transport of desalinated water from the desalination plant of Vasilikos (EAC) was continued for supply of semi-mountainous Communities of Limassol.

5.24 Within the framework of the use and disposal of recycled water from Anthoupolis biological treatment plant, a study was in progress for the construction of a storage reservoir near Anthoupolis treatment plant.

5.25 Intense consultations with the municipalities of Wider Nicosia Area, were conducted for future users of recycled water. Studies have been prepared in connection with the Department of Forestry, University of Cyprus, Mall of Cyprus, Koliokremmos Park and the roundabout of GSP.

5.26 During 2011 was continued the construction of the Limassol Permanent Desalination Plant, which will have a production capacity of 40.000 m³ per day with the possibility of extension to 60.000 m³ per day.

5.27 The construction is under way of the Solea Dam Irrigation Project. The construction works are expected to be completed in 2012.

5.28 Construction of the Garillis pumping station for pumping recycled water towards the Polemidhia Dam.

5.29 There is continuation of works for the second phase of the renovation of the existing pumping station at Vathia Gonia.

5.30 There was continuation of the installations of electromechanical equipment at five government and communal projects of water supply and irrigation.

5.31 There was continuation of Contract management and supervision of the electromechanical construction works of the Limassol Desalination Unit, of the Solea Dam and of the Kannaviou Water Treatment Plant.

5.32 There are on-going contracts for renovation of four Sewage Treatment Plants as well as contracts of Operation and Maintenance of 16 Sewage Treatment Plants and Sewage Pumping Station in Army Camps and Communities. Also there is continuation of construction of a new Sewage Treatment Plant at Mennoyia.

5.33 There was continuation of preparation for the materilisation of the project of the supply and installation of electromechanical equipment for the pumping stations of Anadiou for the water supply system of 31 communities of Paphos from the Kannaviou Water Treatment Plant and Vathia Gonia for satisfying of the irrigation needs of the areas of Idalion, Geri and Potamia.

5.34 There is continuation of the participation to the research programme “Therma Solar production of Water and Electricity” of the interboundary cooperation Greece-Cyprus 2007-2013 scheme. The project’s aim is the construction of a small scale experimental cogeneration unit which will make use of solar energy for the simultaneous production of water and electricity and will confirm the idea of cogeneration.

5.35 A study for the connection of Yermasoyia dam and Southern Conveyor Pipeline is under preparation.

5.36 The installation of the main pipeline for the transfer of water for the Anadiou Government Water Project was continued in 2011.

5.37 The construction is under way of Water Treatment Plant with a capacity of 10,000 m³ per day in the area of the Asproyia-Kannaviou dam. Its completion is anticipated by the beginning of 2012.

5.38 The upgrading, modernization and replacement of community water supply systems in all Districts continued during 2011 for the supply of good quality domestic water and the reduction of losses.

5.39 The monitoring and coordination of the two year operation (and with optional another one) and maintenance contract was continued for Vathia Gonia Domestic and Industrial Wastewater Treatment Plant, as well as the monitoring of imposition and collection of discharge fees in the plant.

5.40 During 2011 the construction of the sewerage collection network at the communities of Xylytypou-Ormidia and the Municipality of Derynia was continued.

5.41 The installation of the main pipeline for the transfer of water from the Limassol Water Treatment Plant in Regional Moutagiaka Work to Amathus Government Water Project and the Municipality of Agios Athanasios and Municipality Yermasoyia. was continued in 2011.

Projects initiated in 2011

5.42 Construction work has begun on the wastewater collection network in Achna- Avgorou, Dherynia and Kakopetria-Galata.

5.43 There was the commencement and continuation of Omonia Pumping Station for the transportation of recycled water from Moni towards Ypsonas for irrigation purposes.

5.44 There was commencement and continuation of the renovation of the recycled water pumping station of the Moni Sewage Treatment Plant.

5.45 There was commencement and continuation for the full renovation of the piping of the Tersephanou pumping station with materials from ductile iron.

5.46 There was commencement and continuation of studies and works improvements of the automatic operations and of electric panels of the pumping stations of the Kokkinochoria Irrigation Network.

6. WATER MANAGEMENT OPERATION AND MAINTENANCE

6.1 The Water Development Department is responsible for the management, operation and maintenance of installations for the production and transfer of water belonging to the State. Also is to coordinate all actions which are related to the management and operation of the Government Irrigation Projects and to apply the Government's water policy, in cooperation with the WDD's District Offices. The Government Water Supply Systems include the Water Treatment Plants, the Desalination Plants, government boreholes, as well as the pumping systems, the central reservoirs and the main diversion pipelines carrying water from the production points to the reservoirs of the Water Boards of Municipalities and Communities.

6.2 Total domestic water output in 2011 reached 80,6 MCM. The production of water treatment plant was in 2011, at 28 MCM, compared to 25 MCM in 2010. The increase in refining due to the decision to operate the Desalination Plants with minimum contractual obligation. Also during July-August following the accident in Mari all Desalination Plants operating on reduced power load savings. It is noted that during this period the Choirokoitia Water Treatment Plant which was held in reserve, was operated.

6.3 During 2011 the management of contracts for type BOOT Desalinations continued for the two permanent Plants of Dhekelia and Larnaca, as well as for the Mobile Plants of Moni and Garyllis and Paphos. The production of the above Desalination Plants was in 2011, at 48,7 MCM. In 2011 were instructed to reduce the production of more Water Desalination Plants and complete closure of Desalination Plant at Paphos.

6.4 During 2011, the total irrigation water supplies in areas irrigated by the Government Water Works reached at 47,5 MCM, of which 36,6 MCM came from water dams, 5,2 MCM from boreholes and 5,7 MCM from recycled water tertiary treatment.

6.5 During 2011, the use of the computerized "Water Invoicing System" (WIS) continued successfully, for the billing of domestic and irrigation water supplied from the Government Water Projects (GWP). In order to upgrade the WDD's services to the consumers, the works for the connection of the WIS to the JCC's network began, in order to provide "on line" payments facilities.

6.6 The procedure of the collection of debts for irrigation water consumption supplied by the Government water works continued, coordinated by the Division in cooperation with the Public Prosecutors Department, which undertakes all judicial measures against debtors. The arrears for domestic water by the end of 2011 was € 95.9 million.

6.7 The Irrigation Division during the year managed the problems of the individual Irrigation Divisions, to conform with the State Aid Regulations.

6.8 In the framework of the implementation of the Government's policy for the development of golf Courses in Cyprus, the Department continued the assessment of the various applications with respect to the water supply (domestic and irrigation) of these projects, as well as other aspects that fall into the WDD's responsibilities. In the same concept, the Department had a considerable input in the Environmental assessment procedure related to each Golf Course development.

6.9 The Department was also responsible for the preparation of the water allocation scenarios, as well as for the implementation of these scenarios and the related irrigation water supply restrictions.

6.10 Daily water balance of all dams and daily reports for storage, inflow, releases and losses were prepared and distributed and also published on the WDD's website.

6.11 Within the framework of measures for the conservation of drinking water the subsidization plans were continued for the drilling of boreholes, the connection of boreholes to lavatories, the installation of grey water recycling systems and the installation of hot water circulators. The total amount of subsidies granted in 2011 is € 376.640. Noted that in November 2011 these projects grants was suspended.

6.12 The installation and maintenance of grey water recycling systems in 49 schools continued in 2011. Five new systems in as many schools were installed.

6.13 Supervision of the operation and maintenance of dams and the Great Water Works and the Wastewater Treatment Plants in Camps and Communities was continued.

7. MANAGEMENT OF INFORMATION TECHNOLOGY AND TRAINING

7.1 In the context of further personnel education within the Department, 16 courses were organized with 175 participants. The educational programmes and lectures addressed Technical, Environmental, Administrative and Legislative issues, as well as issues on Communication, Safety and Health at the workplace, Software Programmes and training for the induction of newcomers to the Public Service.

7.2 The monitoring of the Southern Conveyor Project is carried out through the use of a Telemetry System, which provides for a continuous and overall view of the functioning of Major water Works and the possibility to take repair action. During 2011, became predictive maintenance of the System by the supplier company HSQ Technology.

7.3 The WDD electronic infrastructure includes over 450 network appliances, such as personal computers, printers, scanners and other network peripherals. The entire scientific personnel, and almost all of the technical and clerical staff have access to the internal network files of common use, as well as to the Internet and email services.

7.4 Technical support in equipment and software Programmes is provided on a daily basis at the main offices, district offices and isolated offices of the Department. In the context of technological upgrading, a partial replacement of old computers, printers and other network peripherals has taken place.

7.5 The WDD website is updated every day. The website includes information on the water resources of Cyprus, the environment, the Water Framework Directive 2000/60/EC, Directive 2007/60/EK about flooding and the relevant Cyprus legislation, water saving measures, etc. In addition, the website allows the public to communicate through e-mail and in accordance with statistical data from the Department of Information Technology Services, some 5.500 persons visit the website every month.

7.6 The computerized Water Invoicing System (WIS) used in recording and billing the consumption of domestic and irrigation water from Government Water Projects continued to function during 2011. In order to upgrade the WDD's services to the consumers, the works for the connection of the WIS to the JCC's network began, in order to provide "on line" payments facilities.

7.7 Continued installation of integrated Geographical Data System (GDS) in the Department of Water Development. The GDS system will provide the Department with a common platform for classified access to all data, as well as the facility to prepare reports. The in-built tools for spatial analysis will provide support to the networks monitoring the supply of domestic water, irrigation water and sewage systems, as well as an analysis of the trends affecting future demand. The posting of the information on the database will help the Department to meet the operational challenges it is currently facing.

8. DEVELOPING WATER SAVING AWARENESS

8.1 In the context of intensifying efforts for the creation of water saving awareness among the public, the WDD organized various campaigns and lectures. To this end, the Department hired the services of four teachers, who gave lectures at educational institutions jointly with WDD officers. During 2011 roughly 566 lectures were given at Nurseries, Primary Schools, Technical Schools, Gymnasiums and Lyceums, attended by 60.000 pupils. At the end of the lectures leaflets, stickers and other promotional material regarding water conservation was given to pupils and teachers.

8.2 During 2011, the WDD organized and participated in the following events:

a) Giving the first lecture to National Guard Camp with the aim of informing/sensitizing the soldiers.

- b) "Science Fair about Water" in collaboration with Primary Education of the Ministry of Education and Culture and the Cyprus Parent Association.
- c) Water Saving Week in all towns with the aim of informing/sensitizing pupils.
- d) "We all care about Water," using a stands in all towns with the aim of informing/sensitizing foreign workers who live and work in Cyprus.
- e) Inauguration ceremony to Desalination Plant to Kouklia at Paphos.

8.3 In addition, the WDD participated in exhibitions and other events . Also, film showings and radio broadcasts took place concerning water saving.

9. SAFEGUARDING QUALITY

9.1 During 2011 the draft work on the accreditation of WDD laboratories was almost completed. Accreditation is expected to take place in the first half of 2012

Monitoring domestic water quality

9.2 During 2011, chemical tests were carried out on 2,277 water samples and bacteriological tests on 727 samples. In addition, tests were performed for the needs of the following:

- a) Desalination Plants of Dhekelia, Larnaca, Moni, Garyllis and Kouklia
- b) Water Treatment Plants of Tersefanou, Limassol, Asprokremmos and Kornos
- c) WDD District Offices
- d) Monitoring programmes for community boreholes, minor dams, major springs, hydrological research of ideotypical water composition, the Water Framework Directive 2000/60/EC, and
- e) Monitoring water quality in pipelines that supply domestic water from the Desalination Plants and the Water Treatment Plants

Monitoring of recycled treated wastewater quality

9.3 The collection of samples was continued for Chemical and microbiological analyses, toxicity tests and metal ion analyses of samples from 28 Wastewater Treatment Plants, and from the Wastewater Treatment Plants of Sewerage Boards of Nicosia, Larnaca, Limassol, Paphos and Paralimni - Ayia Napa.

9.4 Sample taking for chemical and microbiological water tests took place from the Polemidhia Dam, before and after the period recycled water was discharged in it.

9.5 Sample taking for chemical and microbiological analyses of Ovgos River before and after the discharge period of recycled treated wastewater in the river

9.6 Sample taking for chemical analyses : **a)** of soil irrigated with recycled treated wastewater of the Wastewater Treatment Plants of Sewerage Boards of Nicosia, Larnaca, Limassol, Paphos and Paralimni - Ayia Napa and of the Central Domestic and Industrial Wastewater Treatment Plant at Vathia Gonia and **b)** from Limassol and Larnaka sea before and after the discharge of recycled treated wastewater in the sea, of soil on which sludge from the Central Domestic and Industrial Wastewater Treatment Plant at Vathia Gonia was disposed and of untreated wastewater from almost all the Wastewater Treatment Plants.

Safety and Health

9.7 During 2011 the Department operates Health and Safety Unit, implementing legislation for Health and Safety Unit for WDD Personnel and third parties in accordance with the Safety and Health at the Workplace Laws N33 (1) 1996-2011. Carried out, on site visits at construction work projects, premises and facilities of the WDD. Coordinated the 10 Security Committees and continuing education and training staff in Health and Safety. Providing the staff with 5 Automatic External Defibrillators (AED) and with all necessary personal protective equipment (PPE).

Internal Auditing

9.8 The internal auditing of works continued during 2011 by on-site visits to WDD construction work projects with self – supervision, which are being carried out by the District Offices. The same held for Government Irrigation Projects across Cyprus, with the aim of maintaining good work standards and preventing and avoiding accounting and technical omissions or oversights.

9.9 Apart from routine checks, continued auditing concentrated on locating institutional and procedural problems and preparing proposals for resolving them. Proposals include changes to the way of carrying out the contests for the execution of water supply projects, the empowerment of the District Offices in respect of laboratory testing, adopting the use of new type valves and initiating the preparation of modern drawings for circular water tanks, as well as the preparation of new technical specifications concerning water supply networks.

GOVERNMENT WATER WORKS 2011
TABLE 9

WATER WORKS-DAMS		Capacity M.C.M	Storage 01-01-11	Inflow 1/1-31/12/11	Water used 2011 M.C.M			
					Domestic	Irrigation	Recharge	Total
1	SOUTHERN CONVEYOR PROJECT							
1.1	DAMS							
	(i) Kouris	115,000	55,847	16,575	10,631	18,518	1,247	30,396
	(ii) Kalavassos	17,100	5,805	2,835	0,131	1,055		1,186
	(iii) Lefkara	13,850	3,916	1,544	1,703	0,100		1,803
	(iv) Dipotamos	15,500	4,411	2,588	2,668	0,486		3,154
	(v) Germasogeia	13,500	5,862	4,184	5,291	0,585		5,876
	(vi) Polemidia	3,400	0,829	0,245		0,574		0,574
	(vii) Arminou	4,300	1,694	13,114			1,776	1,776
	(viii) Achna	6,800	1,256			1,010		1,010
	Total from Dams S.C.P.	189,450	79,620	41,085	20,424	22,328	3,023	45,775
1.2	Nicosia Boreholes-Domestic use				0,260			0,260
1.3	Germasogeia Boreholes-Domestic use				0,343			0,343
1.4	Kouris Delta Boreholes-Domestic use				2,577			2,577
1.5	Krasochria boreholes-Domestic use				0,062			0,062
1.6	Limassol Boreholes- Irrigation					1,947		1,947
1.7	Limassol Garillis Boreholes- Irrigation (Brine)					0,341		0,341
1.8	Larnaca Desalination				18,873			18,873
1.9	Dekelia Desalination				19,383			19,383
1.10	Moni Desalination				6,034			6,034
1.11	Garillis Desalination				2,309			2,309
1.12	Recycle Water East and West of Limassol					3,900		3,900
	Total Southern Conveyor Project				70,265	28,516	3,023	101,804
2	PAFOS PROJECT							
2.1	DAMS							
	(i) Asprokremmos	52,375	31,228	10,433	0,042	6,148	0,164	6,354
	(i) Kannaviou	17,168	11,888	5,190	5,444	0,088	0,073	5,605
	(iii) Mavrokolymbos	2,180	0,942	0,220		1,095		1,095
	Total from Dams	71,723	44,058	15,843	5,486	7,331	0,237	13,054
2.2	Boreholes & Diversions-Domestic				3,000			3,000
2.3	Boreholes-Diarizos				0,493		0,037	0,530
2.4	Boreholes-Ezousa and Recycle					2,969		2,969
2.5	Pafos Desalination				1,365		0,742	2,107
	TOTAL PAFOS				10,344	10,300	1,016	21,660
3	CHRYSOCHOU PROJECT							
3.1	DAMS							
	(i) Evretou	24,000	12,910	5,394		3,263		3,263
	(ii) Pomos	0,860	0,295	0,634		0,691		0,691
	(iii) Agia Marina	0,298	0,166	0,177		0,276		0,276
	(iv) Argaka	0,990	0,199	0,943		0,937		0,937
	Total from Dams	26,148	13,570	7,148	0,000	5,167	0,000	5,167
3.2	Boreholes -Irrigation							0,000
	TOTAL CHRYSOCHOU				0,000	5,167	0,000	5,167
4	Nicosia District							
4.1	DAMS							
	Xyliatos	1,430	0,721	0,970		0,874		0,874
	Vizakia	1,690	0,938	0,658		0,316		0,316
	Kalopanayiotis	0,363	0,363	0,144		0,303		0,303
	Lymbia	0,220				0,021		0,021
	Total from Dams	3,703	2,022	1,772	0,000	1,514	0,000	1,514
4.2	Recycle Water-Vathia Gonia					0,231		
5	Recycle Water-Larnaca					1,587		
6	Avdimou- Paramali					0,232		
	SOURCES - TOTALS	291,024	139,270	65,848				
	DAMS				25,910	36,572	3,297	65,779
	BORHOLES				6,735	5,257		11,992
	DISALINATION				47,964		0,742	48,706
	RECYCLE WATER					5,718		5,718
	ΟΛΙΚΟ	291,024	139,270	65,848	80,609	47,547	4,039	132,195
					Water transferred to Achna Dam			-1,179
	TOTAL CONSUMPTION							131,016

Note: Recharge from Germasogeia Dam to Germasogeia Boreholes used for Domestic 5,291 mcm