



ANNUAL REPORT



2003

KOZLODUY NPP plc
www.kznpp.org

INTRODUCTION



Dear Readers,

The year 2003 shall be remembered by Kozloduy NPP employees as the year of international recognition of the high nuclear safety standards of our plant.

In 2003, the plant was subject to two independent international peer reviews – by the World Association of Nuclear Operators and by the Expert Mission of the EU Council's Atomic Questions Group. Both reviews confirmed the excellent results achieved due to a decade of our hard work, dedication to the highest safety culture and an ongoing investment now approaching several hundred millions of US dollars. The expert conclusions were unambiguous - there are no technical nor safety issues related to the operation of Kozloduy NPP. Today, our modernized and safely operated plant is equivalent to any plant of the same vintage.

The independent international experts confirmed once again that we are among the best members of the world nuclear community. The main credit for that goes to all Kozloduy NPP employees, who proved their professionalism and high safety culture and I openly congratulate and thank them for that.

In 2003, in conformity with the updated nuclear safety legislation of Bulgaria, the Nuclear Regulatory Agency issued long-term licences for operation of all the six units at the plant site, the shut down units 1&2 being licensed for operation at zero power.

The year 2003 was the first one with only four units in operation, units 1&2 having been shut down on December 31, 2002 in accordance with a agreement between the European Union and the Bulgarian Government. Nevertheless, with over 41% share of the annual electricity generation in the country, Kozloduy NPP again confirmed its position as the most reliable and largest electricity supplier in Bulgaria. The low cost price of our generated electricity gives us a solid and competitive position in the electricity market which provides Kozloduy NPP plc with sufficient investment funds for the implementation of the modernization and upgrading programs, for assurance of reliability in generation and for our contribution to the state budget.



The last year was a key one for the implementation of the Units 5&6 Modernization Program. A significant part of the measures related to equipment installation of unit 6 was completed. This is an indication that our responsible team is well organized and that the Program will be accomplished successfully and on schedule in 2006. This program is a striking example of efficient international cooperation as it unites and refines the theoretical knowledge and experience of experts from 15 countries of Eastern and Western Europe, United States and Bulgaria.

The 2003 results confirm that Kozloduy NPP has the capacity to play a key role in the national and regional energy markets with its reliable, flawless and stable generation, low price cost, whilst promoting the highest safety standards now recognized by national and international institutions which combine to enhance the already high level of public acceptance.

In 2004 Kozloduy NPP celebrates the 30th anniversary of its commissioning. I am certain that the new challenges we will face during the jubilee year will be the next occasion for us to show proudly the results of three decades of the professionalism of the Bulgarian nuclear engineers and all our support staff!

EXECUTIVE DIRECTOR
IORDAN KOSTADINOV

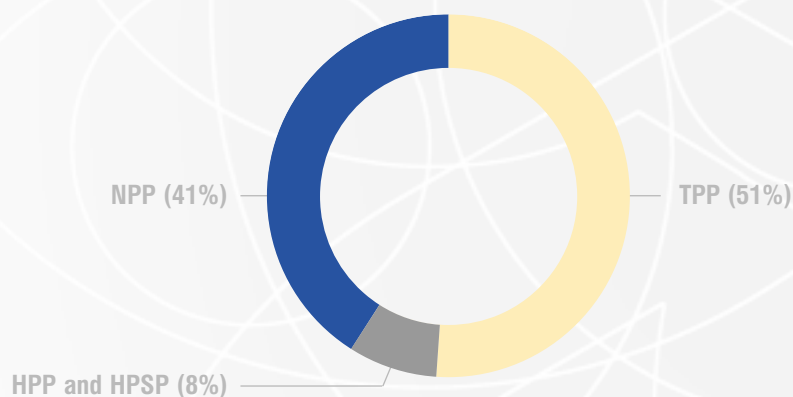
GENERATION

Kozloduy NPP plc – Major electricity supplier in Bulgaria

Kozloduy NPP is the main electricity producer in Bulgaria with four nuclear reactors in operation of 2880 MW total installed capacity. In 2003 the nuclear power plant produced 41% of the total national electricity generation. The reliability of generation, which has no real alternative in the country, combined with the low cost price, contributed to meeting the electricity demand both in Bulgaria and the region.

The electricity output of Kozloduy NPP is generated in full compliance with the nuclear safety and radiation protection requirements of the Bulgarian legislation. Together with the production program, the plant provides safe storage of the spent fuel and radioactive waste from all units and maintains in a safe condition Units 1&2 which were shut down in 2002 in compliance with the Council of Ministers' Decision.

2003 Share of Kozloduy NPP generation in the total national electricity generation



In 2003, only four of the six nuclear units on Kozloduy NPP site were in operation. As compared to the record – breaking 2002 production of 20 221 719 MWh, the electricity generation in 2003 was reduced by 14,56 % and amounted to 17 278 411 MWh.

Kozloduy NPP's share in the 2003 gross electricity generation dropped by 6,66% as compared to the previous year. At the same time, the share of each of the Kozloduy NPP units was increased by 2%.



During the past year Kozloduy NPP confirmed its importance as the most reliable and safe electricity supplier during the period of an unprecedented low level of the Danube River which caused an interruption of the electricity generation from many power plants in the region.

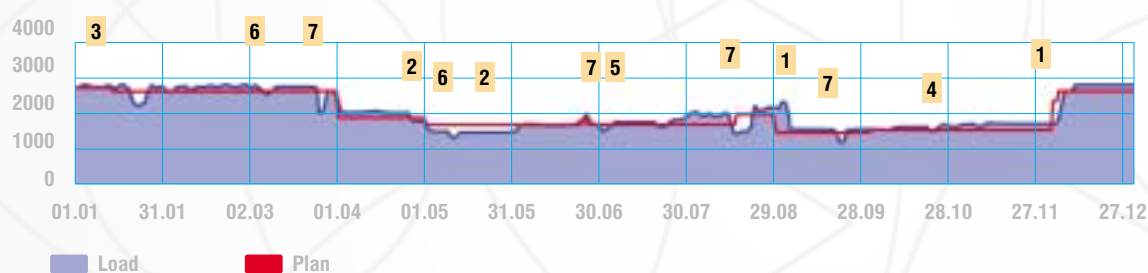
Production Program

During the last few years, the generation has been in compliance with the predicted demand of the country.

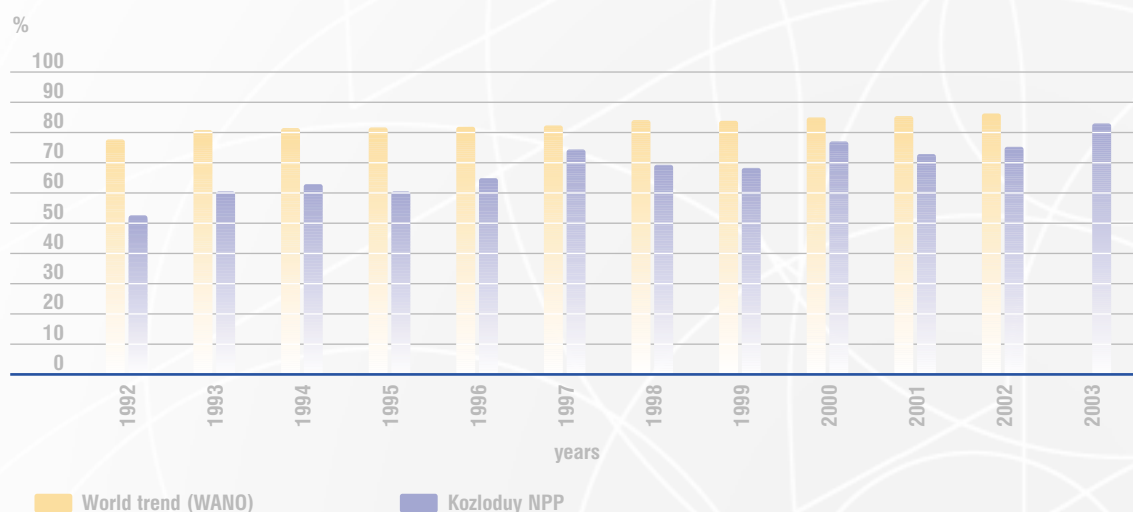
Despite the dispatch limitation for the plant output imposed in the period from the end of April to the middle of June, in 2003 Kozloduy NPP over-fulfilled its production targets by delivering 104% of the planned amount.

All units produced more electricity than planned. Most significant is the performance of Unit 4 which operated at a greater output than planned throughout the whole year despite only very minor deviations from its operating schedule.

Load Diagram of Kozloduy NPP for 2003



Availability Factor



In the year under review 99,38% (20 457 132 MWh) of Kozloduy NPP's maximum planned availability was provided which is within the frames of the 3% reserve agreed with the National Electricity Distribution Company.

In 2003 Kozloduy NPP has used 47,78% (295 053 MWh) of the permitted unavailability time for maintenance outside the outages. As compared to 2002, there is an 11,17% decrease of the non-generation (planned and non-planned).

The stable tendency for reduction of the non-generation share continues (by 5-6% per year). The availability factor values of Kozloduy NPP are comparable with the average indicators of the very best nuclear plants worldwide.

Maintenance Program

The maintenance of the nuclear plant equipment and facilities is implemented mainly during the annual outages, simultaneously with the reactor refueling. For the equipment, which could be repaired during the unit operation, the current maintenance activities are performed in the course of the year.

In 2003, a significant scope of maintenance activities was implemented aiming at effectiveness enhancement and lifetime extension of the equipment, the investments totaling to BGN 42.579 millions.

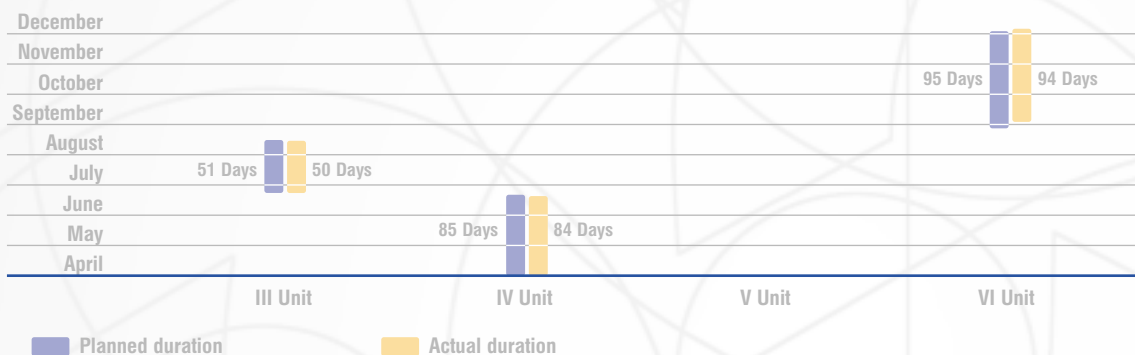
Due to efficient use of resources and sound management practices, the plant outage schedule was kept despite the significant scope of complex activities and the prolonged modernization of unit 6 (94 days), as well as the implemented reconstructions and modernizations of units 3 and 4.



Unit 5 was in operation without outage for maintenance and refueling.

The 2003 outage of Unit 6 was the most intensive maintenance campaign in the unit operational history. It started with six days delay, due to the prolonged grid limitation and unit operation at reduced load in April and May, and was finalized ahead of schedule.

Outage campaign in 2003



The most significant modernization measures implemented on unit 6 during the 2003' outage are:

- Equipment replacement – condenser tube bundles of the turbine generator; thermal insulation of the equipment and pipelines in the containment; in-core reactor monitoring system; steam generator safety valves; relay protection and automatics of the main distribution circuits; 6kV breakers of safety systems equipment; generator breaker; computer information system, etc.
- Installation of new systems and equipment – detection of loose parts system; primary leakage detection and localization system; system for monitoring of thermal cycles on coolant system piping; hydrogen detection and recombination system; installation of one additional Diesel Generator for unit consumers.

An important factor of the successful realization of the maintenance program is the application of modern methods for diagnostics and control of the equipment and facilities. The Diagnostics and Control Center of the plant applies the most up-to-date methods for non-destructive testing and vibration diagnostics. The high quality of the D&C Center activities was confirmed by a TÜV certificate for conformity of the applied quality assurance system with the international standard ISO 9000:2000.

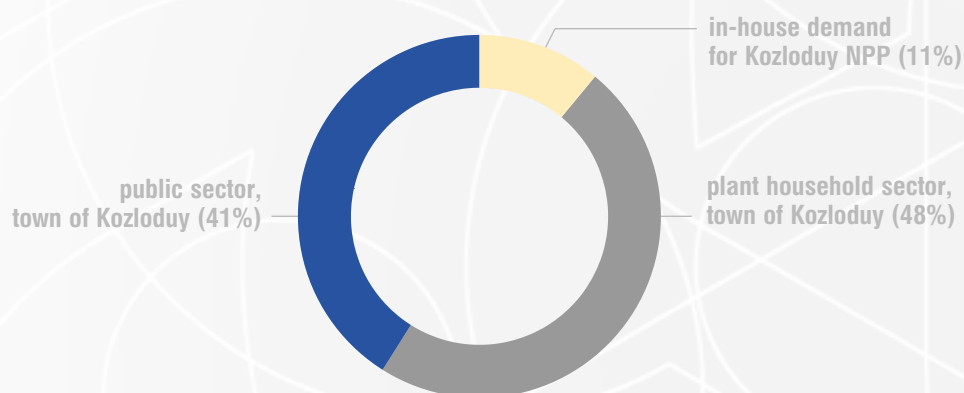


Thermal energy production and enhancement of the heating supply efficiency

The thermal energy generated by the plant totally satisfies the demands of the town of Kozloduy and the plant in-house demands.

During the last year an amount of 189 011 MWh thermal energy was produced by units 5&6 boiler installations, 141 387 MWh being delivered to the town of Kozloduy consumers.

Distribution of the thermal energy generated by Kozloduy NPP in 2003



A large-scale program is under implementation aiming at enhancement of the heat supply efficiency. It includes replacement of the existing consumer substations with new ones equipped with heat measurement and control devices; section replacement of the so-called “yard grid”; construction of dispatch system for remote control of the heat supply parameters. During the last two years, 94 substations and 25 sections were replaced. The initial tests for actual heat loss measurement were performed in 2003. The overall program will be completed at the end of 2005.



SAFETY

Compliance with the contemporary safety requirements

By enacting the new Safe Use of Nuclear Energy Act (SUNEA), endorsed by the Parliament in June 2002, the Bulgarian nuclear safety legislation achieved conformity with modern international standards and criteria.

According to the SUNEA requirements, all Kozloduy NPP units received long-term operational licences. The procedure of licensing by the national regulatory authority requires the demonstration of the possibility for long-term operation of the units in compliance with the contemporary safety requirements. The main document confirming the units' safety is the Safety Analysis Report.

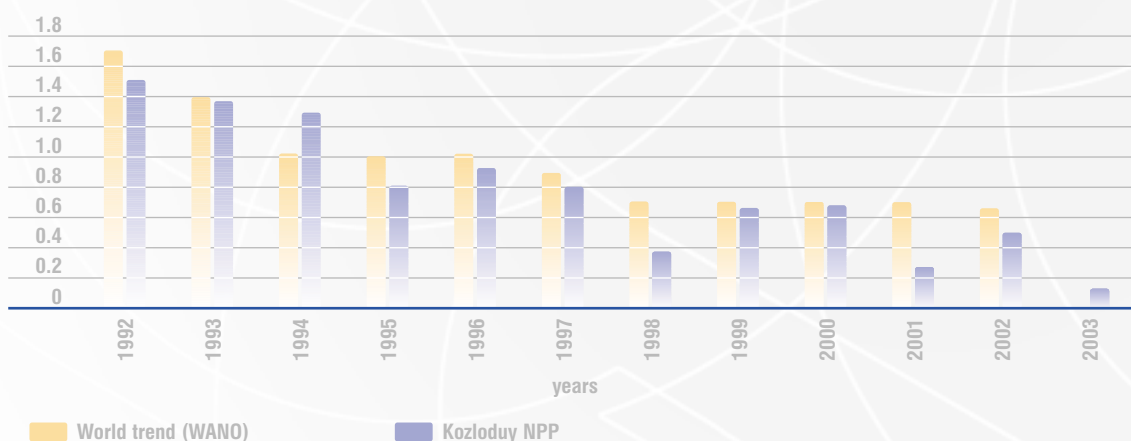
As a result of the successfully implemented modernization programs of units 3 and 4, unit 3 received a license for 8 years, and unit 4 a license for 10 years. Both 1000 MW units 5&6 were issued licenses for operation for a period of 6 years. The Modernization Program for units 5&6 will be completed by the end of the license period and then on the basis of the implemented improvements and on the grounds of a new Safety Analysis Report there will be the possibility for license issuing for a longer period.

Nuclear safety

The stability and safety of units operation is measured with the unplanned automatic scram (trip) factor. During recent years, according to WANO data (World Association of Nuclear Operators), this indicator for Kozloduy NPP is significantly better than the average values for nuclear power plants throughout the world.

There was one unplanned scram for unit 3 in 2003. During the year unit 6 completed seven years without scram, and unit 5 holds the record of 7 years and 7 months. These results show a stable tendency towards a high level of reliability of Kozloduy NPP operation.

Unplanned reactor scram at 7000 hours

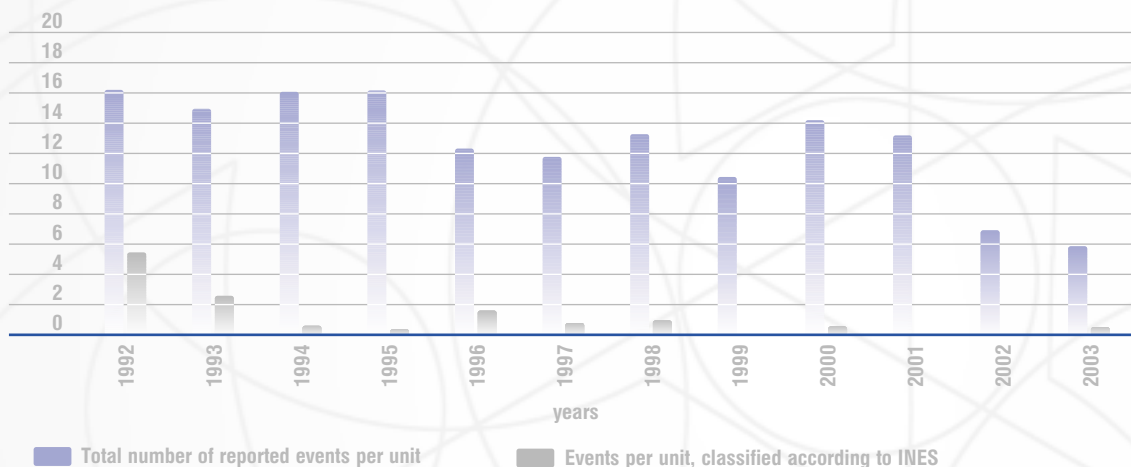




Events

International Atomic Energy Agency (IAEA) developed an International Nuclear Event Scale – INES for promptly communicating to the public in consistent terms the safety significance of events reported at nuclear installations. Kozloduy NPP uses this scale for events' assessment. All operational events related to the safety are registered, analyzed and reported to the Nuclear Regulatory Agency (NRA), which finally confirms the events' rating according to INES.

Reported events with classification according to INES per unit



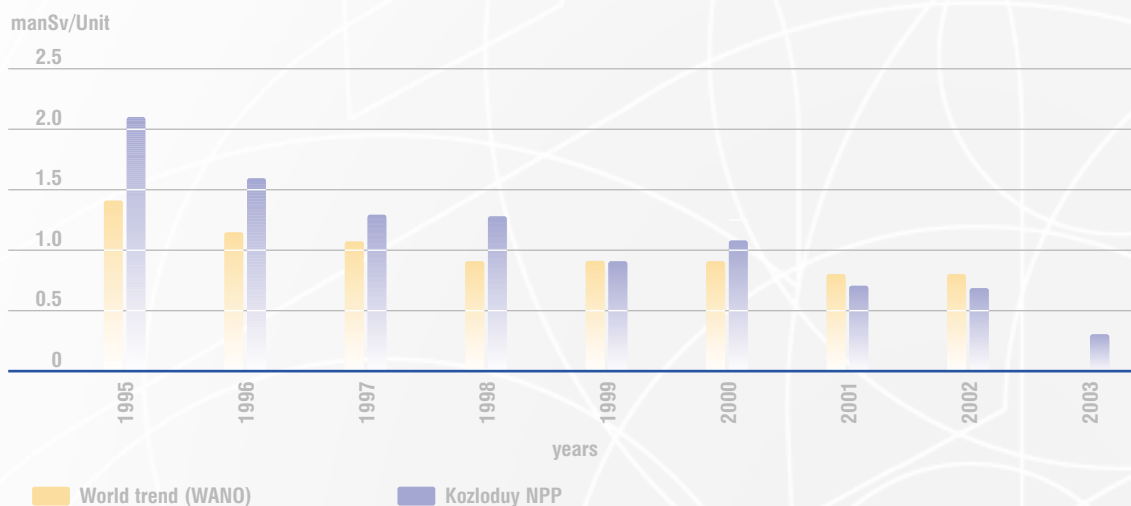
The decrease of the number of events per unit, rated INES level “0” and above, shows that the system for utilization of operational experience is an effective one and also it is evidence that preventive measures are taken, in order to avoid events with a higher severity.

Radiation protection

Optimal staff radiation protection is one of the main applied management principles which ensures the lowest possible levels of ionizing radiation for the personnel. The Bulgarian radiation protection standards are strictly observed. In recent years there has not been any recorded case of exceeding the annual radiation dose limit of 20 mSv for exposure to radiation at work.

The comparison of the personnel collective dose data averaged per unit of Kozloduy NPP, against the same WANO indicator shows that a level comparable with the best results in the world is achieved. Individual dose exposure indicators are analogical and confirm the radiation protection effectiveness.

Collective dose per Unit



The gamma radiation dose rate at the plant site is within the range of the natural radiation background for the region. In spite of the prolonged maintenance campaigns and the modernizations and reconstructions implemented, no changes of the radiation status in the radiological controlled area (RCA) have occurred.

Physical protection

Kozloduy NPP plc implements a structured program for physical protection of the nuclear facilities and nuclear material. Physical protection is provided by the specialized police unit. The access to the plant is controlled by technical security systems and organizational measures. The coordination between Kozloduy NPP plc and the National Police, Border Police and the National Security Service is optimized. Because of the complicated international situation during the last years, the plant physical protection has been additionally reinforced by state of art equipment and methods.

Emergency planning

Irrespective of the low probability of occurrence of emergency situations, all measures have been prepared at Kozloduy NPP to take control of the situation in case of an accident and to minimize the consequences for the personnel, population and the environment.

An Emergency plan has been developed and the necessary facilities and trained personnel are available. The level of preparedness in case of an accident is checked by performing emergency drills which show the high level of preparedness and good interaction between Kozloduy NPP, the regional and national emergency response authorities.



Exchange of information is maintained between the Emergency Control Center of Kozloduy NPP, the NRA Emergency Center and the Permanent Commission for Protection of the Population during disasters and accidents at the Government of the Republic of Bulgaria.

Independent international assessments of Kozloduy NPP safety

The international reviews performed during recent years confirmed that the safety level of Kozloduy NPP units corresponds to similar units operated in the western countries.

On June 2 to 13, 2003 by an invitation from the plant management a WANO Peer Review was conducted at Units 3 and 4. The final report was officially submitted in September 2003. During the review, the team found 23 good practices, as well as three strong points that the team considered worthwhile to be acquired by other plants. The final report mentions that during the last decade Kozloduy NPP has implemented impressive enhancements of the processes and the work practices. The team stated that the plant has competent and capable personnel providing its safe and reliable operation.

From 16 to 19 November 2003, upon request of the Bulgarian Government, an Expert Mission of the EU Council's Atomic Questions Group (AQG) was conducted at Kozloduy NPP, within the frame of the Peer Review of nuclear safety in all EU candidate-countries.

The main conclusion of the reviewing team is that all AQG recommendations to Kozloduy NPP of 2001 and 2002 have been implemented and do not need further monitoring. It was stated that excellent engineering work was performed at Kozloduy NPP concerning the Accident Localization System which is in full compliance with the western approaches and good practices. The experts found that the reactor safety of Units 3 and 4 is provided with a considerable reserve up to the end of the term of the licenses issued by the NRA. Concerning the management of severe beyond design basis accidents, the implemented activities were assessed as exceeding the scope of AQG recommendations.

INVESTMENTS AND MODERNIZATIONS

Investment program with own funds and external assistance

In order to extend the units' design lifetime and to keep them in compliance with the contemporary safety requirements, an investment program totaling to BGN 96.676 millions was implemented in 2003. Within the scope of the investment program some separate measures have been included for reconstruction and modernization of equipment and facilities as well as industrial projects which are indirectly related to production and safety.

The financing of the investment program is provided by Kozloduy's own funds (BGN 86.880 millions), as well as through the PHARE program of the European Union and the National Fund "Safe Storage of Radioactive Waste" (BGN 9.796 millions).

Modernizations of Units 3&4

In 2002, within the frames of the planned outages, the implementation of the main measures of Units 3&4 Modernization Program was completed. In 2003 on each unit more than 40 additional technical measures have been implemented to improve the systems and equipment important to safety or to install new systems. The modernization projects implemented on units 3&4 required an investment of BGN 15.859 millions and represent a natural continuation of the long term work on units 3 and 4 modernization aiming to maintain a high level of safety and to increase the reliability and effectiveness of operation. The main activities related to Units 3 and 4 modernization projects are: completion of the replacement of the DC panel on unit 3; implementation of a new system for early localization of leakages from the primary circuit on Unit 4; implementation of non return valves on the feedwater lines near every steam generator on Units 3 and 4; development of an updated Safety Analyses Report for Units 3 and 4 accounting for the main reconstruction and modernization of the Units.

The annual outages have also been used for preparation of the technical measures planned for 2004. The most significant of them are related to the second stage of the accident localization system modernization. After the implementation of the two remaining measures – installation of a system for hydrogen measurement and recombination in the confinement and construction of a filter system for forced ventilation of the confinement, Kozloduy NPP will have the up-to-date severe accident management.



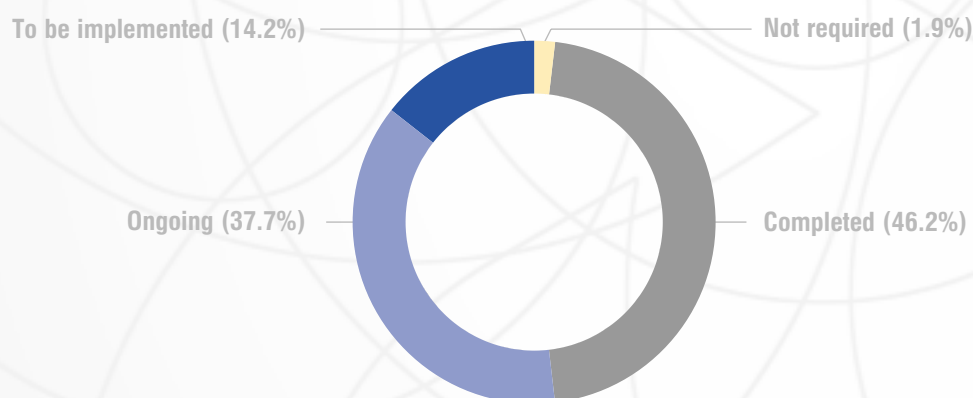
Modernization of Units 5&6

The main objective of Units 5 and 6 Modernization Program is to implement the improvements necessary to meet all international requirements for NPP's with VVER-1000/B-320 units in terms of safety and reliability, in order to extend the unit lifetime by 15 years. The Program which includes 212 measures is based on the good international practices and is reviewed by several independent international missions.

In 2003, Unit 5 worked without an outage and the main efforts were focused on Unit 6. The modifications implemented are comparable to the commissioning of a new unit, as the scope and terms of this reconstruction have no precedent in the world practice.

By the end of 2003 46.2% (98 measures) of the total program scope has been completed. Over 20 international companies were involved in the works, the major effort being undertaken by the Main Contractors – European Consortium “Kozloduy” (ECK), composed of the French and German branch of Framatome together with the Russian Atomstroyexport and the American company Westinghouse. A significant part of the engineering, installation and commissioning work under the Modernization Program was performed by Bulgarian sub-contractors.

*Implementation Status
of Units 5 & 6 Modernization Program by the end of 2003*



The improvements implemented in 2003 by the main Contractors – ECK and Westinghouse amount to BGN 249 millions provided through state-guaranteed credits from international financial institutions.

Following its Investment Program Kozloduy NPP invested in the modernization of Units 5 and 6 another BGN 32 millions from its own funds.



Most of the Unit 6 measures were implemented by the partner companies of the European Consortium “Kozloduy”. In general the measures of the ECK scope can be grouped in several categories:

- Replacement of mechanical equipment;
- Modernization of electrical equipment and systems;
- Installation of instrumentation and control systems and new diagnostic systems;
- Enhancement of the operational conditions;
- Improvement of the units fire protection, etc.

The main scope of measures of the American company Westinghouse is related to the replacement and modernization of information and control systems. In 2003 on Unit 6 the following was successfully replaced and modernized:

- Computer information system;
- Radiation monitoring system.

Units 5 and 6 Modernization Program is developing as planned in compliance with the approved schedule which envisages its completion in 2006.

The implementation of the program is successfully by a well organized project management team applying high technologies and engineering solutions that will considerably contribute to the enhancement of safety, reliability and performance of KNPP.

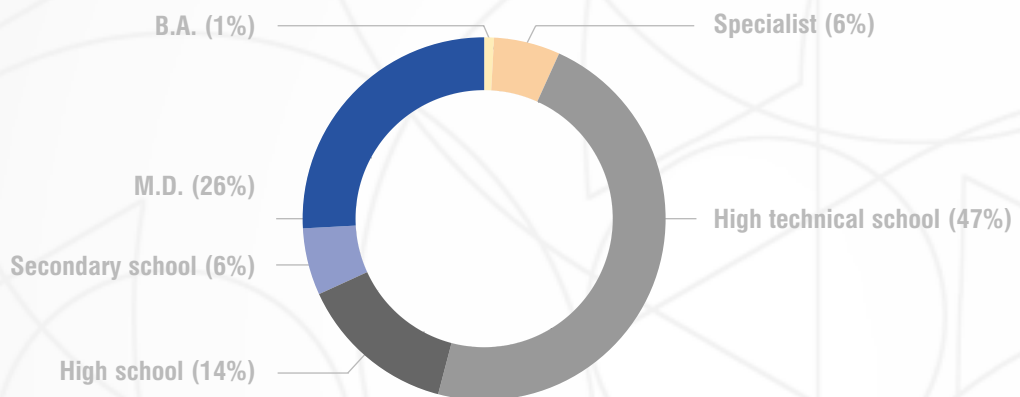
Kozloduy NPP believes that this program will give a positive example of high quality modernization of an NPP with VVER reactors.

HUMAN RESOURCES

Human resources management

The personnel of Kozloduy NPP responsible for the safe operation of nuclear facilities have a high educational status. In 2003, 80% of the KNPP employees had a university degree and high technical education. This was achieved through application of a system for recruitment of new personnel with higher education and qualifications as some employees reached the retirement age, and who had lower educational qualifications.

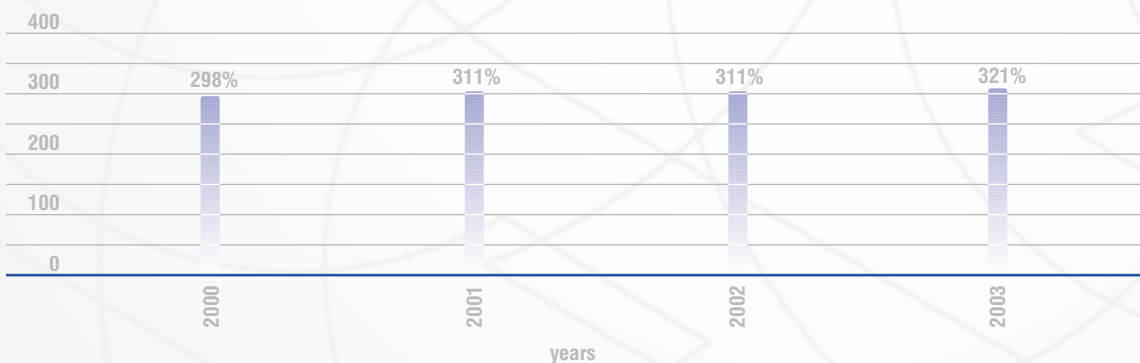
Distribution of personnel according their education



The measures for personnel number optimisation (down-sizing) undertaken after the detachment of Kozloduy NPP plc as an independent commercial company in 2000, have given good results. In the last three years the staff number has been reduced by 20% at the end of 2003. It should be noted that both output and safety levels have increased over the same period.

The good performance indicators in the last several years have given the opportunity to keep a good salary level at Kozloduy NPP, as compared to the average salary in the country.

Correlation of average salary in KNPP to average salary in Bulgaria





The salaries increase in the nuclear power plant is possible due to shared efforts of all employees for fulfilment of the business indicators, giving the highest priority to safety requirements.

Training

One of the most important factors of the safe, reliable and effective operation of Kozloduy NPP is the availability of well-trained and qualified personnel.

The overall training process and personnel qualification control are conducted in accordance with the Systematic Approach to Training implemented in all nuclear power plants.

For improving the qualification of NPP personnel, two basic forms of training are applied – theoretical training (lectures, self-training and computer-based training) and on-the-job training.

The plant Training Centre is equipped with modern simulator facilities, ensuring adequate training for licensed operators and line managers as well as the performance of a number of engineering tasks and analyses. At present two simulators, VVER-1000 Full Scope Simulator (FSS-1000) and VVER-440 Multi-Functional Simulator (MFS), are used for training.

Current modernization programmes are also implemented on the simulators aiming to maintain their conformity with the reference units.

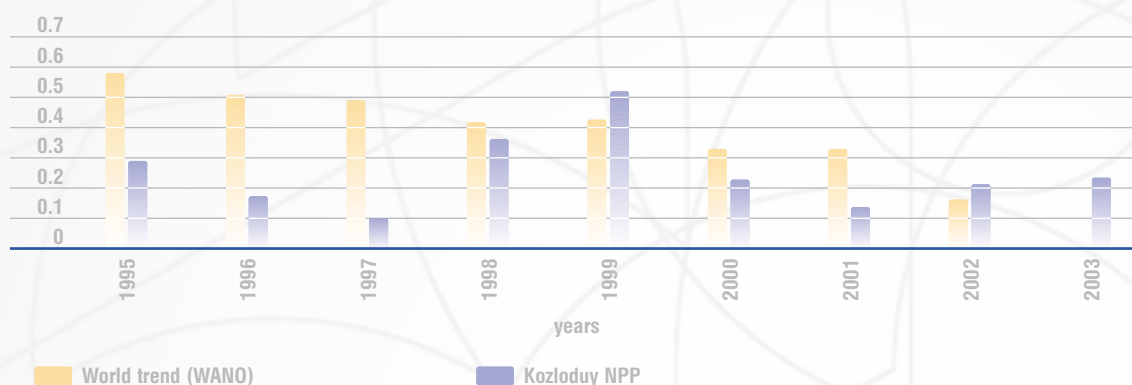
All training courses are annually upgraded based on analysis of events in other plants, feedback from the training sessions, unit design modifications and other reasons, including changes of the regulatory requirements.

Working environment

Provision of a safe and healthy working environment through elimination or maximum limitation of the existing hazards is one of the basic goals of Kozloduy NPP plc Management.

In compliance with Bulgarian legislative requirements, which were harmonized with the European requirements for the working environment, a risk assessment of the work place was made and corrective measures were implemented. The data from the last few years proved the effectiveness of the efforts made in this direction.

Industrial safety accident rate for 200000 manhours



The trend for reducing the industrial safety accident rate is very clear and this indicator is comparable with the world's best NPP indicators according to WANO database. In recent years there have been no accidents, which led to death or disability of Kozloduy NPP personnel.

Social Policy

The social policy of Kozloduy NPP plc is oriented towards provision of equal social benefits aiming at maintaining and increasing the personnel's motivation. Together with the five Trade Unions in the plant a number of social benefits were agreed in accordance with the possibilities given by the labour legislation.

The Company annually provides BGN 8 millions for social and cultural funds. The priorities for these funds are determined by the General Assembly of the Kozloduy NPP employees.

Kozloduy NPP maintains two recreational complexes, a cultural centre in the town of Kozloduy and a sports facility with two swimming pools and other opportunities for sport and relaxation. In the Balkan Workers Games held in Albena, Bulgaria in 2003, Kozloduy NPP won the Cup of the National Workers Games for the third time. Kozloduy NPP Management pursues an open dialogue in communication with the personnel on all the issues – the ones related to production and safety as well as the social problems.

ECONOMIC AND FINANCES

After the vesting of Kozloduy NPP plc as an independent entity in 2000, the Management efforts were directed towards maintaining a sustainable growth in a competitive economic environment which resulted in a solid financial basis for Kozloduy NPP plc.

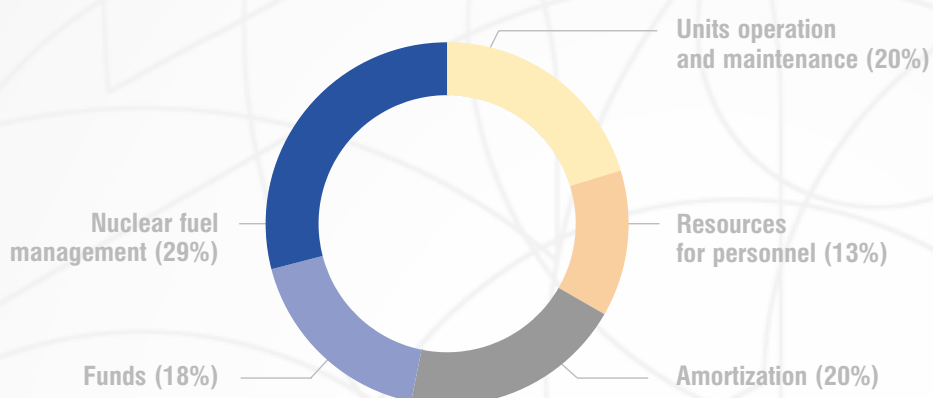
The financial income from electricity generation provided the implementation of production and investment programs aiming to maintain and enhance the safety level as well as the fulfillment of the obligations to personnel and State.

The financial status of Kozloduy NPP Ic by 31.12.2003

ASSETS	2003 r. (in BGN thousands)	2002 r. (in BGN thousands)
Long-term assets – total, incl.:	1 363 919	787 589
Long-term material assets	1 282 635	700 508
Long-term immaterial assets	80 970	81 979
Long-term financial assets	147	4 408
Expenditures on future periods	167	694
Short-term assets – total, incl.:	513 784	485 570
Material reserves	221 943	204 409
Short-term accounts receivable	171 333	181 148
Financial resources	115 372	99 260
Expenditures on future periods	5 136	753
Assets holdings – total:	1 877 703	1 273 159
Provisional assets		
LIABILITIES		
Own capital – total, incl.:	1 074 000	755 086
Fixed capital stock	35 631	35 631
Reserves	1 017 269	694 114
Financial result	21 100	25 341
Long-term liabilities – total, incl.:	547 576	345 897
Long-term obligations	485 840	283 218
Incomes for future periods and financing	61 736	62 679
Short-term liabilities	256 127	172 176
Short-term obligations	255 567	171 613
Incomes for future periods and financing	560	563
Liabilities holding – total:	1 877 703	1 273 159
Provisional liabilities		

INCOMES, EXPENDITURES, FINANCIAL RESULT	2003 r. (in BGN thousands)	2002 r. (in BGN thousands)
Incomes from the activity	741 141	751 147
Expenditures from the activity	712 506	731 507
Account profit	28 635	19 640
Tax expenses	18 967	6 161
Net profit	9 668	13 479

Structure of 2003 expenditures



The breakdown of Kozloduy NPP expenditure is similar to that of other nuclear plants, the major expenses being related to nuclear fuel supply and management. In accordance with the Bulgarian legislation, the payments to National Funds for Radioactive Waste Safe Storage and Nuclear Facilities Decommissioning are 18% in the expenditure total, which is a high percentage compared to those of other European countries. In 2003 BGN 144.273 millions was paid into these funds. The stable financial status of the Company allowed taxes totalling to BGN 161.483 millions to be paid to the State and local budgets, for which the Ministry of Finances nominated Kozloduy NPP as a Major Taxpayer of 2003 in the energy sector.

BGN 29.757 millions were donated to the social funds, including social insurance, staff requalification and unemployment funds, medical insurance and additional insurances.



ENVIRONMENTAL PROTECTION

Clean energy

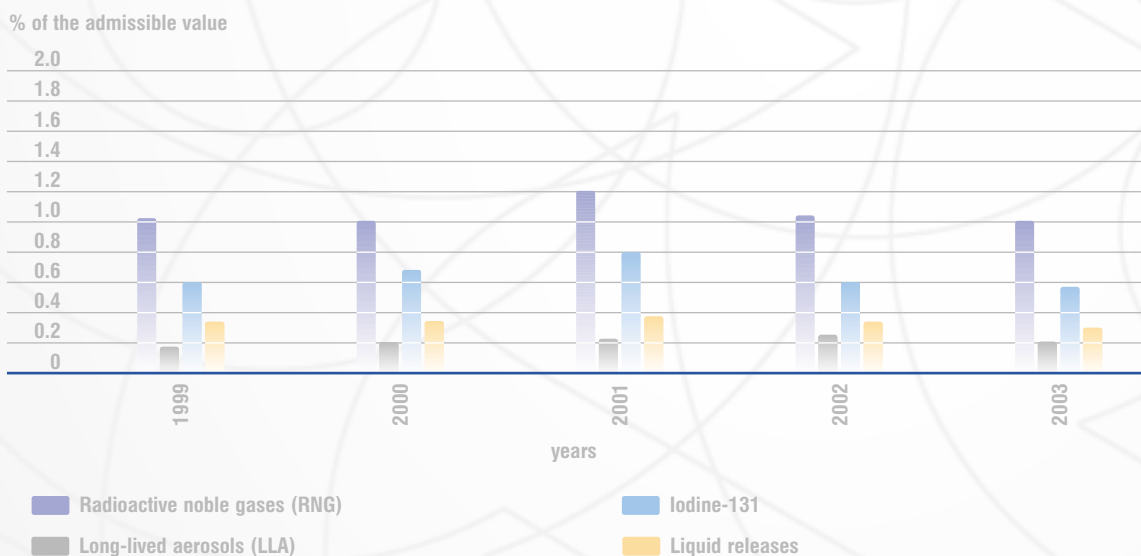
Kozloduy NPP plc produces energy from nuclear sources fully complying with the normative requirements for population and environmental protection. The production of “clean energy” does not release carbon dioxide and other green-house gases, does not consume oxygen from the atmosphere and does not release large quantities of conventional waste. The small amounts of radioactive waste obtained during the production process are collected, treated and stored so that there is no impact on the environment. The conventional wastes are managed in compliance with the legislative requirements in this area.

Gaseous, aerosol and liquid radioactive releases

The gaseous, aerosol and liquid releases data are included as an indicator of effective and safe operation of the plant and are constantly controlled and compared to the admissible values, permitted by the NRA and approved by the Ministry of Health (MH) and the Ministry of Environment and Waters (MEW).

The gaseous and liquid releases during the last years do not exceed 2% of the admissible values.

Total activity of the gaseous, aerosol (RNG, LLA and Iodine-131) and liquid releases in % of the admissible average annual value





The total and specific activity of the technological waters released in the Danube river in 2003 are considerably lower than the legal limits. The data obtained confirmed the effectiveness and normal functioning of the systems and equipment for special treatment and purification of the waters from the production cycle at the NPP.

Radio-ecological monitoring

The impact of Kozloduy NPP operation on the environment components has been subject to detailed and systematic studies since the plant commissioning in 1974. The radiation situation in the radiologically controlled area is without deviations from the characteristic natural values within the limits of 0.06 – 0.14 $\mu\text{Sv/h}$.

The control of the environment protection is implemented through a set of measures in the area of the environment monitoring; the control of the releases from the NPP to the atmosphere and hydrosphere; treatment and storage of the radioactive and conventional wastes. The continuous radiation monitoring within the 3 km area around the plant is performed by an automated information system of the plant integrated into the national radiation monitoring system. Within the 100 km surveillance area around Kozloduy NPP samples are taken and analyzed of air, soil, flora, the Danube river and drinking water sources and radiation gamma background is measured.

The utility radiation monitoring results are annually verified by independent radio-ecological studies in the frames of parallel programs – from MEW and the National Radiobiology and Radiation Protection Center. The information is available to the population. The radiation parameters of the ecological components are within the normal limits of the values typical for the region. Compliance is established of the radio-ecological status of the environment around the NPP with the requirements of the active legislation in the area of radiation protection.

Control of the public exposure

The additional exposure of the public within the 30 km area resulting from the operation of Kozloduy NPP is negligibly low. During the last ten years it is lower than 0.02% of the background radiation and is below 0.04% of the limit of 1 mSv according to Basic Norms for Radiation Protection (BNRP) 2000. The normalized collective effective dose of population of gaseous aerosol effluents is completely comparable to the average value for the reactors of the same type worldwide according to data of the Scientific Committee for Investigation of Atomic radiation at the UNO, 2000. According to the indicators for radioactive noble gases and Iodine-131 the dose rate is lower than the average for the world. The public dose exposure of the plant liquid effluents is also negligibly low.

Conventional wastes

Kozloduy NPP plc manages all non-radiation aspects of the environmental impact in compliance with the legislative requirements in this area.

The use of superficial waters from the Danube river and underground waters from the own water sources is implemented in compliance with the requirements of the permissions under the Water Act.

The activities on radioactive wastes management are performed in compliance with the permission received at the end of 2000 under the Act for Restriction of the Harmful Impact of Wastes on the Environment. The separate collection of conventional wastes at the Plant is regulated by rules for management of conventional wastes. The wastes that could be re-utilized are sold to companies which have the licenses and permits required by the Act.

Since December 2001 an own plant repository for conventional domestic and industrial wastes has been in operation and it is constructed in compliance with the contemporary requirements for environment protection. The design operation term is 24 years. Since April 2002, after optimization of the wastes management process, all wastes obtained within the limits of the protected area of Kozloduy NPP are treated at the depository.

Two programs for own non-radiation monitoring are being implemented – of the depository for conventional wastes and of the effluents into the waters. The annual reports with the results of the implementation of these programs are sent to the Executive Agency on Environment and the Regional Inspection on Environment and Waters – Vratza.

RADIOACTIVE WASTE AND SPENT NUCLEAR FUEL

RAW and SNF Management

Kozloduy NPP target is to minimize the impact on the population and environment of the radioactive wastes and spent nuclear fuel stored at the plant site. The management of these activities is in compliance with the requirements of the Vienna Convention on Safety of Spent Nuclear Fuel Management (SNF) and on Safety of Radioactive Wastes Management (RAW).

Radioactive waste

During the operation of the nuclear power plant liquid and solid radioactive wastes are generated. Compared to the unit of produced energy the RAW quantities generated by NPP are over 10 000 times lower than the wastes from coal-fired power plants.

The generally accepted principles for RAW management define the requirement the RAW to be collected, treated, conditioned and stored in a way that provides protection of human health and environment protection now and in future without being a burden to the future generations.

At Kozloduy NPP site, a facility was constructed for treatment, conditioning and storage of low-level and intermediate-level liquid and solid radioactive wastes. The commissioning of this facility gave a permanent solution of the issue for reliable storage of RAW and is also a significant contribution to environment protection. As a result of the commissioning of this facility and the program applied during the last years to minimize the radioactive wastes, the speed of treatment and conditioning of RAW for long term storage has increased.

Spent nuclear fuel

The spent nuclear fuel (SNF) is stored at the plant site under conditions which provide safety for the environment. After storage in special at-reactor spent nuclear fuel pool, the fuel is removed to a specially constructed facility for storage of spent nuclear fuel for all units.

The capacity of the facility allows storage of all spent nuclear fuel assemblies being discharged now and for the future years until the commissioning of the new facility.

The conditions created for safe storage of SNF at the plant site, together with the fact that part of the fuel is transported for treatment and long term storage in Russia, provide a mid-term solution of the SNF safe management issue. Together with the Ministry of Energy and Energy Resources (MEER), NRA and other national institutions implementation is prepared applying the best practices for long term safe storage of radioactive wastes and spent nuclear fuel.



COOPERATION AND DIALOGUE

Openness and Transparency

Kozloduy NPP plc has implemented and now operates a policy of cooperation and open dialogue with international organizations and companies in the nuclear field, with the media and public on all issues related to production, safety and nuclear fuel management.

International Contacts

As a member of the world community of nuclear operators, Kozloduy NPP maintains a continuous process of information and operational experience exchange with the International Atomic Energy Agency (IAEA), the World Association of Nuclear Operators (WANO) and other international organizations and leading companies in the field of nuclear energy.

Through participation in the international peer review process, Kozloduy NPP obtains assessment and support of its efforts in operational safety enhancement. In 2003 the plant was hosted of two major reviews:

- June 02-13 – WANO Mission to units 3&4;
- November 16-19 – Expert Mission of the EU Council's Atomic Questions Group (AQG).

Both expert teams acknowledged the exceptional efforts invested by the plant during the last several years and the high motivation of people working at KNPP.

In 2003 the First National Report of the Republic of Bulgaria was presented on implementation of the obligations under the Joint Convention for Safety of Radioactive Waste and Spent Fuel Management. Kozloduy NPP leading experts participated in the development of the report and answers to additional questions posed to Bulgaria by the Convention countries.

The plant participated in a number of regional projects and technical assistance programmes of IAEA, WANO, EU PHARE Nuclear Safety Programme, Nuclear Safety Programme of Department of Trade and Industry (DTI) of UK and in separate bilateral cooperation programmes.

Kozloduy NPP participated in the activities of the largest international and European forums and organizations such as World Nuclear Association (WNA), European Nuclear Society (ENS) and European Nuclear Forum – FORATOM (through BULATOM). This enabled the KNPP specialists to be in line with nuclear energy news and to present before the international science community and bodies of EU the achievements of Bulgarian nuclear industry.



Public Acceptance

Public support has always been of significant importance for the present and future of Kozloduy NPP. One of the priorities of the plant Management is the increase of effectiveness of communications with the media as well as with the public, both in Bulgaria and abroad.

In response to the increased interest of the media and the public, in 2003 the dialogue was focused on the implemented upgrades for safety and reliability improvement.

Through the year the nuclear power plant was open for visits of Bulgarian and international politicians, specialists, journalists as well as for citizens.

The interest demonstrated by the members of Joint Parliamentary Committee “Bulgaria – European Union”, the Great Britain Ambassador Ian Soutar, the Member of the European Parliament Giles Chichester and representatives of different Bulgarian and international political groups, showed that politicians needed additional information and personal impressions about plant operation.

Senior managers of international nuclear organizations were familiarized with Kozloduy NPP achievements in safety enhancement. Among them were Ms. Judith Melin, WENRA Chair and Director General of Swedish Nuclear Power Inspectorate (SKI) and Mr. Kevin Brockman, Head of Division “Safety of Nuclear Installations”, IAEA, Vienna.

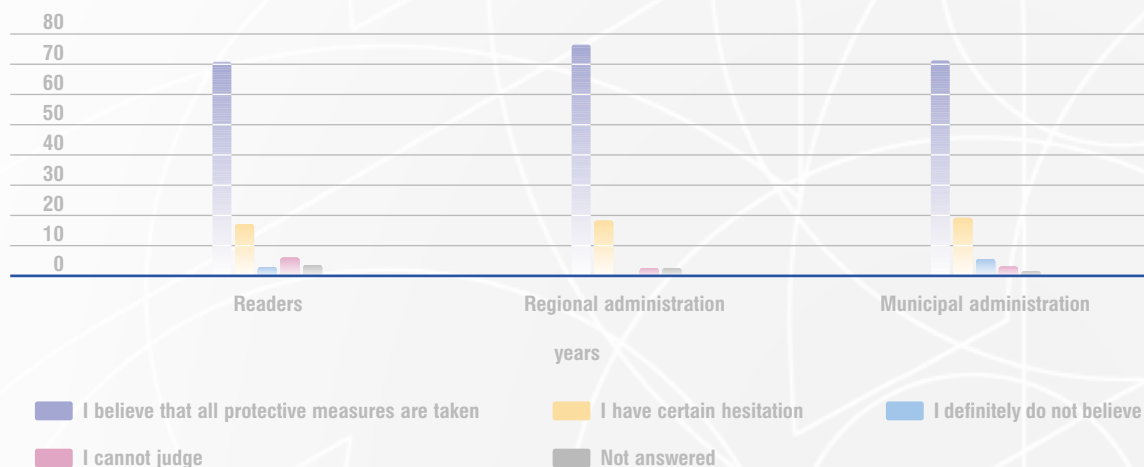
As a result of increased public interest to the operation of Kozloduy NPP, a number of guests were introduced to the specifics of the nuclear electricity production process and its contribution for environment protection. Bulgarian pupils and students represented 43% of the visitor total number. During the organized Open Door day on October 4th, 2003, Kozloduy NPP accepted around 500 visitors from the whole country, which was a record in the plant history.

In 2003 the public opinion supported the operation of the only nuclear power plant in Bulgaria. Bulgarians thought that the plant is an important factor for economic prosperity of the country.

The results of the opinion poll covering the readers of the regional newspapers as well as the municipal and regional administration in the towns of Vratza, Montana, Vidin, Lom and Kozloduy, showed that more than 70% were convinced of the safety of the nuclear power plant.

Confidence in Kozloduy NPP safety among the region residents

Do you believe that Kozloduy NPP is safe?



The confidence in the plant safe operation is based on good operational results as well as on the open policy for international reviews in Kozloduy NPP, which confirm the safety of the plant.

Current information about Kozloduy NPP activities can be found at www.kznpp.org, the web-site of the plant.



CONTENTS

INTRODUCTION	2
GENERATION	4
SAFETY	10
INVESTMENTS AND MODERNIZATIONS	14
HUMAN RESOURCES	17
ECONOMIC AND FINANCES	20
ENVIRONMENTAL PROTECTION	23
RADIOACTIVE WASTE AND SPENT NUCLEAR FUEL	26
COOPERATION AND DIALOGUE	28

Kozloduy NPP plc
Kozloduy 3321
Bulgaria
tel.: + 359 973/ 7 20 20
fax: + 359 973/ 8 05 91