

The Nuclear World in 2002

Introduction

Forty-five years after its founding, the International Atomic Energy Agency continues to serve as the focal point for worldwide co-operation in the peaceful uses of nuclear *technology*, for promoting global nuclear *safety* and, through its *verification* activities, for providing assurances that international undertakings to use nuclear facilities and materials for peaceful purposes only are being honoured. What follows is a survey of worldwide nuclear related developments in 2002, and how they affected the work of the Agency.

Technology

Nuclear Technology for Sustainable Development

The World Summit on Sustainable Development (WSSD) met in August and September in Johannesburg to review progress made since the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro in 1992, and to reinvigorate global commitment to sustainable development. The importance of energy as an essential prerequisite for socioeconomic development was emphasized in the ‘Johannesburg Plan of Implementation’ and the ‘Johannesburg Declaration on Sustainable Development’, which contrasts notably with the absence of an energy chapter in *Agenda 21*, the action plan from the Rio conference.

The Agency’s work in nuclear applications and the relevance of Agency activities towards sustainable development were highlighted by the Secretariat in the work leading up to the WSSD. At the Preparatory Committee meetings, the Secretariat organized side events on ‘Nuclear Applications and Capacity Building for Sustainable Development’, and ‘Integrated Coastal Zone Management — Issues, Technologies and Partnerships’, and at the WSSD itself an event on ‘Environment Friendly Control of Insect Pests’.

The major mechanism at the WSSD for prompting specific action in pursuit of *Agenda 21* objectives was the promotion of new partnerships among governments, businesses, non-governmental organizations and international organizations. Over 250 “Type 2 Partnerships”, as they came to be known, were announced at Johannesburg, including four Agency led partnerships on ‘Indicators for Sustainable Energy Development’, ‘Designing Country Profiles on Sustainable Energy Development’, ‘Application of Isotope Techniques for Sustainable Water Resource and Coastal Zone Management’, and ‘Application of Nuclear and Non-nuclear Techniques for the Monitoring and Management of Harmful Algal Blooms in the Benguela Coastal Region’. These partnerships involve a number of countries, academic institutions, international associations and UN system organizations.

Managing and Preserving Nuclear Knowledge

Recent trends have drawn attention to the need for better management of nuclear knowledge. One challenge is to ensure the availability of qualified people to sustain or even expand the present level of deployment of nuclear technology. A related concern is the potential loss of valuable knowledge, accumulated over past decades, due to ageing of the workforce. There are currently a number of national and international initiatives to reverse these trends.

For example, an encouraging development in the USA was the increase for the third straight year in enrolments in undergraduate nuclear engineering programmes. After declining from 1500 students in 1992 to about 450 in 1999, enrolment in 2002 rose to 1000. South Carolina State University and the University of South Carolina also announced that they will introduce new graduate and undergraduate nuclear engineering programmes. These will be the first such academic programmes in this area in more than 20 years in the USA.

Agency efforts in this area included the hosting of a meeting on managing nuclear knowledge, with senior experts from academia, industry and government. The meeting urged the Agency to lead activities towards preserving and enhancing nuclear knowledge by complementing and supplementing activities by governments, industry, academia and international organizations. The urgency and importance of these issues were confirmed at the Scientific Forum and through a resolution at the 46th session of the Agency's General Conference.

Nuclear Power Around the World

At the end of 2002, there were 441 nuclear power plants operating in 30 countries, representing a total capacity of 359 GW(e), more than 10 000 reactor-years of operating experience, 16% of global electricity generation and 7% of global primary energy use. Six new nuclear power plants were connected to the grid in 2002 — four in China, one in the Republic of Korea and one in the Czech Republic. Four plants were retired — Kozloduy-1 and 2 in Bulgaria and two units at Bradwell in the United Kingdom — and construction began on seven new plants, all in Asia.

Current expansion, as well as near term and long term growth prospects, is centred in Asia. Of 33 reactors currently under construction worldwide, 20 are located in Asia. Seventeen of the last 26 reactors to be connected to the grid are in the Far East and in South Asia. The greatest growth in nuclear electricity production in 2002 was in Japan.

Elsewhere the outlook is more mixed. In Western Europe the most significant possibility for new nuclear capacity is in Finland. In May 2002, the Finnish Parliament ratified the Government's "decision in principle" on the application by Teollisuuden Voima Oy (TVO) to build a fifth nuclear power plant. In September, TVO invited bids from reactor vendors. On the other hand, Belgium has now voted a nuclear phase-out policy into law, and the United Kingdom's White Paper on energy puts off any consideration of new nuclear capacity for at least another five years.

In North America, the United States Nuclear Regulatory Commission (NRC) approved four licence extensions of 20 years each (i.e. 60 years for each power plant), bringing the total number of approved licence extensions by the end of the year to 10. The NRC had 20 more applications under review and expected at least 9 more in 2003 and 10 more in 2004.

In the Russian Federation, the Government body responsible for electric and thermal power generation at nuclear power plants (ROSENERGOATOM) has begun a programme to extend licences at 11 plants. For example,

Innovation: A Key to Success in Competitive Energy Markets

The 21st century is likely to witness a rapid rate of technological change, increasingly competitive globalized energy markets and, particularly in developing countries, a substantial expansion in energy use to fuel economic development. For a technology to survive and flourish in this century, continual innovation is essential. This is widely recognized in the nuclear industry. In 2000, the year the Agency began its International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO), the US led Generation IV Project also began. The European Union has the 'Michelangelo Initiative'. And individual countries have developed national complementary innovation programmes.

In 2002, the Generation IV Project completed selection of six concepts for future international research — the gas cooled fast reactor, the lead cooled fast reactor, the sodium cooled fast reactor, the supercritical water cooled reactor, the very high temperature reactor and the molten salt reactor. The Agency published the final report of a study on innovative nuclear reactor development, completed with the OECD's IEA and NEA. In addition, a draft report on Phase 1A of INPRO was submitted to the project's steering committee for review. INPRO provides a global perspective on energy demands in developing countries and their future needs, incorporates the Agency's safeguards and safety expertise, and takes a global view of environmental impacts from the full fuel cycle.

Novovoronezh-3 received a five year licence extension (beyond the original 30 year period) in December 2001. In 2002, ROSENERGOATOM submitted an application for a 15 year extension for Novovoronezh-4 and it is currently preparing applications for 15 year extensions for three more units.

Of the world's 441 operating nuclear power plants, 345 have been in operation for 15 or more years, while 128 have been in operation for more than 25 years. In many countries nuclear reactors completed in the high growth decades of the 1970s and 1980s will shortly be nearing the end of their originally planned lifetimes. Many decisions will need to be taken on the relative merits of licence extension and decommissioning. Indeed, the speed at which licence extension and decommissioning experience is accumulating is accelerating, and the Agency is contributing to a corresponding acceleration in the rate at which new information is shared, best practices are disseminated and new knowledge is put to immediate and constructive use. However, there is still no international agreement on some of the key 'end points' for decommissioning, in particular on criteria for disposing of large amounts of very lightly contaminated construction materials and for releasing decontaminated land or buildings for general reuse. This lack of clear criteria is a significant impediment to planning decommissioning activities. However, the levels currently being discussed internationally to define the scope of regulatory control should, when they are agreed, help to address this and several other issues. The Agency also completed a report on licence extension costs and regulatory approaches in 12 Member States in November and began development of an international database on nuclear power plant life management.

Safe Management of Spent Nuclear Fuel and Radioactive Waste

Through 2002, global nuclear electricity production generated 255 000 tonnes of heavy metal (t HM) of spent fuel. Of this amount, 84 000 t HM went to reprocessing and 171 000 t HM to storage. The amount of spent fuel in storage is projected to increase to 260 000 t HM in 2015. Extended schedules for getting final repositories on line mean longer storage periods for spent fuel — up to one hundred years in some cases. Globally, there is sufficient capacity for the projected increase, although the potential exists for national shortages that need to be anticipated and resolved.

All radioactive waste can be contained safely for long periods of time. There is, however, broad technical consensus that storage in perpetuity is neither feasible nor acceptable, and that geological disposal provides the best means for the safe long term management of high level radioactive waste. Nevertheless, recognizing societal concerns, there is an increasing perception that such geological repositories might have to be kept open until such time as a future generation decides either to close them or retrieve the waste and dispose of it in some other manner. The Agency is currently in the process of updating safety standards on geological disposal to take account of this possible need for 'retrievability', while emphasizing the importance of not compromising long term safety.

Progress on final repositories included the February decision by the President of the United States of America to proceed with the Yucca Mountain disposal site, a decision effectively ratified by Congress in their subsequent vote to override formal objections by the State of Nevada. Commissioning of the site is scheduled for 2010. Finland's Parliament had already ratified in 2001 the decision in principle for a final disposal site at Olkiluoto for spent fuel from Finland's four operating nuclear power plants. In 2002, the Parliament ratified a further decision in principle to allow spent fuel from the planned new reactor to also be disposed of at Olkiluoto.

In Canada, the new Nuclear Fuel Waste Act came into force in November 2002. The Act requires nuclear utilities to form a waste management organization, which will submit options to the Government for the long term management of nuclear fuel waste, and also requires the utilities to set up a trust to finance long term waste management. Also in November, the European Commission proposed a directive on spent nuclear fuel and radioactive waste which would give priority to geological waste disposal and require Member States to decide on burial sites (national or shared) for high level waste by 2008 and to have the sites operational by 2018. For low level and short lived waste, disposal arrangements would have to be ready by 2013.

An international conference on 'Issues and Trends in Radioactive Waste Management', held in Vienna in December 2002, provided an update on some of the major issues in radioactive waste management, and introduced a range of new issues. The conference underlined the need for a greater recognition of the importance of the social and political aspects of radioactive waste management.

Research Reactor Fuel Repatriation

In 2002, the Reduced Enrichment for Research and Test Reactors (RERTR) Programme continued, with 20 reactors outside and 11 inside the USA completely converted from high enriched uranium (HEU) to low enriched uranium (LEU) and seven reactors partially converted. In addition, the US acceptance of research reactor fuel of US origin continued, with shipments of fuel from reactors in Denmark, Germany, Japan, the Netherlands and Sweden.

At a summit in May, the US and Russian Presidents agreed on the formation of a group of experts on non-proliferation to investigate near and long term bilateral and multilateral solutions for reducing HEU and plutonium inventories. Their September report included two options that are of particular relevance for research reactors: the use of Russian HEU to fuel selected US research reactors until they are converted to LEU; and the accelerated development of LEU fuel for both Soviet era design and US designed research reactors.

An initiative involving the Agency, the Russian Federation and the USA on the feasibility of returning research reactor fuel of Russian origin to the Russian Federation for management and disposition made some progress in 2002. Preparations are under way for the first shipment to take place from Tashkent, Uzbekistan, in 2003.

In August, 48 kg of 80% enriched uranium was removed from the Institute of Nuclear Sciences Vinča near Belgrade and flown to Dimitrovgrad, Russian Federation, where it is to be blended down for use in LEU fuels. Agency safeguards inspectors verified and sealed the material before its transfer. As part of the agreement that led to the HEU removal, the Nuclear Threat Initiative pledged up to \$5 million for the cleanup of the Vinča Institute, including conditioning and packaging of the corroded spent fuel for shipment or dry interim storage, decommissioning of the 6.5 MW research reactor and addressing current problems with the low and intermediate level wastes stored on-site.

Nuclear Applications

The five Agency programmes in the field of nuclear sciences and applications have a unifying theme of serving basic human needs, and of providing nuclear and isotopic techniques to promote economic development in a clean and safe environment. In particular, the water resources, human health and food and agriculture programmes are of major relevance to the five key thematic and priority WEHAB areas (water, energy, health, agriculture and biodiversity) identified by the UN Secretary General to provide focus and impetus to the WSSD.

Teaming up to Manage the World's Water Resources

The Agency's water resources programme co-ordinates its activities with other national and international organizations that are active in the water sector. In 2002, the Agency assisted developing Member States in using effective tools for the assessment and monitoring of water resources, in particular groundwater resources, based upon the applications of isotope techniques. Indeed, monitoring and assessment of both the quantity and quality of groundwater resources is an integral part of nearly 75 technical co-operation projects operational in about 48 countries. In addition, substantial human resources and institutional capacity are being built through the provision of training and appropriate equipment for monitoring.

In recognition of its contribution to water resources management, the Agency was invited to be the lead organization for the UN system to mark World Water Day 2002. The celebrations were held in Vienna and stressed the role of science and technology in the use and management of water resources.

Nuclear Techniques for Better Health

The Johannesburg Plan of Implementation identifies certain priority areas such as HIV/AIDS, malaria, tuberculosis and cancer. In all of these areas the Agency, through its human health programme, is active on its own and in partnership with other organizations. For example, it is strengthening its collaboration with WHO/UNAIDS to make use of molecular techniques to monitor HIV/AIDS and related problems, and is contributing to trials for testing a new HIV/AIDS vaccine.

International Collaboration on Water Issues

The Agency has active collaborative programmes with the WMO, the World Bank, FAO and UNEP. Together with UNESCO, a Joint International Isotopes in Hydrology Programme (JIHP) has recently been launched to improve implementation and co-ordination of the hydrological programmes of both agencies. The Agency will also be involved in the UN system's activities for the International Year of Freshwater. In addition, the Agency chairs the UN interagency committee on co-ordination for freshwater for 2002–2004. Under the WSSD partnership initiatives, the Agency has joined with UNESCO (in their 'Isotopes in Hydrology Programme' and the Intergovernmental Oceanographic Commission), International Council of Scientific Unions, International Association of Hydrologists and International Association of Hydrological Sciences in the application of isotope techniques for sustainable water resources and coastal zone management.

Another method, namely radiotherapy, is one of the earliest applications of radiation and remains a major modality available for cancer treatment. However, developing countries with 80% of the world's population have only one-third of the world's radiotherapy resources. These countries need support to adopt and develop various radiotherapy techniques and integrate them into their overall national cancer control programmes. In 2002, the Agency continued to transfer mature and established technologies to the developing countries through training, including the development of training material, expertise and guidance, in addition to the provision of equipment.

In the fight against malaria transmitting mosquitoes, research was initiated in 2002 to develop key components of the sterile insect technique (SIT) against these mosquitoes and to evaluate the feasibility of applying this technique in a field programme.

Promoting Food Security Through Nuclear Techniques

Together with FAO, the Agency devotes considerable resources to such agricultural issues as soil and water management and crop nutrition, plant breeding and genetics, animal production and health, insect and pest control and food quality and safety, with objectives that are closely aligned to the WSSD's Johannesburg Plan of Implementation.

In the spirit of the partnerships called for by the WSSD, the Agency has arrangements and relations with many organizations in the food and agricultural sectors. An example is the Rice–Wheat Consortium for the Indo-Gangetic Plains. A network has been established between national and international agricultural institutions that focuses on improving the productivity of rice and wheat in a sustainable fashion. The research agenda is supported by many countries and by regional and international funding and development organizations.

The tsetse fly continues to be a serious problem in many parts of Africa. As part of its efforts to combat this insect pest, the Agency became a member in July 2002 of the secretariat of the Programme Against African Trypanosomosis (PAAT). The Agency brings to PAAT its specialist knowledge of SIT for use in area wide eradication and control campaigns against tsetse. One of the chief functions of PAAT is to be a forum for the Pan African Tsetse and Trypanosomosis Eradication Campaign (PATTEC), which was formed as a result of the declaration of the OAU (now the African Union) Heads of State in July 2000 for the eradication of tsetse flies from Africa.

Technology Transfer and Capacity Building for Sustainable Development

Promoting the scientific, technological and regulatory capabilities of developing countries through technology transfer and capacity building is among the main tasks of the Agency's technical co-operation programme, with special emphasis given to technical co-operation among developing countries. In 2002, disbursements went up to \$74.8 million, from \$73.5 million in 2001. The major areas of activities were: human health (21%), safety (18%), food and agriculture (17%), applications of physical and chemical sciences (11%), water resources and environmental protection (8%), nuclear science (7%) and capacity building (7%).

Eradicating Rinderpest: A Major Livestock Killer

The Global Rinderpest Eradication Programme (GREP) aims at eradicating rinderpest from the world by the year 2010. This will be the first time that an animal disease, which has historically killed hundreds of millions of cattle, is eradicated globally. Support for the monitoring and verification process of GREP is provided by the Agency through its technical co-operation programme and through co-ordinated research by FAO and the Agency. The result has been the development of a capacity for the diagnosis of rinderpest in more than 40 countries in Africa and Asia.

Safety and Security

International Safety Standards

As required by its Statute, the Agency has been establishing safety standards since it was founded. The scope and application of the standards have gradually expanded with time. The rigour of the standards has also increased to reflect changing expectations about safety, and the process for establishing the standards has been improved to enhance the quality and authority of the product. The Agency's current safety standards reflect the 'best practice' in safety: the levels of safety that are considered to be achievable and that all Member States should strive to achieve.

The acceptance and application by States of the Agency's safety standards is an important element of the global nuclear safety regime. The Commission on Safety Standards (a standing body of senior government officials that provides guidance and advice to the Director General on the overall programme on regulatory aspects of safety) has developed a strategy for the revision of the standards. The aim of this strategy is to meet the changing needs of users and take into account new technologies, and implement an 'outreach' initiative to extend awareness of the standards and to promote their use. The strategy also supports closer links between the safety standards and measures to provide for their application, such as the Agency's advisory and review services on nuclear safety.

In this connection, a directive setting out basic obligations and general principles on the safety of nuclear installations, proposed for adoption by the European Commission to members of the European Union (EU), is aimed at introducing common safety standards for EU States and making them legally binding in those States. If the EU were to adopt and rely on the Agency's international standards, the effectiveness of the standards would be further increased.

Convention on Nuclear Safety

In April 2002, the second Review Meeting of Contracting Parties to the Convention on Nuclear Safety was held in Vienna at which the national reports submitted by Contracting Parties were reviewed. The Summary Report of the Meeting, addressing issues discussed and conclusions reached, is an important record of the Contracting Parties' views on the state of nuclear safety in their countries. The overall conclusions were encouraging, particularly in respect of legislation, regulatory independence, financial resources for regulatory bodies and operators of nuclear installations, implementation of safety improvements in installations built to earlier safety standards and emergency preparedness. At the same time, the meeting acknowledged that there are areas that warrant special attention, including the management of safety and safety culture, plant ageing and upgrading, maintaining competence and the effectiveness of regulatory practices.

In general, the Convention process appears to have persuaded many Contracting Parties to take measures to improve the implementation of their obligations and to further enhance nuclear safety. Recognizing the value of the various safety review missions and services, the Contracting Parties invited the Agency to submit a report to them identifying generic issues and trends observed in the course of performing nuclear safety review services.

Building Infrastructures for Greater Safety

Countries with expanding nuclear programmes can encounter difficulties in finding sufficient numbers of trained and experienced staff, while those with static or contracting programmes can struggle to find suitably qualified young people to replace retiring experienced staff. Therefore, education and training are essential to maintaining safety infrastructures. The Agency's strategic plans for education and training in nuclear safety and in radiation, waste and transport safety aim at addressing this concern by promoting self-sustaining capabilities in Member States, including 'training the trainers' and developing and disseminating standardized training materials for a wide range of courses. Furthermore, there is a need to strengthen efforts to pool, assess and effectively share existing and new technical knowledge and practical experience. The Agency is assisting Member States in developing nuclear safety networks to exchange knowledge among regional hubs and national centres using modern information technology tools.

Transport Safety

Ensuring the safe transport of radioactive material remains high on the international safety agenda. The Transport Safety Appraisal Service (TranSAS) was introduced by the Agency at the request of its Member States as one way of providing assurance that the Agency's Transport Regulations were being consistently implemented. The 2002 missions to Brazil and the United Kingdom, and the forthcoming missions to France, Japan, Panama and Turkey represent a significant development. In particular, France, Japan and the United Kingdom are major shippers of radioactive material, while Panama and Turkey control important waterways for international maritime transport. The publication of the full mission reports is also a significant step towards greater transparency with regard to the transport of radioactive material.

Nuclear Security

Combating the dangers of using nuclear and other radioactive material for malevolent acts was an important area of activity during the year. An Advisory Group on Nuclear Security was established in January to provide advice on the Agency's activities related to preventing, detecting and responding to malicious acts involving nuclear and

Protecting Radioactive Sources and Materials

To protect the public from the hazards of ionizing radiation, 'cradle to grave' control is essential for radioactive sources used in medicine, food preservation, water resources management and industrial applications. In the wake of the 11 September attacks in 2001, and the growing awareness of the potential for radioactive sources to be used in malevolent acts, source security has taken on a new urgency. A widespread problem involves sources that, due to loss, theft or abandonment, have fallen outside official regulatory control — the so-called "orphaned" sources.

The Agency and its Member States have been working to raise the levels of radiation safety and security associated with radioactive sources, focusing on countries with urgent needs. Nearly a decade ago, the Agency established the *International Basic Safety Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources*, and has been implementing a technical co-operation project on upgrading radiation protection infrastructure to help improve the control of radioactive sources in developing countries. In addition, a draft 'Code of Conduct on the Safety and Security of Radioactive Sources' has been developed, focusing on those radioactive sources posing a significant safety or security risk. The Agency has also put forward recommendations to States for creating national source registries, securing orphaned sources and establishing measures to prevent malicious acts and activities involving nuclear and other radioactive materials. Activities are being carried out in the countries of the former Soviet Union, and recently an initiative was launched to locate, recover, secure and recycle orphaned sources worldwide. Assistance is also being provided to States to strengthen their border controls against illicit trafficking, and to improve their security of radioactive sources.

other radioactive materials and nuclear facilities. In March 2002, the Board of Governors approved specific proposals for protection against nuclear terrorism submitted by the Director General. The proposals encompass eight areas of activity. By the end of 2002, implementation of the activities was well under way, with new and revised standards, guidelines and methodologies under development, and a substantial increase in the number of assessment missions and training courses, especially those related to the physical protection of nuclear material and to illicit trafficking. An Agency wide confidentiality regime was established to enhance the protection of nuclear security related information. In addition, assistance was provided to States regarding legislation related to nuclear security, covering for example the control of radioactive sources, physical protection requirements, safeguards and import–export controls. The Agency maintained co-operation with other international organizations, such as Europol, Interpol, the Universal Postal Union and WCO.

Verification

Comprehensive Safeguards Agreements and Additional Protocols

The Model Additional Protocol to safeguards agreements, approved by the Board of Governors in May 1997, provides the legal basis for a significantly strengthened Agency safeguards system. When fully implemented in a State, the measures provided by a comprehensive safeguards agreement together with an additional protocol will allow the Agency to enhance its ability to draw safeguards conclusions about both the non-diversion of declared nuclear material and the absence of undeclared nuclear material and activities in that State.

In 2002, the Agency expanded its efforts to encourage wider adherence to the strengthened safeguards system, bearing in mind the importance of achieving the universal application of that system, consistent with the respective safeguards undertakings of Member States. Three outreach seminars were held, and bilateral consultations were pursued with a large number of States. During the year the number of States having concluded additional protocols rose from 61 to 67, and the number of additional protocols in force increased from 24 to 28. Thirteen States notified the Agency of their intent to conclude additional protocols. Nonetheless, progress continues to remain disappointingly slow, in particular with regard to the number of States with additional protocols in force. The Agency's outreach efforts also aim at the conclusion of safeguards agreements. Although the number of non-nuclear-weapon States Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) that still had to conclude comprehensive safeguards agreements in accordance with their treaty obligations went down from 52 at the end of 2001 to 48 at the end of 2002, the number remained unacceptably high. In November 2002, Cuba acceded to the NPT as its 188th State Party. It has initiated negotiations with the Agency on concluding a comprehensive safeguards agreement.

The Board of Governors was presented with the completed conceptual framework for integrated safeguards, comprising the set of safeguards concepts, approaches, guidelines and criteria that govern the design, implementation and evaluation of integrated safeguards. The framework will help to ensure consistent, non-discriminatory implementation of integrated safeguards. During the year, work continued to strengthen the effectiveness and improve the efficiency of the safeguards system. In this regard, the Secretariat focused on: the State evaluation process; safeguards approaches, procedures and technology; increased co-operation between the Agency and State or regional systems of accounting for and control of nuclear material; and training and support activities.

Non-Proliferation Treaty

The first session of the Preparatory Committee for the 2005 NPT Review Conference was held in New York in April 2002. Participating States Parties acknowledged with appreciation the Agency's roles in implementing NPT safeguards, strengthening the security of nuclear material, promoting nuclear safety and facilitating co-operation in the peaceful uses of nuclear energy, technology transfer and nuclear applications.

Democratic People's Republic of Korea

The Agency continued to be unable to verify the correctness and completeness of the initial declaration by the Democratic People's Republic of Korea (DPRK) of nuclear material subject to safeguards in accordance with its

NPT safeguards agreement with the Agency. At the request of the United Nations Security Council, however, the Agency, between November 1994 and December 2002, monitored the “freeze” of the DPRK’s graphite moderated reactors and related facilities in accordance with the “Agreed Framework” between the DPRK and the USA, and until the end of December maintained a continuous inspector presence at the Nyongbyon site.

In October it was reported by the USA that the DPRK had a uranium enrichment programme that had not been declared to the Agency. The Secretariat requested clarification from the DPRK, but no response was received. On 29 November, the Board adopted a resolution demanding that the DPRK comply fully with its NPT safeguards agreement, respond urgently to the Secretariat’s enquiry and provide all relevant information regarding the reported enrichment programme. The DPRK rejected the Board’s resolution. On 12 December, the DPRK notified the Agency that the following day it would lift the “freeze” and resume nuclear power generation operations. The DPRK asked the Agency to immediately remove its seals and cameras from all facilities subject to the freeze. The Secretariat then urged the DPRK not to take unilateral steps related to seals or cameras and to agree to an urgent meeting of technical experts to discuss practical arrangements involved in moving from the freeze to normal safeguards operations. However, on 22 December, ignoring the Agency’s requests, the DPRK unilaterally impeded or removed all the seals and cameras installed for verification purposes. The DPRK then demanded that the Agency withdraw its inspectors immediately. On 31 December, the inspectors left the DPRK and the Agency’s verification activities were suspended.

Iraq

From December 1998 until November 2002, the Agency was not in a position to implement its Security Council mandated activities in Iraq. The Agency’s activities were limited to physical inventory verification, pursuant to Iraq’s NPT safeguards agreement, of the nuclear material placed under safeguards. Agency inspectors verified the presence of the nuclear material in question in January 2002. In September 2002, after a series of talks, Iraq decided to allow unconditionally the return of United Nations and Agency weapons inspectors pursuant to their respective Security Council mandates. Subsequently, in November, the Security Council adopted Resolution 1441 (2002), under which inspections in Iraq were resumed. The verification activities carried out by the Agency pursuant to Security Council Resolution 687 (1991) and subsequent resolutions, in particular Resolution 1441 (2002), included: follow-up with the Iraqi authorities on Iraq’s “Currently Accurate Full and Complete Declaration”, received on 8 December 2002; on-site inspections; collection of environmental samples at known and new locations; satellite imagery analysis; gamma radiation monitoring; interviews; and re-verification of the nuclear material under safeguards. No evidence of ongoing prohibited nuclear or nuclear related activities was detected. However, by the end of the year, verification activities were still going on and at that time no firm conclusions could be drawn.

Outreach

As a result of political developments during 2002, there was a sharp increase in interest in the Agency and its work. While part of this interest was in response to the worldwide discussion of the threat of nuclear and radiological terrorism, developments in Iraq and the DPRK also resulted in wide media coverage of the Agency and its involvement in these issues. To meet this increased interest, the Agency adopted a proactive media and communications policy to communicate, on as wide a basis as possible, the Agency’s important role under its three pillars of technology, safety and verification.

Management

Within the framework of the results based approach, 2002 represented the first year of implementation of the programme for the 2002–2003 biennium. Towards the end of the year, preparation began of the *2002–2003 Mid-Term Progress Report*, intended to inform Member States — on the basis of the activities so far implemented, the outputs delivered and the resources utilized — of any factors that have affected implementation and any adjustments that are necessary to ensure achievement of the planned outcomes by the end of the biennium. Throughout the year, planning continued — in consultation with Member States — on the proposed programme

for 2004–2005. In December, the corresponding budget estimates were prepared and the overall draft programme and budget document issued.

Another key component of programme enhancement is a review of management practices and processes. In July the Agency engaged the services of an external consulting firm to conduct such a review. In its report the consulting firm commended the Agency for its consistent responsiveness to Member States, its willingness to be self-critical and engage in reform, and its performance under the stress of an expanding programme combined with a zero real growth budget. A number of areas for improvement were highlighted, including: simplifying some management processes, modernizing support services and delivery mechanisms, and developing a comprehensive change management strategy. But a key conclusion of the firm, which validated previous findings of the Agency's internal and external auditors, was that the mechanisms for identifying and achieving cost savings are in place. In fact, the consulting firm concluded that a sustained focus on identifying savings had in the end been counterproductive because it hampered sensible investments in people, processes and modernized support systems. It was the firm's view that the focus should be on measures to enhance effectiveness which, in the long term, would enhance quality and achieve savings.

Conclusion

The year 2002 was exceptionally busy for the Agency, particularly in the field of verification. Acting under the authority provided to it by safeguards agreements and additional protocols, the Agency continued to provide assurance of the peaceful uses of nuclear energy. Moreover, as the world's intergovernmental global forum for scientific and technical co-operation in the peaceful uses of nuclear technology, it was also active in the areas of nuclear technology applications and nuclear safety. The Agency achieved many successes during the year: initiating and supporting radiotherapy services; extending the tsetse fly eradication programme in Africa; and exploring new and safer methods of detecting land mines. The Agency also continued to promote the need for a strong safety culture, demonstrate nuclear power's relevance in meeting global energy needs, highlight acceptable waste management solutions, and introduce technological innovations.

There are many challenges and problems still facing the Agency and its Member States. These include the need to: strengthen the safeguards and non-proliferation regime and extend its application; upgrade nuclear safety around the world; establish a strengthened nuclear security framework; assess the role of nuclear power for sustainable development; and promote the application of nuclear techniques. Dealing with these challenges requires concerted, co-operative international action.