

# Objectives for international co-operation in the field of nuclear safety: A joint challenge

*Nuclear energy's future development must be built upon a solid international "safety partnership"*

by Dr K. Töpfer

International questions now on the agenda in the field of nuclear safety are intimately caught up with the much wider joint tasks we face for future political, economic, and ecological development. If we do not have an intact environment and are not careful in our use of natural resources, it will be impossible to achieve sustained and continuous economic development in either industrialized or developing countries.

Of central importance here are the urgent questions of future global energy supply.

The facts are that:

- Energy production and consumption put a great strain on the environment.
- Adequate economic energy supply is an essential element determining social and economic development.
- In view of the world's growing population, the limited amount of strain that can be placed on people and their environment — and the finite nature of the fossil fuels we mainly use today to guarantee global energy supply — represents a tremendous challenge which can only be met at great effort, involving a high level of capital, resources, and time.

In coming to terms with the problems we all face, and in developing specific strategies and measures to be taken, it is necessary to re-think and re-determine the basis and the objectives of the future development of the peaceful use of nuclear energy. Our work must not be geared only towards specific results but must be able to adapt to different needs as they arise. Only when operational security in nuclear power stations is guaranteed beyond doubt, and radioactive waste can be disposed of without fear of any future risks, will it be possible for nuclear energy to play its part in future energy supply.

Dr Töpfer is the German Federal Minister for the Environment, Nature Conservation, and Nuclear Safety.

In meeting these challenges in the field of nuclear safety and radiological protection, we can build on the experience and results of 30 years of global co-operation within the framework of the IAEA, the Organisation for Economic Co-operation and Development (OECD), and the European Community. Additionally, we are able to draw upon the intensive bilateral co-operation among western industrialized countries.

## Forward-looking actions

We are now called upon to make a decisive, forward-looking contribution to building up a safety culture.

To initiate this process and lay down the requirements for both the future development and the redefinition of the peaceful use of nuclear energy, the Federal Republic of Germany provided the impetus for the IAEA's International Conference on the Safety of Nuclear Power, which was held in Vienna in September 1991.

This conference showed that there is global agreement on the objectives for basic protection, and on the procedures, methods, and safety standards required to reach them, and that this may serve as a basis for an international safety partnership. It is therefore now necessary to create an internationally effective regime for nuclear safety at the highest level possible, one that is applied on a uniform basis and puts into concrete terms the basic agreement that already exists in this regard.

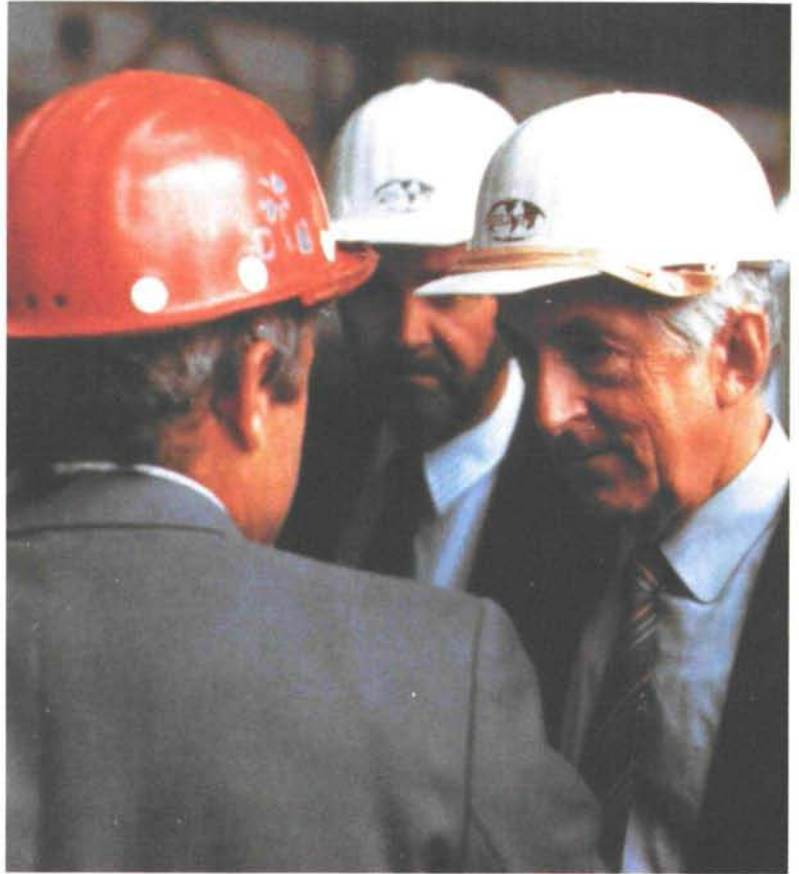
Our joint objective must go beyond protection against transboundary accidents. A serious accident in one country is a setback for all, even if it does not have transboundary effects, and may call into question the very future of the use of nuclear energy as a whole.

## Joint commitments and strategies

A joint commitment to the need for nuclear safety and the harmonization of safety standards on the lowest common denominator are not enough to reach this objective. Rather, to achieve an international nuclear safety regime, it is necessary to take into account and use the work done over the past few years by experts working in groups and commissions under the IAEA's auspices.

A key function is played here by the IAEA's nuclear safety standards and codes, commonly known as NUSS. These contain requirements and procedures based on experience gained, and on the basis of the best available technology and highest scientific standards, they have been shown to be fundamentally necessary for securing safety at the highest possible level.

Consensus exists internationally that these amended codes may serve as guidelines for the development, introduction, and revision of national safety standards, and that present safety standards in the western industrialized countries are basically in line with the requirements contained in the codes. They are, therefore, very much suited to serve as the basis for creating a catalogue of internationally recognized safety



Under IAEA programmes, teams of international specialists help national authorities to assess the safety of their nuclear electricity plants. Shown here are scenes from a mission to Czechoslovakia.

requirements and can be made binding at the global level by means of a convention.

The content and objectives of a convention, however, cannot, and indeed must not, be the creation of an international monitoring agency with rights and obligations under international law. The signing of a convention on nuclear safety does not mean that the States are relieved of their individual responsibilities in this area. Responsibility for nuclear safety lies in the first instance with the operator of each individual plant. Continuous monitoring must be carried out by national bodies of each sovereign State to ensure that the obligations arising from this responsibility are met. It is therefore crucial for the implementation of obligations entered into freely by the signing of a convention that compliance is maintained at the national level.

A convention must contain verification mechanisms to ensure that the agreed safety practice is actually implemented at the national level. Initial approaches already have begun internationally. Two IAEA safety services, known as OSART and ASSET, for example, are well-proven examples of effective mutual support.\*

In this regard, we must also recognize the fact that preventive safety measures in the form of plant-based technology are insufficient to guarantee the required level of safety. A high level of standards is required at the technical and regulatory levels. This is essential to avoid shortcomings not only in management and organization, but also in official compliance monitoring. These elements must become firmly embedded in an international safety culture if the aim of achieving an international safety partnership is to be reached.

A strategy for the future of nuclear safety and radiological protection must, in the final analysis, prove its worth in the way it solves the problems to be faced at the moment. In particular, this relates to how it comes to terms with former and present uses of nuclear energy.

The importance of safe disposal of radioactive waste was initially underestimated both in the countries using nuclear energy and at the international level. Intensive efforts made over the past few years mean that the technologies required for waste disposal and final burial are now available and can be assessed adequately. Nevertheless, although some countries have begun final disposal projects, the level of disposal potentially remains unsatisfactory and gives rise to public discussions on "unsolved" waste issues.

\*OSART stands for Operational Safety Review Team, and ASSET stands for Assessment of Safety Significant Events Team.

Joint efforts are required to specify and evaluate the entire spectrum of the options available for final disposal of radioactive substances; and to construct and operate installations to dispose of present and future residual substances and waste.

International co-operation has been practiced for many years in the field of radiological protection. Priorities and the need for action exist not so much in the fact that basic standards in radiological protection have to be continually developed. Rather, they concern the practical implementation and application of specific protection and prevention measures. Joint efforts particularly are required for the areas affected by the accident at Chernobyl.

### Central and Eastern European challenges

Of crucial importance for the future development of nuclear energy, and its contribution to world energy supply, is to ensure the accident- and incident-free operation of all nuclear power stations. It has become clear, at least since Chernobyl, that international co-operation in this area is absolutely essential. It was only possible for Western experts to gain a more comprehensive and detailed assessment of the operational and safety properties of Soviet-designed reactors in the countries of the former Council for Mutual Economic Assistance (CMEA) once the States of Central and Eastern Europe began to open up and new trends became apparent in the former Soviet Union.

The information provided by initial safety assessments and analyses gives cause for concern. Practically all installations of Soviet design have, to varying degrees depending on type of plant and country of operation, considerable operational and technical shortcomings.

In older reactor lines, in particular, the safety design of systems and components is inadequate. The actual construction often diverges from the planned safety layout. There is also cause for concern about known inadequacies in quality assurance, maintenance, repairs, overhauls, and organizational structure of the plants, and the lack of qualified and motivated staff. In general, it may be said that, under the standards of German licensing procedures and monitoring practices, it would not be possible to keep these plants in operation. As a consequence, we have shut down the Greifswald and Rheinsberg nuclear power stations in eastern Germany.

The general situation as regards energy supply in Central and Eastern Europe is marked by low efficiency in energy production, which in the conventional energy sector, causes extreme-

ly high levels of environmental pollution. This problematic situation is exacerbated by the fact that some of the former CMEA countries are unilaterally dependent on energy exports from former republics of the Soviet Union, in what is now the Commonwealth of Independent States.

In addition to this, there is tremendous pressure to export electricity in order to acquire the urgently needed foreign currency. This precarious situation has resulted in a postponement of the shutdown of obsolete nuclear power plants in the States of Central and Eastern Europe and in the successor States of the former USSR, in spite of the fact that it is urgently necessary. On the other hand, a return to the more widespread use of conventional plants equipped with outdated technology as substitutes for nuclear power stations in energy production would cause additional problems for the environment.

This strained economic and ecological situation makes it clear that, as these countries themselves recognize again and again, the reforming States of Central and Eastern Europe and the successor States of the former Soviet Union will not be in a position to solve the problems of safety, administration, and the economy on their own. International aid is urgently required.

Germany has offered and delivered aid from a very early stage in the form of bilateral co-operation. For example, the results obtained from the safety analyses of the WWR-440 plant in Greifswald and the WWR-1000 plant in Stendal were made available to former CMEA countries on the basis of international agreements. Germany also has provided specific material aid, for example the delivery of spare parts to the Bulgarian Kozloduy nuclear power plant. Nonetheless, this measure should be seen only as emergency aid and should not be misinterpreted as tacit agreement for the continued operation of unsafe plants. Furthermore, joint declarations have been made with the Russian Federation and Ukraine for initial steps to provide regulatory and administrative support.

### Multinational safety efforts

However valuable and helpful aid measures by individual countries may be, they cannot do justice to the total extent of the problem. An effective solution can only be achieved within the framework of widespread international support based on increased commitment from European industrialized countries, with the participation of technologically highly advanced countries, in particular the United States, Canada, and Japan.

A whole range of multinational aid measures is already underway. A first step towards pan-European action was the joint declaration of France, Great Britain, Belgium, and Germany on 25 March 1991, which included agreement on a common procedure for support given to the countries of Central and Eastern Europe and to the successor States of the former USSR to bring their nuclear power stations up to a standard comparable to that of the West.

Another particularly important element is the IAEA special programme for safety evaluations of older reactors in the countries of Central and Eastern Europe. (*See the article beginning on page 24.*) The European Community has introduced an immediate aid programme for the Kozloduy nuclear power plant. Further aid programmes are due to begin shortly.

These first joint multinational efforts will not be enough to deal with the tasks at hand. It is essential to provide adequate capital from international financial institutions. The European Bank for Reconstruction and Development, set up in 1991, and the World Bank must play a leading role here and contribute to an adequate division of the financial burden among the donor industrialized countries. An adequate financial contribution is urgently required from all industrialized countries since the scope of the aid measures required goes beyond the capabilities of individual countries.

Improvements also can be achieved by joining and co-ordinating individual bilateral and multilateral aid measures. Close and well-gear harmonization is essential in view of the extent of the problem to ensure the efficient application of the financial resources available and expert capacity required. Germany will use the occasion of the World Economic Summit to be held in Munich in 1992 to give a greater push to structures of co-ordination in this field.

Finally, joint efforts must be made to achieve an international safety partnership on nuclear safety by the creation of an international convention. The safety partnership must prove itself effective in meeting the tremendous challenge posed in overcoming the problems that have arisen in the countries of Central and Eastern Europe in the light of the political, social, and economic changes that have taken place there.

A strong joining of forces and strict co-ordination of the resources and support measures of Western industrialized countries is a prerequisite to reach the aim in the longer term of enabling the countries of Central and Eastern Europe, and of the successor States of the former Soviet Union, to be in a position once again to deal with their economic and ecological future development on their own. □