Building confidence in nuclear power

by Hans Blix*

No one will question the need to expand energy production throughout the world. Conservation programmes have made considerable progress and we must not, of course, relax our efforts to conserve energy and to find substitutes for oil. Nevertheless, when the present recession ends, the demand for energy in industrial countries as well as the Third World is likely to resume. We must respond not least to the needs for energy to promote economic and industrial growth in the developing countries.

Nuclear energy will play an important role in meeting the world's energy demand in the foreseeable future. In saying this, I do not deprecate in any way the contribution of other sources of energy: whether coal; or oil (which will remain indispensable for transport for a long time); or solar, wind, and other renewables which, we hope, will be important in due course. We shall need them all. The mix will obviously differ according to the economic and technological circumstances and resources in the various countries or regions of the world. There is nothing wrong with this. On the contrary, there is greater security in diversity. Diversification is desirable globally as well as nationally.

Let me stress, too, that the IAEA has never considered that its role is to promote nuclear energy at all costs. We are not a propaganda agency. In its advice to governments, the IAEA has always stressed that nuclear power must be considered only in the context of a rigorous comparison with all alternative sources of energy.

Right now, a number of factors tend to make this comparison a bit less favourable to nuclear than it was a few years ago. In several countries, economic recession, public reluctance – evidenced for instance by court actions and increasingly complex regulatory procedures and the resultant lengthy lead-times, have narrowed the advantage that nuclear power enjoyed. Oscillating government policies not only in regard to the place of nuclear power and requirements of nuclear safety, but also in regard to export and safeguards requirements have added to the difficulties.

We are all aware of the present position: over-capacity in most branches of the nuclear power plant industry; in enrichment; over-supply of uranium, and a spectacular fall in its spot-market price.

A crucial factor is the public's attitude to nuclear power. Public acceptance of and opposition to nuclear power varies significantly from country to country. However, in all countries there seem to be three decisive elements affecting public confidence:

- concern about the safe operation of reactors;
- concern about the safe disposal of nuclear waste;
- concern lest nuclear energy contributes to the spread of nuclear weapons.

Safe operation

Confidence in the safe running of nuclear reactors comes only with experience over time. The nuclear power industry rightly likes to draw attention to its excellent safety record over the last quarter of a century. However, in many countries there are sections of the public that feel that the industry has been lax in several respects and unduly secretive. The Three Mile Island accident is regarded as a frightening example.

Closer international co-operation and an increased international exchange of information about problems in operation are essential. An interesting session at the 1980 Stockholm Conference on Nuclear Power Plant Safety was devoted to the civil aviation industry. It was clear that the nuclear industry could learn a few lessons on both counts from its older technological brother. To give one case in point, I believe it is very much in the interest of utilities to co-operate fully in the international Incident Reporting System which has emerged out of the Three Mile Island accident. There has been in the past some reluctance to exchange information about plant failures and shortcomings. Although one can understand the motives for such attitudes, they are clearly against the long-term interest of all. To learn to the maximum from each other, we need to tell each other the maximum.

The IAEA has also long been engaged in developing a comprehensive set of standards covering every aspect of nuclear power plant safety, siting, construction and

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operation. I am told that this obviously useful endeavour did not have an easy birth. Fortunately, we have passed this period.

Waste management

We have failed to convey to the public the message that nuclear waste can be safely disposed of. There may be a lot to be said for keeping nuclear wastes on the surface for some decades while its activity falls by several orders of magnitude. But if we are to gain the public's confidence, we must demonstrate *now* our ability to handle waste and show how it is to be done in practice. Moreover, the costs of waste management must be paid for now as part of the energy charge to the consumer. We must not be open to the charge that we are reaping the benefits today and leaving the bill to our children and our grandchildren.

Most of the IAEA's work in this regard has been to promote a wide and free exchange of information on research and experience in nuclear waste management. We are also issuing guidelines which cover progressively all aspects from waste depositories to the decontamination of nuclear power plants. We have also promoted in a modest way some co-ordinated international research on waste management methods and techniques. There have frequently been calls, which we have supported, for an international demonstration repository which would show all the world that high-level nuclear wastes can be finally and safely disposed of. However, no government has yet volunteered to accept permanently the nuclear waste of other nations. Perhaps it will be necessary first to make such demonstrations on a national scale.

Safeguards

Finally, we must foster confidence in the minds of governments as well as the general public that the growth of nuclear power will not contribute to the spread of nuclear weapons. In particular, that trade in nuclear plants and material can be conducted without increasing the risk of proliferation. In this regard, I believe, the IAEA can make an important contribution, and incidentally be of significant help to the nuclear industry.

The nuclear industry is characterized by long lead-times, not only in the manufacture of nuclear power reactors but also in opening new uranium mines and creating new milling and processing facilities. Since it must plan a decade or more ahead, the industry needs a predictable market and a stable, internationally harmonized, and accepted framework of principles and procedures to prevent proliferation.

Within such a framework, trade in nuclear plant and materials could flow freely across frontiers. Such trade is as necessary and desirable for nuclear as for other commodities. It enhances the international distribution of labour. It promotes healthy competition and it avoids artificial distortions of the market and uneconomic investments. It helps to restrain tendencies towards nuclear autarky which are not only uneconomic but might also increase the risk of proliferation. International trade should also serve as a vehicle for the transfer of advanced technology to the developing countries. Such a trade is attainable, however, only if there are adequate assurances that it will not foster the spread of nuclear weapons. If that confidence is absent or falls away, we are likely to see severe swings in export policy and the type of restrictionism that characterized both the early days of nuclear energy from 1948 to 1953, and the last few years of the 1970s. Furthermore, a transparency in transactions in nuclear material would inspire confidence and could help the Agency in its safeguarding functions.

A viable non-proliferation regime can be sustained only if states have reached the political conclusion that it is not in their interest to acquire nuclear weapons. Nobody can force it upon them. This conclusion on their part is dependent upon several factors, however, especially the security situation of the state concerned. This in turn is influenced by its foreign policy arrangements, by its alliances and "nuclear umbrellas" or lack of them, and many other factors. These are outside the scope of the IAEA but they are highly relevant to our work. As we know, the vast majority of nations has concluded that it is in their own security interest to remain without nuclear weapons and they demonstrate this conviction by adhering to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT).

Their conclusion may also be influenced by a perception of positive consequences outside the security field of not acquiring nuclear weapons, for instance, in the fields of trade, aid, and transfer of technology.

The IAEA's function could be described as that of assisting states to demonstrate to the world at large that they are not making use of nuclear facilities or diverting material for the production of nuclear weapons. The safeguards function of the IAEA consists essentially of verification of amounts and location of nuclear materials, *inter alia,* by inspections and surveillance measures in facilities.

Safeguards began three decades ago as bilateral arrangements between suppliers and customers. In time, these responsibilities were transferred to the IAEA. Its safeguards are now anchored in the system developed before the NPT, in the NPT itself, and in the Latin American De-nuclearization Treaty, which are the basis of some 145 agreements with 85 states and also with the European Atomic Energy Community. There can be no going back to bilateral controls.

The international safeguards system is unique and it represents an extremely interesting precedent in international control. But it must not be seen for more than it is. We must be conscious of its limitations. Perhaps exaggerated beliefs in what the IAEA safeguards can do, are one of the reasons for the critique which has been heard during the last few months.

The system can legitimately be required to provide assurances that items submitted to safeguards are not being used for the production of weapons or other nuclear explosives or military uses. The system cannot give assurance about the long-term intentions of governments: for instance, whether they will remain indefinitely in the NPT; whether they will always refrain from denouncing their safeguards agreements; whether they will never contemplate a future diversion, or setting up an unsafeguarded fuel cycle.

Nor can the system provide any assurances about nuclear material and installations which are not submitted to its safeguards. The main risks of proliferation start where safeguards end. Exporting states will have to assess by other means whether weapons production is being or could be furthered by such unsafeguarded factilities and they will have to bring whatever influence they may have to dissuade such military use.

Nor can the IAEA require states to join a non-proliferation system as the NPT or to accept full-scope safeguards, or to submit a specific nuclear facility to safeguards. These decisions can only be taken by states concerned themselves.

Nor can the safeguards system physically prevent diversion. The IAEA has no police powers. It is there to verify; at the invitation of governments, that the governments are complying with their international obligations. If the IAEA finds that this is not the case, the sanctions at its disposal are very limited. The IAEA can report the matter to the UN Security Council and General Assembly, it can stop assistance to the state concerned and ask for the return of material and equipment it has received from the IAEA or other states. Whether truly effective action is taken (after the IAEA has sounded the alarm) depends, however, entirely upon the decisions of governements.

What can legitimately be expected of the IAEA is improvement of the technical effectiveness of its safeguards. In this regard, we stand ready to be as effective as our member governments want us to be, are ready to pay for, and make other resources available for.

Today 98% of the world's nuclear facilities outside the nuclear-weapon states are under safeguards and, as far as we know, significant unsafeguarded nuclear operations are only taking place in four countries outside the five nuclear-weapon states. This has entailed a very rapid expansion of the safeguards operation during the last five years. The system has inevitably had growing pains and its efficacy can be improved. Every effort must be made – by improving efficiency and providing adequate resources – to enable the system to give all that assurance that it is inherently capable of providing.

Safeguards are promotional

Industry thus has a clear interest in IAEA safeguards. Together with safety and security of nuclear operations, they are promotional in the fullest sense of the term. Without them today there could be no significant international trade in nuclear plant and material. No one is more familiar with industrial installations than those who run them and it is in the interest of the industry to support our efforts and to tell us how we can make the system more efficient and effective.

As has been said, the same applies to governments. In a period when the nuclear market is over-supplied, governments and industry might be tempted to underbid competitors in regard to safeguards requirements as well as in other respects. We are in fact living today with the consequences of some underbidding in safeguards matters that took place in earlier years. In the long run, this type of competition is counter-productive, not only for international security but also for that stable international system which is of such importance to industry. It would be far better to improve international harmonization of safeguards export requirements.

If negative consequences could flow from the non-acceptance of safeguards, it is equally important to ensure that positive consequences flow from accepting non-proliferation obligations.

Many of the non-nuclear-weapon states that accepted these obligations in the 1970s feel today that the other parts of the bargain have not been kept. That the promise of access to nuclear technology has not been fulfilled and that meaningful steps towards arms control and disarmament pledged in the Partial Nuclear Test Ban Treaty and the NPT itself have not yet been taken. If safeguards are to remain viable – and in our common interest they must remain viable – there will have to be tangible progress in these matters.

One area in which such progress can be generated is in the Committee on Assurances of Supply (CAS) which the IAEA set up last year. The ideal outcome of CAS would be a generally accepted set of rules for international nuclear trade including a generally agreed safeguards regime. It may take a considerable time before we reach that goal, but CAS is already engaged in identifying the principles upon which an internationally acceptable arrangement should be based and on practical questions such as the problem of fallback arrangements in the event of a disruption of supplies. The fact that these matters are now being freely discussed in a world-wide forum instead of being decided upon unilaterally or behind closed doors really constitutes a very considerable advance. The very existence of CAS will, we hope, discourage future radical and abrupt unilateral changes in supply policies.