

INTERNATIONAL COLLABORATION FOR NUCLEAR COMPETENCE BUILDING

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This report is a summary of the OECD Nuclear Energy Agency (NEA) study “International Collaboration for Nuclear Competence Building; Developments and Good Practice.” The summary report will be published soon.

In many countries, government funding has been dramatically reduced or has disappeared altogether and at the same time the profit margins of generators have been severely squeezed. All of which has led to a reduction in technical innovation and a danger of loss of technical competences and skills. However, because different countries are at different stages of the nuclear technology life cycle, these losses are not common to all countries, either in their nature or their extent; a competence that may have declined or be lost in one country may be strong in another. And therein lies one solution to the problems the sector faces – international collaboration.

Facing the danger of declining level of competence, the reaction of governments, academia, and industry has been varied. Some have launched, or supported, a variety of initiatives, often based on national studies of nuclear education and manpower requirements. Others have not undertaken any initiatives at all. However, there is some evidence that the actions launched have had a positive effect and at least slowed the declining tendency.

Many NEA Member countries have undertaken studies to define the extent of the problem of possible demographic downturns in their nuclear industries. In spite of the myriad initiatives underway in the area of nuclear education and training, these national surveys show that in many countries more engineers and scientists having nuclear knowledge are required than are graduating. Though, recently some countries have reported significant increase of student’s interest to study nuclear related topics.

As it has reached maturity, the nuclear industry has developed areas of expertise that are transferable to other industries. There has thus been a flow of personnel from the nuclear sector into other sectors. This was convenient when the industry was consolidating and wished to reduce staff numbers. Now that it cannot afford any further reduction in existing competence and needs to develop new ones in the areas of decommissioning and clean up, attracting young blood, retaining staff and attracting experts from other sectors in the face of competition from industries perceived as more attractive is proving problematic in many countries.

Many of the aforementioned problems can be countered through diverse and vibrant R&D programmes. Within companies R&D is as important for technical advancement as for training staff. Where industry collaborates with universities and research institutes it is also an important source of recruits. In addition, such collaborations provide a reservoir of qualified and experienced personnel, which can service both the industry and the regulatory bodies on an ad hoc basis. Further, R&D performed in universities revitalises the education system by paving the way for new courses, providing topics for theses, and encouraging academics to become positively engaged with the industry.

Nuclear research has never been a purely national endeavour. Collaboration, information exchange and even exchange of personnel have always been an integral part of the development of nuclear power – inasmuch as political constraints have allowed. That nuclear power has become a reliable energy source, accounting for a significant proportion of the electricity produced in many nations today, within a single generation is largely due to international co-operation.

The decline in recent years of many nationally funded nuclear research programmes and the associated loss of facilities and expertise, has forced countries to seek international collaboration. Although bilateral arrangements continue, increasingly multi-lateral programmes between many countries and research institutes are favoured in order to maximise the use of facilities and expertise as well as to share costs. Agencies such as the NEA, EC and IAEA play an important role in both promoting and co-ordinating this type of collaboration and, moreover, ensuring that collaboration is open to as diverse range of participants as possible. The NEA has adopted a strategy aimed at maintaining essential types of research facility through these collaborative arrangements.

While nuclear research centres can look back over a long history of international collaboration, the same is not true for universities. It is only recently that some regional collaborative networks have been created in both Europe and Asia. The same principles apply to maintaining teaching expertise on nuclear related topics as to maintaining research capabilities, especially in those countries where such expertise may be in short supply. In this area more can be done at the national level to develop co-operation between universities; at the international level the recognised agencies have a key role in promoting and co-ordinating co-operation between countries.

Naturally, collaboration between industrial companies is limited by commercial interests. Some companies have merged and their internal activities are, as result, no longer restricted to national boundaries. However, overall, it is necessary to recognise that industrial collaboration will always be subject to limitations.