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ANSTO

Senate Employment, Workplace Relations and Education References Committee

Inquiry into current and future skills needs

In this submission to the inquiry into current and future skills needs by the Senate Employment, Workplace Relations and Education References Committee, the Australian Nuclear Science and Technology Organisation (ANSTO) particularly addresses two terms of reference, namely:

(a) areas of skills shortage and labour demand in different areas and locations, with particular emphasis on projecting future skills requirements; and

(b) the effectiveness of current Commonwealth, state and territory education, training and employment policies, and programs and mechanisms for meeting current and future skills needs, and any recommended improvements.

The focus of this submission is on skills in science, engineering and technology (SET) as used in research and development (R&D) and the manufacture and application of SET products and services. ANSTO is a significant employer of people with SET skills at many levels, and the adoption of its innovations by others relies on the presence of sufficient SET skills in industry. The Organisation also plays a role in developing skills in the Australian workforce though access to its expertise and facilities.

Future skills requirements

To ensure a sustainable future for Australia's society, economy and environment, the nation needs to increase the supply of quality graduates, postgraduates and postdoctoral fellows with SET skills. This will promote innovation in industry and facilitate the effective take-up of the outcomes of research from organisations such as ANSTO.

These skills are developed in universities, in the vocational education and training (VET) system such as at TAFE colleges, and in the workplace. As well as developing subject-specific skills and knowledge, graduate and postgraduate programs at universities should address generic competencies such as analysis and communication to enable the effective selection and adoption of innovations. Research degree programs at universities are particularly likely to contribute to the promotion of innovation in businesses. VET has a critical role to place in developing skills in the workforce in introducing, operating and maintaining innovative technologies.

The replacement research reactor (RRR) at ANSTO will open up new opportunities for Australian industry, and with it, new demands for SET skills. The RRR will help address problems in life sciences, biotechnology, nanotechnology, complex industrial processes and environmental management. For example, research under way around the world is expected to lead to a new generation of radioisotopes, which the RRR has the potential to produce. The RRR will also facilitate R&D relating to polymers, ceramics and other new materials. The demand for skills in utilising the RRR will therefore be wide-ranging: spanning manufacturing, minerals, petrochemicals, pharmaceuticals and information science industries, among others. The RRR is due to come online in 2005/06 and a build-up of competent individuals in industry, higher education and at ANSTO leading up to this date will maximise the benefits of this major Australian research facility.

Mechanisms for meeting current and future skills needs

One of ANSTO's functions is to operate large nuclear science and technology based facilities in Australia and overseas for the benefit of the Australian R&D community, including postgraduate students,

postdoctoral fellows and staff in higher education. Its relationship with universities is aided by the Australian Institute for Nuclear Science and Engineering (AINSE), which has 37 universities in Australia and New Zealand as well as ANSTO as members. AINSE was established in 1958 to provide a mechanism for access to the nuclear science and technology facilities at Lucas Heights by universities and other tertiary institutions and to provide a focus for cooperation in the nuclear scientific and engineering fields. It has a specific mandate to arrange for the training of scientific research workers and the award of scientific research studentships in matters associated with nuclear science and engineering.

In 2001-02, 181 post- and under-graduate students were jointly supervised by ANSTO. Research undertaken at ANSTO through AINSE is not only in SET disciplines such as physics, chemistry, engineering, earth sciences, biology and medicine, but also in non-SET areas such as Aboriginal and Torres Strait Islander studies, cultural studies and archaeology.

Conclusion

Opportunities to fully capture the value of Australian investment in R&D by the public and private sectors will depend especially on a strong skills base in SET. These skills are developed not only through specialised SET programs, but also through making SET facilities and expertise available to a broad range of researchers and the funding of postgraduate students and postdoctoral fellows at our universities and national research organisations.

Mechanisms for cooperation between organisations enable the maximum benefit to be obtained from specialised facilities and the associated expertise. ANSTO believes AINSE provides a demonstrably robust model of cooperation between Australian universities and a science and technology organisation to advance Australia's skills base and knowledge base. This model could be applied in many other fields to meet future skills needs in Australia.