

Capacity Building and Nuclear Knowledge Maintenance for Sustainable Energy Development

Objective

To enhance the capacity of Member States to perform their own analyses of electricity and energy system development, energy investment planning and energy–environment policy formulation and their economic implications; to sustain and effectively manage nuclear knowledge and information resources for the peaceful uses of nuclear science and technology.

Energy Modelling, Databanks and Capacity Building

The Agency revised upwards its annual projections for the future of nuclear power. The 2009 update for the low projection anticipated an installed global nuclear power capacity of 511 GW(e) in 2030, a 40% increase over the 370 GW(e) installed in 2009. The high projection anticipated 807 GW(e), more than a doubling of the current level. The revised projections for 2030 were 8% higher than the projections made in 2008.

The upward shift in the projections was greatest for the Far East. Modest downward shifts in the projections were made for North America and for Southeast Asia and the Pacific. For all other regions there was a generally modest upward shift, with the exception of a higher upward shift in the high projection for the Middle East and South Asia. The variation across regions reflected, in part, the financial crisis that began in late 2008, which had different impacts in different regions.

The low and high projections were developed by international experts assembled by the Agency. The general upward revision in both projections reflected, first, the judgement of the experts that the medium and long term factors driving rising expectations for nuclear power — good performance and safety, projected energy demand growth, and concerns about global warming, energy supply security, and high and volatile fossil fuel prices — had not changed substantially.

Second, the upward revision reflected their judgement that the commitments of governments, utilities and vendors to their announced plans, and the investments already made in those plans, had become firmer than in the preceding year.

Demand remains strong for the Agency's support in analysing different national and regional energy systems and energy strategies. The Agency develops and transfers to interested Member States analytical tools for energy assessments and trains energy experts to help build local analytical capacity to chart energy strategies consistent with national development objectives. Increasingly, Member States are applying these tools to analyse cost effective options for reducing greenhouse gas (GHG) emissions, and those interested in nuclear energy are using them to explore the feasibility of adding nuclear power to their energy systems. By the end of 2009, these analytical tools had been distributed to

more than 120 Member States and eight international or regional organizations.

Over the year, more than 500 energy analysts were trained in 28 courses, mostly organized through Agency technical cooperation projects. National energy assessments were supported in more than 70 countries through 44 national and regional technical cooperation projects. Fifty of these countries explored a possible role for nuclear power in their national energy assessments.

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Energy Economic Environment (3E) Analysis

In line with its mandate to provide objective and up to date information about nuclear power, the Agency contributes to international studies and deliberations that provide the context within which nuclear power is assessed and compared with other sources of energy.

At the 15th Session of the Conference of the Parties (COP-15) to the United Nations Framework Convention on Climate Change (UNFCCC), held in Copenhagen, Denmark, the Agency maintained an

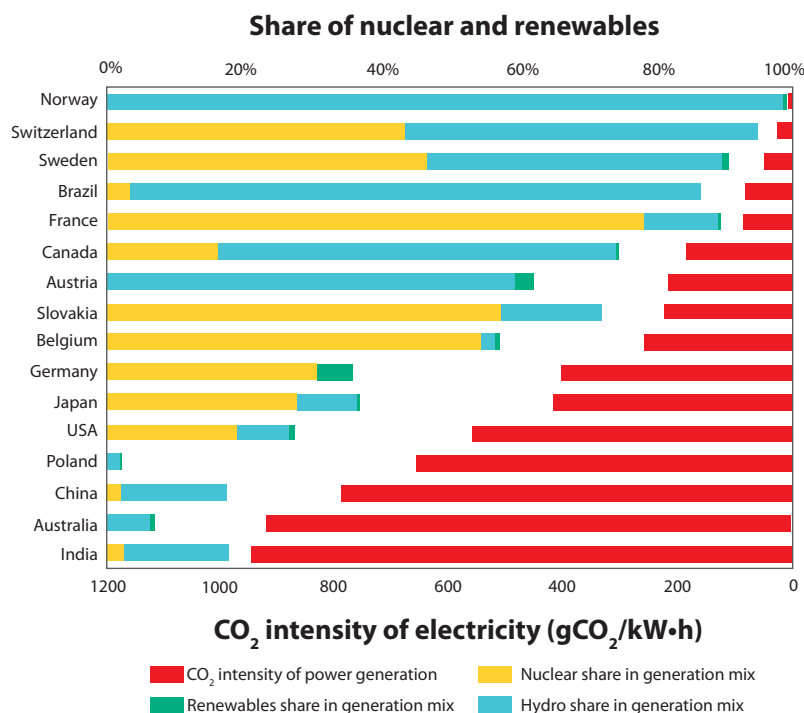


FIG. 1. Intensity of carbon dioxide and the shares of non-fossil sources in the electricity sector of selected countries. (Source: Agency calculations based on IEA data.)

information centre. Agency publications distributed at the centre included a brochure, *Climate Change and the Atom*, describing the Agency's activities related to the issue of climate change, and *Climate Change and Nuclear Power 2009*, which provides updated information on all aspects of nuclear power in the context of current climate change concerns and presents national perspectives from a number of countries (Fig. 1).

As more countries began to explore establishing nuclear power programmes, demand increased for in-depth assessments of the associated economic, social, policy and technical issues. The Agency therefore began a project on developing indicators for comprehensive nuclear energy development aimed at countries considering the introduction of nuclear power. The project builds on previous Agency work on energy indicators for sustainable development. A series of meetings in 2009 provided a preliminary evaluation of an extensive list of possible indicators and developed a concise selection of indicators for testing by Member States and the Secretariat. The results of initial testing completed in 2009 will be the basis for the next phase of the project.

Public acceptance and stakeholder involvement have been given high priority by many countries

considering the introduction of nuclear power. The Agency conducted two public information seminars, in China and Malaysia, on the benefits and risks of nuclear energy. The seminars included sessions on experience around the world and lessons learned in communicating about nuclear energy with the general public.

The Agency also completed a CRP on GHG mitigation strategies and energy options, which evaluated the impacts on the energy sectors of 13 participating countries of different possible 'post-Kyoto' international agreements for limiting GHG emissions and mitigating climate change impacts. The results show that the range of possible post-Kyoto agreements — given the findings of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, the GHG reduction targets of the European Union and the Bali Action Plan — would create serious challenges for energy sectors in both developed and developing countries, but would simultaneously offer new opportunities for the development and deployment of low carbon energy technologies, including nuclear power.

'Energy for Development' was the title of the 2009 Scientific Forum held during the General

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Conference. The forum covered energy access, energy security, international assistance, the drivers of energy demand, energy efficiency, low carbon technologies, the impacts of biofuels on food security, and the effects of changing demography and long lived infrastructure such as buildings and roads. The concluding session discussed improving international assistance through an expanded role for UN-Energy, by building on the Vienna Energy Conference 2009, or by expanding the Energy Charter Treaty. For example, the Energy Charter Treaty could be expanded to Africa, to help aggregate small markets and establish conditions attractive to investors.

Nuclear Knowledge Management

In 2009, the Agency conducted knowledge management assistance visits to Atomic Energy of Canada Limited, to the Nuclear Power Production and Development Company in the Islamic Republic of Iran, and to the national nuclear power organization in Slovakia, as well as to educational organizations in Malaysia and in Montenegro. Such visits provide assistance, education and advice on best practices and strategies in knowledge management; they also reinforce existing strengths and offer recommendations on possible improvements.

The Agency publishes guidance and reference documents on the collection and preservation of nuclear knowledge and expertise. In 2009, it published *Development of Knowledge Portals for Nuclear Power Plants* (IAEA Nuclear Energy Series No. NG-T-6.2), which proposes guidelines for the development of such portals, covering their main design principles and typical content.

The Agency also conducts training courses on nuclear knowledge management to reach broader audiences, and supports networks that disseminate information in this area. A regional training course was organized in the United Arab Emirates on operating the web portal and cyber platform of the Asian Network for Education in Nuclear Technology (ANENT) (<http://www.anent-iaea.org>). Other workshops on knowledge management were hosted by Germany and Malaysia. In cooperation with the ICTP, the European Commission and the World Nuclear University, the Agency conducted the 2009 School of Nuclear Knowledge Management at the ICTP.

International Nuclear Information System and the IAEA Library

The International Nuclear Information System (INIS) and the IAEA Library provide access to over 3.5 million bibliographic references and 300 000 full text documents, as well as print and audiovisual material. This pool of information was enlarged even further through the International Nuclear Library Network, which has 32 participating nuclear libraries.

In 2009, there were over 1000 visitors per month to the IAEA Library. Usage statistics showed that there has been a shift from a product to a training orientation: requests for customized training sessions quadrupled, individual information coaching visits doubled and the number of research queries increased by 58%.

Free access to INIS via the Internet was added in 2009, which increased the average number of INIS searches from 7000 per month at the beginning of the year to 70 000 in December.

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