



UKERC ENERGY RESEARCH ROADMAP SYNTHESIS : NUCLEAR ENERGY (Fission)

MAY 2014

1. [Technology Roadmap: Nuclear Energy \(Fission\)- International Energy Agency](#)

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1. TECHNOLOGY ROADMAP: NUCLEAR ENERGY (Fission)

International Energy Agency

http://www.iea.org/publications/freepublications/publication/nuclear_roadmap.pdf

This roadmap provides a set of measures and actions that define the global pathway for nuclear power deployment to 2050, focusing exclusively on the use of energy from nuclear fission. The roadmap provides a high level overview of the opportunities and challenges associated with nuclear expansion on a global level. The roadmap follows the needs of the industry in order to achieve the ETP BLUE Map scenario, which projects that nuclear capacity will reach about 1200 GW by 2050, providing about 24% of the global electricity supply. Throughout the document, recommendations and actions are highlighted.

Since nuclear is a mature technology, the current challenges and opportunities lie with policy, industrial or financial issues rather than technological. The roadmap identifies the need for a strong policy support from national governments as a requirement to develop new nuclear programmes, or to continue the development of programmes in countries where one already exists. Further, the document identifies that needs of to develop the necessary industrial capacities and skilled human resources in order to support the projected growth in nuclear capacity.

A significant amount of the roadmap examines the management of radioactive waste. There will be a need to demonstrate the feasibility of permanent disposal of such wastes, which is supported by the recommendation that governments should put in place policies and measures to ensure adequate long-term funding for the management and

disposal of radioactive waste and for decommissioning, and establish the necessary legal and organisational framework. A specific approach which is being pursued worldwide is the disposal of material in deep geological repositories.

The roadmap covers actions and milestones for policy, financial and social aspects, noting the importance of establishing the correct balance of legal and regulatory framework, ensuring the protection of the public and environment whilst also providing the certainty and timeliness required for investment decisions. Furthermore, when financing new nuclear power plants, the roadmap recommends that governments should ensure that the structure of electricity markets, and where appropriate, carbon markets supports the large, long-term investments required in nuclear power plants, providing sufficient confidence of an adequate return on investment. Additionally, the roadmap reiterates that governments should encourage investment in low-carbon electricity sources, including new nuclear capacity, through policies and measures designed to reduce CO₂ emissions, such as carbon trading schemes, carbon taxes or mandates on utilities to use low carbon sources. The roadmap also identifies that the international community should continue to strengthen cooperation, especially by providing support for countries without an existing nuclear industry.

The roadmap concludes by summarising the actions identified throughout the roadmap, which are necessary to be undertaken in order to achieve the target nuclear capacity set out in the ETP BLUE Map scenario.