

The evolving role of governments in the nuclear energy field

The NEA Nuclear Development Committee (NDC) recently completed a study that looks into the evolving role of governments in nuclear energy matters. Many decisions on government intervention in recent decades have been based on the earlier experience of what works best. The report suggests some considerations that all governments could take into account when establishing their respective roles.

Government and Nuclear Energy¹ looks at the role of governments in the evolving context of the three main goals of energy policy in NEA member countries: adequate and secure supply; competitive markets and prices; and sustainable development, including goals for climate change and air quality. The report examines some of the forces that influence the degree of government intervention, while trying to avoid issues of ideology.

Governments have been deeply involved in the development of nuclear energy. Some of them initiated and led the development of nuclear energy since its military beginnings in World War II, because of its strategic nature and the scope of its risks and benefits. Governments later supported the development of civilian nuclear energy, primarily for

the generation of electricity. In the post-war period, governments played an increasing overall role in the economies of the industrial countries. Science and technology were essential instruments of government action and nuclear energy was a highly visible symbol of their successful application.

In the 1980s and 1990s, problems with exclusive government ownership and control of production equipment appeared. Governments came under pressure to cut expenditures and diminish their direct involvement in the economy. Expanding international trade forced all industries to be more competitive. Markets were championed as an alternative to government direction and regulation. Simultaneously, environmental protection and the concept of sustainable development increased in

importance in policy making, whilst the need to ensure security of energy supplies persisted or even increased.

In the current era of privatisation and competitive markets, governments still have an essential role in energy, electricity and nuclear energy. While in some countries they may not exercise as much direct control through ownership and economic regulation as in the past, they still have the basic responsibility for creating policy frameworks within which market forces can function and public policy goals can be achieved. So, with fewer direct instruments, governments will need alternative policy measures.

Why governments intervene and when

The reasons for government intervention in nuclear energy have evolved as governments confront their limits. Privatisation and competition mean that many decisions are no longer directly made by governments. However, there will always be strategic reasons for government intervention – national security; emergencies, disasters and health crises; national projects of such importance or

urgency that only government can do the job. By and large, the current sentiment in most OECD countries is that the government should intervene only when it is in the best position to carry out the task and when the benefits of intervention outweigh the costs. In fact, the role of governments in nuclear energy varies considerably between countries, according to their specific history and situation.

The economic, social and environmental reasons for government intervention generally fall into two categories: market failure to allocate resources efficiently, and equity or distribution

case for government intervention, that intervention itself should be well designed and managed. Both markets and government action can fail, thereby affecting the customers and societies that they serve. The government should have the competence and resources to carry out its interventions effectively.

Actual and recommended involvement

The most important government role is setting overall policy for the economy, energy and the environment, with an adequate base in legislation and institutional

change and air quality goals, given the current and prospective market dominance of fossil fuels, as well as how to ensure long-term security of supply in open market conditions. In this situation, governments have hard choices to make about whether, when and how to intervene in order to achieve the full range of policy goals.

In privatising and opening markets to competition, governments should make sure that they respect some basic principles. For markets, they have an ongoing responsibility to ensure fairness, access, transparency and effective regulation and to provide the public goods that markets

Electricity sector ownership and concentration

	Private, mixed, or public ²	Market share of top 3 firms ³
Belgium	M	96
Canada	M	high*
Czech Republic	PU*	(high)
Finland	M	45
France	PU	92
Germany	PR	64
Hungary	(PU)	(high)
Japan	PR	(high)
Korea	(PU)	(high)
Mexico	(PU)	(high)
Netherlands	M	59
Slovak Republic	(PU)	(high)
Spain	PR	83
Sweden	M	90
Switzerland	PR	(high)
United Kingdom	PR	36
United States	PR	(variable)

* NEA Secretariat estimate.

concerns. Market failure may relate to several issues, some of which overlap: public goods, infrastructure, externalities, information and competitive behaviour. However, even if there is a

competence. In particular, governments should have clear strategies for achieving all three main goals of energy policy over the coming decades. They should show how they will meet climate

may not otherwise deliver. Governments should ensure security of supply, through incentives or other means guaranteeing that generating and transmission capacity as well as reserve margins are

adequate, and that the grid is effectively regulated to avoid severe fluctuations, or even worse, blackouts.

Governments have a role in looking at the long term to compensate for the high discount rate and short-term perspective of competitive markets, through appropriate tax incentives or other mechanisms. In particular, they should carry out longer-term and fundamental R&D with a sustainable development perspective in mind. They should also assess R&D on the basis of its contribution to achieving the three energy policy goals.

Governments should try as much as possible to treat nuclear energy on a similar basis to other energy sources, while keeping in mind its unique properties. They should sponsor studies that compare the full life-cycle costs and impacts, including risks, across the spectrum of energy sources and uses. They should also internalise the external costs of all energy activities on an even basis. Regulation and liability for radioactive waste should be in line with those for other activities.

Regulation of nuclear safety and security remains a core function of government. It should guarantee the existence of an independent, competent regulator with adequate resources and authority. The emphasis now is on the safety culture of organisations, beginning at the most senior levels. This brings in the need to ensure good governance. Nuclear regulation should be in line with modern regulatory practice across the government, allowing nuclear energy to compete fairly. Governments looking for a future contribution from nuclear energy should ensure that regulation

is prepared to deal with issues of decommissioning, refurbishment, uprating, life extension and new reactor designs.

Governments should look beyond regulation to other means of influencing the behaviour of operators and investors. Economic instruments will be important in this regard. Governments will have a role in setting up public processes for the siting and approval of nuclear installations, including waste management facilities.

Governments have a role in ensuring that flexible, step-wise policies are in place for the long-term management of wastes and that funds and institutions are available to carry out the plans. They should oversee the implementation of policy to ensure progress toward waste management goals.

Governments should ensure that the public is adequately informed about energy policy and that there is adequate opportunity for public participation in key energy decisions. Processes for decisions should incorporate the best scientific information as well as a broad spectrum of public views. Governments should take leadership on longer-term energy policy issues and provide clear justification for preferred options. They should also ensure that they and the public can continue to access basic information about energy that may not flow freely in a deregulated regime.

Governments clearly have a lead role in diversion resistance, non-proliferation and national security. This includes responsibility for the physical security of critical infrastructure, including nuclear facilities. Governments should guard against the use of nuclear power materials as radio-

logical weapons. They should also ensure that new fuel cycle and reactor designs have built-in resistance to proliferation from the start.

The international dimension

Intergovernmental co-operation will continue to be essential in the field of nuclear energy. Concerns about nuclear safety and environmental impacts can be effectively addressed through international co-operation and technical assistance. The harmonisation of safety and radiation protection standards is helpful in increasing public understanding, especially in emergency situations. Joint projects on future reactor designs can make efficient use of limited national resources. In addition, international consensus and state-of-the-art reports can contribute to public discussions on nuclear energy. ■

Notes

1. This article is an extract of the Executive Summary of *Government and Nuclear Energy*, ISBN 92-64-01538-8.
2. International Energy Agency (1996), *The Role of IEA Governments in Energy*, OECD, Paris.
3. Commission of the European Communities SEC(2002)1038, *Commission Staff Working Paper: Second Benchmarking Report on the Implementation of the Internal Electricity and Gas Market*, Brussels, Belgium.