

The Global Nuclear Renaissance

NEW POLICIES NEEDED

BY COLETTE LEWINER

THE BRITISH GOVERNMENT HAS recently given the go-ahead for the possible construction of a new generation of nuclear power plants. A government report on nuclear energy says energy companies should be allowed the option of investing in new nuclear power plants, and the government should take active steps to facilitate this.

Proposed new energy legislation contains clauses to ensure that potential developers of new nuclear units provide adequate funds to cover the full costs of decommissioning and their full share of waste-management costs. This decision demonstrates a new era of pragmatism at a time when concerns about the impact of CO₂ emissions on global warming and a secure supply of energy have become paramount. Currently, the United Kingdom is a net gas importer.

The majority of Western nuclear reactors currently in use were built without public subsidies. The construction, operations and financial risks were undertaken by the utilities themselves. These utilities have also collected funds for the future treatments of used nuclear fuel and nuclear waste. These full costs are then incorporated into the prices at which these utilities sell electricity to their customers. It is a sound model for nuclear power plants – in line with the British model – and should be widely adopted.

Government needs to provide a long-term regulatory framework including siting and reactor design approvals, security and safety rules. They also have to give clear indications as to how the CO₂ emission reduction will be handled in the long term to enable utilities to forecast the long-term carbon price when comparing nuclear plants competitiveness with fossil fuelled plants.

It takes about six years to build a nuclear plant, which will then last for 40 years or more. These investments are huge. The third-generation Areva evolutionary pressurized water reactor 1,600-megawatt plant costs about 3.3 billion Euros, or \$4.9 billion.

With today's high prices for oil and carbon, nuclear energy is already competitive. These economic conditions should prevail in the future. Moreover, nuclear energy allows countries to be more independent of oil and gas imports and thus less sensitive to political pressures.

A nuclear renaissance is under way. Today there are 30 reactors under construction and about 300 nuclear projects worldwide. The Asian countries, notably China and India, are facing huge electricity demand and the bulk of their electricity is produced today with coal. Coal is used to generate 75 percent of China's electricity. This represents a very big pollution problem for their countries and for our planet. This, combined with their determination to be more independent

of gas and oil imports, explains why they are very bullish on nuclear energy.

In the United States, five utilities have applied for combined siting and design nuclear licenses and more are going to do so in coming months.

In Europe, Finland and France are building one new third-generation reactor each, and some Eastern European countries are constructing new nuclear plants. Others, such as Belgium and Switzerland, are reconsidering their nuclear moratoriums. Germany is still blocked, for political reasons, on their nuclear phase out decision.

Oil and gas producing countries are confronted with high domestic energy demand and wish now to produce electricity with nuclear plants to reserve more oil and gas for exportation.

Russia, which is a dominant gas exporter, has seven reactors under construction and 26 more are planned.

During French President Nicolas Sarkozy's recent visit, Gulf countries such as Qatar and Abu Dhabi signed agreements with French companies to build new third-generation reactors.

In a nutshell, we are seeing the start of a nuclear renaissance.

The financial and industrial risks, linked to the size and lead construction time of nuclear plants, are similar to those of all big long-term industrial projects. To mitigate these risks, governments have to establish long-term legislative and regulatory frameworks and stick to them.

Governments must guarantee nuclear nonproliferation by requiring nuclear countries to sign and commit to non-proliferation treaties forbidding them to use civil nuclear technology for military purposes.

Governments must also ensure nuclear safety and security by selecting reactors with safe designs, establishing competent and powerful safety authorities, training engineers and technicians able to build and run the reactors, implementing a safety culture and adopting transparent behaviors.

Countries must deal with nuclear radioactive wastes in a sound manner either by storing the used nuclear fuel in geologically stable repositories as in Sweden, or, as in France, by reprocessing the used fuel, recycling the extracted uranium and plutonium, vitrifying and storing the high radioactive wastes. The United States has to implement one solution or the other.

All these challenges may seem complex, but nuclear power remains feasible. In France, 80 percent of electricity is produced with nuclear energy and public opinion is positive.

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