

Nuclear's moment?

Nuclear energy: what part of the solution to climate change?

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Philippe Esper, President, Eurotradia International, France

Helga Kromp-Kolb, Professor, BOKU University, Austria

Jean-Pol Poncelet, Senior Vice-President, Sustainable Development and Continuous Improvement, AREVA

Sir Crispin Tickell, Director, Policy Foresight Programme, James Martin Institute, Oxford University, United Kingdom

Nuclear energy is back in focus as a low-carbon emissions technology. Governments look at nuclear as a part of the policy mix on climate change. However, public concerns remain.

Jeremy Webb remarked that the nuclear power has always been a contentious issue and that, over the past decade, global warming has changed the conception of nuclear energy. If once nuclear energy was “a little bit dirty, but cleaner,” it is now “a little bit more expensive, but cleaner.”

He outlined three major challenges facing the nuclear industry: the time lag between the decision to build a reactor and its completion, the sustainability of radioactive waste disposal, and the cost of security.

Luis Echávarri noted that nuclear energy provides 23% of electricity in OECD countries. While no significant improvement in nuclear technology have emerged in last 20 years, plants continue to run at 85-95% of capacity. He projected that nuclear energy will meet 94% of overall electricity demand in 25 years, or 55% of overall energy demand. Nuclear energy, he felt, is a mature technology, capable of meeting our energy needs.

But according to some figures, the global uranium supply may only last a few decades; at best, 150 years. Mr Echávarri produced figures from the recent OECD findings, which indicate that, at current demand, known supplies of uranium should last between 250-300 years. Hence, a uranium shortage is not an issue.

While nuclear is competitive compared to fossil fuels, plants require a large initial investment, and a long approval process. He swept aside the argument that nuclear energy competes with renewable; it does not, it competes with fossil fuels both in terms of price and CO₂ emissions as these are currently the available ways to augment base capacity.

The main argument in support of nuclear power to mitigate climate change is that its carbon lifecycle is zero. Current production levels save about 8% in emissions. However, the solution is far from perfect; we need a stable regulatory environment, ongoing dialogue with stakeholders concerning the issue of radioactive waste, more qualified personnel, and an industrial base to support the mass commissioning of reactors. On this last point, he noted that more reactors might induce a bottleneck in the fuel supply chain. He concluded that it was up to societies to make the choice, given what we know about nuclear power.

Philippe Esper reflected instead on the merits of nuclear power in helping to reduce current energy tensions. His concern was centered on security: how electronuclear energy can be made safe and reliable.

Demographic and economic growth has driven up the demand for energy. At present, electronuclear energy accounts for only 16% of global energy consumption, compared with 40% for coal and 27% for hydrocarbons. However, nuclear power is gaining adherents, faced with soaring oil prices and the need to cut emissions, even though construction and installation costs are also rising.

After 25 years of nuclear stagnation, Mr Esper sees a fresh opportunity for nuclear energy. It could provide up to 25% of the world's energy consumption. But such a renaissance depends on whether nuclear energy can remain competitive with other energy sources, whether safety and non-proliferation are addressed and energy supply and demand is well-managed, and finally, whether all players in the supply chain cooperate.

Jean-Pol Poncelet affirmed that nuclear power can indeed contribute to the problem of climate change. Aside from emissions reductions, it is competitive with coal-based power plants. And it is a safe and reliable way to produce electricity. Moreover, 95% of nuclear energy material is recyclable, a percentage that represents a mere 10% of the final bill. A larger part of the added value lies in the capabilities of the local personnel. Finally, he argued that the externalities are recouped in the costs of nuclear energy.

Mr Poncelet thinks that we can eventually move towards an economy running on 60% clean energy, or nuclear coupled with renewables. The biggest problem is that licencing in the EU region is chaotic. National rules prevail and procedural requirements are muddled, which create strong constraints to build new nuclear plants and hamper nuclear development. Compared to the situation in the United States, where regulation is harmonized across the states, and a USD 100 million proposal can easily pay for itself, proposals for each member of the EU simply cost too much money at this time.

Sir Crispin Tickell urged coherent energy policies. He regretted policies externalities (i.e. outside costs like taxes) to be too high, which therefore prevent knowing if nuclear really

is cost-effective. Sir Crispin claimed that “the problem of future supply was not so important” and that there were alternatives to nuclear.

The EU is a leader in nuclear energy. In surrendering that leadership is effectively handing it over to emerging economies such as China or India. Does the EU want to surrender that leadership?

He stressed the role of government in energy, since “energy is essential to a good management of society”, and it can’t be ruled by the market. The policy has to be led in the public interest. The UK government, after hesitating, finally decided to replace nuclear plants, leading to a rebirth of nuclear in the UK.

Finally, nuclear has to be more transparent to the public to avoid misconceptions, such as confounding the use of nuclear for civil and military purposes.

Helga Kromp-Kolb argued that sustainability rules out nuclear energy, at least in its present form. Energy efficiency and renewable are more attractive in that they do not require the huge initial investment, they come in all scales and are adjustable to individual needs. On the other hand, externalities such as safety drive up nuclear power’s costs. In the end, the ultimate solution to climate change is not to be found on the supply side, but in efficiency and new lifestyles. “We need to find a sustainable lifestyle accessible to all, which also curbs our demand for energy” Ms Kromp-Kolb felt.

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