



Emerging nuclear powers: A safe path to energy security?

Protesters gather near
a nuclear power in
Kudankulam, southern
India © REUTERS



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Demand for electricity in the emerging economies is growing very strongly – between 5% and 6% each year, on average, compared to 1% or less in developed economies – and will continue to rise in the decades ahead. Moreover, many of these same countries have goals to improve energy security and avoid emissions of greenhouse gases and other air pollutants.

It's impossible to rely solely on natural gas or sources of renewable energy to meet this demand. Nor is it possible to rely exclusively on coal, the most carbon-intensive fossil fuel.

From our past work it is clear that almost all of the increase in nuclear power capacity over the coming decades is set to come from emerging countries. There are three that are particularly crucial: China, India and Russia. Within the OECD, South Korea is the only country expected to see any notable expansion. There are also many other countries that are considering the introduction of nuclear power for the first time. Although significant caution should be exercised in assessing which might actually succeed and over what timeframe as doing so will

require a lot of time, expertise and determination.

Countries pursuing an expansion of nuclear power face big challenges. Nuclear power plants have high upfront investment costs and long construction times, which creates particular issues in competitive markets where utilities face significant market and regulatory risk. Nuclear power also faces intense public concern about a wide range of issues. Safety is the dominant concern – safety in plant operation, safe radioactive waste disposal and safeguards against the proliferation of nuclear weapons. And perhaps most importantly, there is the need to improve confidence in the competence and independence of regulatory oversight. If these challenges are not adequately addressed, the nuclear component of future generation may be lower than many expect.

Our world is facing twin challenges of climate change and energy security. Nuclear power can be part of the solution and I believe it will remain an important part of the electricity generation mix in the decades to come in many countries ■



Emerging nuclear powers: A safe path to energy security? (cont.)



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Safeguarding nuclear material

You cannot stop the transmission of knowledge. There is no way that you can prevent people learning how to build a nuclear power plant, how to enrich uranium, or even how to make a bomb. If every nation is to have the right to use nuclear energy, there must be disciplined behaviour in its use, both in terms of safeguarding the environment and resisting the temptation to use it as a weapon. Beyond that, the greater challenge is to apply this discipline in a world that is increasingly unstable.

The key to ensuring this is to control and manage the materials that serve as nuclear fuel, such as uranium-235 and


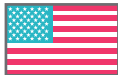



plutonium-239. We must reach a global consensus on how to manage these substances: it could be that a multinational company is empowered to control most of the nuclear fuel worldwide, which it then leases to each country, and when the fuel is spent, it is safely returned. This last stage is crucial, as some spent materials can be used for the production of nuclear arms.

In theory, such an arrangement is workable, but it's up to the politicians to decide if we can reach that kind of agreement. To get to the negotiation table, we must first stabilize Eastern Europe, the Middle East and North Africa; only then can we begin the necessary process of diplomacy and understanding. Because it goes without saying that this cannot be achieved without cooperation and consensus between the world's superpowers ■



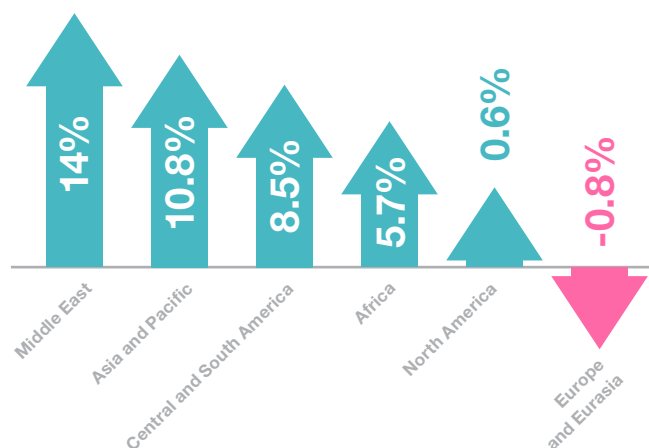
The top 5 countries for primary energy consumption in 2013

(in million metric tonnes of oil equivalent)

	#1 China 2,852
	#2 USA 2,266
	#3 Russian Federation 699
	#4 India 595
	#5 Japan 474

Source: BP Statistical Review of World Energy, June 2014

How energy consumption changed around the world between 2010 and 2013



Source: BP Statistical Review of World Energy, June 2014