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Energy Security: Asking the Wrong Question

Is energy security nothing more than a geopolitical competition for scarce resources? Not for long, argues Michael Bradshaw. In his view, this type of security isn't just about supply and affordability. Climate change and technology will also define it soon enough.

By Michael Bradshaw for ISN

Ongoing events in Ukraine have heightened sensitivities across Europe and in Washington D.C. in relation to energy security. However, in the face of economic globalization and climate change, energy security is now a much more complicated challenge than the traditional concern of physical security of supply.

In the future, two countervailing tendencies will force difficult choices on states across the world. On the one hand, there is the promise that plentiful unconventional oil and gas production based on the global deployment of techniques developed in North America will see a return to relative fossil fuel abundance. On the other hand, climate change science makes it clear that we cannot afford to go on burning fossil fuels at the current rate and that drastic action is required if we are to have any chance of limiting global warming to 2°C. Fatih Birol, the Chief Economist of the IEA, has warned that about two thirds of all proven reserves of oil, gas and coal will have to be left undeveloped if the world is to meet that target. Thus to frame future energy security challenges around competition for scarce resources (namely fossil fuels) is to ask the wrong question about the nature of future energy challenges.

A global energy dilemma

Elsewhere, I have suggested that the world faces a global energy dilemma: *can we have secure, affordable, and equitable supplies of energy services that are also environmentally benign?* Recent history has demonstrated that energy strategies that focus narrowly on affordability and security of supply result in an energy mix that is environmentally unsustainable. This is because these strategies tend to favor primary energy sources—such as coal—that have high carbon emissions and that create other environmental problems such as air pollution and acid rain. The recent history of China is a case in point. In the contemporary context, energy strategy must seek to decarbonise the energy mix while also ensuring security, affordability and equity of access – an extremely difficult task that is only complicated by the fact that it is presented in radically different ways in different parts of the world.

Different strokes for different folks

Broadly speaking, we can divide the world into three groups when it comes to addressing the global

energy dilemma. First, there are the states of the high-energy industrially developed world – represented by the OECD. These states are responsible for the majority of historical carbon emissions; they consume the bulk of the world’s energy and have the highest levels of energy consumption and GNP per capita (notwithstanding outliers like Qatar). For these states, balancing energy security and climate change is a policy imperative. Most of them were Annex 1 signatories to the Kyoto Protocol and those that are members of the European Union have embarked on an ambitious path to reduce their carbon emissions by 80% by 2050. Nevertheless, the high economic costs of this low-carbon transition are becoming increasingly apparent to these states. Indeed, it is unclear whether the political will remains to stay the course, particularly as efforts to address climate change are increasingly seen as coming at the expense of economic competitiveness. Tellingly, the energy-abundant states within this grouping, such as Australia, Canada and the US, are already following a different path, as is Japan after the loss of its nuclear power capacity.

Fuelling growth

The second group of states is the emerging economies. The most significant of these are the CIBS—China, India, Brazil and South Africa—or the ‘Southern Engines of Growth’ that are now being joined by the so-called MINT economies—Mexico, Indonesia, Nigeria and Turkey – that are touted as the next centers of global economic growth. Whatever the precise nomenclature and membership, the point is that there is a group of emerging economies that will account for the majority of the growth in energy demand over the coming decades. Many of these economies will be based on energy-intensive sectors of economic activity. As living standards increase, so will automobile use and levels of household consumption. This means that providing access to secure and affordable energy will be an essential goal for these states and an explicit component of their social contract.

The future energy demands of these states have major implications for global climate change. At present, too much of the growth in demand is being met by coal-fired power generation. By and large, the governments of these states remain to be convinced that there is a low-carbon path to future prosperity. In fact, the growth of energy demand in these states is largely driven by government energy subsidies. With some justification, emerging economies claim that they should be afforded the same opportunities that the OECD economies had when they industrialized. Bringing these economies into the fold of a global climate change agreement is perhaps the greatest energy security challenge that the world faces.

Sustainable energy for all

The final group of states is the residual category that comprises the ‘global south’, where the majority of the world’s population resides. Within this group are a number of energy-abundant states, including many which have struggled to turn their energy wealth into economic prosperity and others where that energy wealth is used to support autocratic regimes, whose stability is questionable. These energy-abundant states may soon face additional challenges associated with declining demand for fossil fuels as a result of climate change policy.

The vast majority of states in the global south, however, remain low-energy societies that are still dependent on ‘traditional’ forms of energy supplies and that have only limited access to ‘modern energy services.’ At present, some 1.3 billion people—or 1 in 5 on the planet—lack electricity to heat their homes or businesses (over 95% of these people live in sub-Saharan Africa and South Asia). Nearly 40% of the world’s population still relies on wood, coal, charcoal or animal waste to cook their food, which has negative consequences for both their health and the surrounding environment. For these people, energy security is central to poverty alleviation and has even been identified as the “missing” Millennium Development Goal, in belated recognition of its significance.

Moving these people up the energy ladder cannot be based on fossil fuels alone. This is because the volatility and high price of those fuels threatens economic growth, and because as incomes rise future growth in energy demand cannot become yet another source of carbon emissions. That is not to say that there is no place for efficient grid-based electricity services from fossil fuels in more densely populated places. The harsh reality, however, is that we cannot afford to address the challenge of energy access at the cost of environmental sustainability – hence the concept of sustainable energy for all. After all, it is also the case that these same countries are more likely to bear the brunt of climate change, particularly in the form of challenges to water and food security. This is why those who have benefitted the most from the combustion of fossil fuels—the developed world—have an obligation to make energy security a central goal of their foreign policies.

Dimensions of energy scarcity

An alternative way to approach energy security is to focus on the various dimensions of scarcity – physical, economic, geopolitical and environmental – rather than on affordability and security of supply alone. As already noted, the development of unconventional oil and gas has significantly increased the resource base, but that does not mean that all of those resources will be economic or desirable to develop. It may be the case, for example, that these new reserves—unconventional oil and gas, Arctic offshore reserves or methane hydrates—are simply too expensive to recover. As fossil fuel demand falls in the face of climate change policy, the world may nevertheless become increasingly dependent upon the lowest cost oil and gas producers, which means the Middle East – and that raises more traditional geopolitical concerns. As in the past, the interplay between economics and geopolitics will result in the development of more costly reserves and associated infrastructure, as well as the subsidization of higher cost energy—such as nuclear power—in the name of energy security. Already, the cause of renewable energy is championed because it is seen as more secure. But renewable energy also brings new security challenges, related to the supply chains required to construct generating capacity and infrastructure and to the intermittency of production.

Returning to the starting point of this analysis, the fragility of the global climate system places constraints on how much more fossil fuel we can burn. In other words, energy security is subject to a wider, environmentally imposed scarcity constraint than the narrow preoccupation with physical supply can accommodate. Of course, this wider conception is not without its geopolitical implications. The question of who gets to burn the remaining allowance of planetary fossil fuel is a thorny one that raises security challenges of its own.

The worst of all possible worlds

Our conception of energy security must recognise that the world must undergo a transition away from an increasingly unsustainable energy system based on fossil fuels to a significantly lower carbon future if it is to avoid catastrophic climate change. In the years ahead, the world still faces the traditional security challenges posed by fossil fuels, while increasingly having to grapple with the new security challenges posed by the demands of climate change and an emerging low-carbon energy system.

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