



# The great disconnect on energy policy

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**T**here is a fundamental disconnect between the ongoing discussion on energy policy and the clear and present energy requirements of the 21st century global economy.

The energy debate typically centres on how to reduce carbon emissions. At last December's Copenhagen Conference, for instance, countries around the world pledged dramatic reductions in carbon emissions: The US promised a 17 per cent reduction below 2005 levels by 2020. India pledged 20 to 25 per cent. China doubled down on that with a 40 to 45 per cent target. Brazil, South Korea, the European Union and many others all swore to reduce emissions well below 2005 levels.

That's all well and good, if the only issue is carbon emissions. But rarely are those reduction goals compared to the inescapable need to meet what many predict will be a massive increase in energy demand and consumption in the coming decades.

According to the US Energy Information Administration (EIA), world energy consumption is projected to rise by 49 per cent *above* 2007 levels by 2035. And the most rapid growth will be in non-OECD countries such as China, Brazil and India, where energy consumption is slated to increase 84 per cent. The problem is obvious. How do you cut emissions between 17 and 45 per cent when you need to increase energy use by as much as 49-84 per cent?

I believe both can and must be done, but we'll only be able to do it if we take a realistic view of our energy needs and begin to examine where and how we can achieve real cuts in carbon emissions.

Most often, the answer of pundits and policy makers is increased investment in and reliance on renewables. I strongly believe that renewables must be part of the energy mix. My company makes and markets the infrastructure for many of the most promising renewable technologies, from geothermal, to solar to wind. But we have to ask ourselves if renewables can possibly, from a realistic point of view, provide the massive amounts of new energy we need in the near future.

A little over 7 per cent of the world's energy supply currently comes from renewable energy sources. The vast majority of that, however, is produced by hydropower (3 per cent of all energy) and biomass (4 per cent). Both these energy sources have limitations, however: It's unlikely that many new dams will be built in the developed world and the emerging and developing nations are increasingly concerned

about the environmental damage large-scale hydropower infrastructure entails. Meanwhile, the food shortages and unrest that occurred around the world in 2007 and 2008, which many attributed in part to the diversion of cropland to corn ethanol production, suggest that there may be real limits to biofuels as well.

This leaves us with solar and wind, which is in any case what most people think of when they think "renewable." Solar and wind, however, account for less than one per cent of all energy use. Wind power currently accounts for less than one-third of one per cent of global energy output. Solar cells currently produce less than four hundredths of one per cent of global energy output – an almost infinitesimal quantity.

The situation is no better in the developed world, where massive subsidies have yet to seriously increase the contribution of wind and solar. In the US, for instance, wind and solar together contribute about one half of one per cent of our energy. These facts, while uncontested, are somehow rarely mentioned. And I would say, the difference between 1 per cent renewable energy contribution and the 49 to 84 per cent increase in energy needed in the next 25 years is the measure of the disconnect in our energy policy conversation.

There's a joke about a tourist who is driving in Maine and stops to ask a grizzled old farmer how to get to a town along the coast. The farmer begins to suggest a route, then stops and says, "Nope, that won't work." He thinks for another moment, then shakes his head again and says, "Nope, that won't work either." Finally he shakes his head again and announces, "I guess you just can't get there from here." But we have to get there from here. We have to come up with that energy from somewhere. Failure is not an option.

The developed world is still reeling from the real estate collapse and credit crunch. Unemployment in the US and Eurozone are hovering around 10 per cent and there is growing concern the economy will fall back into a double dip recession. Imagine what an energy crunch of 49 per cent would mean. Imagine what an energy crunch of 84 per cent would mean to the emerging economies of the world.

A few years ago, the World Bank predicted that the global middle class would expand to over a billion people by 2030. That trend – the most dramatic and widespread advance in human prosperity and well-being in history – has most likely been slowed by the current economic downturn. But without adequate sources of cheap and abundant energy this revolution in prosperity will ultimately decline and may even slip into reverse. Clearly we need to be focusing our

efforts on energy sources that are both abundant and that can provide significant CO<sub>2</sub> reduction.

There seems to be no question that nuclear is way up on that list. Nuclear power plants today are safer than ever and produce zero emissions. Importantly, they produce electricity on a continuous basis, 24 hours a day, seven days a week, regardless of whether the sun is shining or the wind blowing, so they provide a reliable and vital source of necessary base power until we build up renewable power capacity.

Not only do nuclear plants emit no greenhouse gas themselves, they can help us dramatically reduce them in other areas – particularly the fossil fuels we burn in our car and truck engines. As we move from gasoline to electrically powered transportation, nuclear can provide the massive new amounts of electrical energy required. And it can do it without releasing one CO<sub>2</sub> molecule into the atmosphere.

Many countries are moving ahead in modernising and expanding their nuclear power fleet. In the US, however, all the talk about a nuclear renaissance is, so far, just talk. Decades go by, and no new nuclear power plants are built. According to the Nuclear Energy Institute, simply meeting the increased demand on electrical energy with nuclear power would require hundreds of new power plants. We should start building now.

*SPX provides solutions that support the expansion of global infrastructure, with particular emphasis on the growing worldwide demand for energy and power*



Photo: SPX

Clean coal combined with carbon sequestration must be another focus of our efforts. For many, this is counter-intuitive. Coal is the poster child of CO<sub>2</sub> emitting technology. Ageing power plants that are now 30 or more years old have an average efficiency that is extremely low – 33 per cent – essentially the same as it was a century ago. But new plants have dramatically improved their ability to reduce emissions. New coal plants can operate at 44 per cent efficiency or more. And new technologies hold out the possibility of effectively sequestering CO<sub>2</sub> as well.

We really have no choice. According to the EIA, coal will remain the world's largest energy source, accounting for some 38.3 per cent in 2030. Just as with renewables, advances in technology will be key. But shouldn't we be looking to find technological remedies where the great bulk of our energy is produced?

Updating our world's antiquated energy grids is another imperative. Last January, northern India was blacked out for 12 hours because of a collapse of their grid. But failing and inadequate infrastructure not only plagues the developing world. In the US, electricity blackouts are skyrocketing, and losses on transmission lines are so great that some 10 per cent of all the electricity generated is simply wasted. Ten per cent saved, in this case, would be 10 per cent earned – with zero additional emissions.

As important as the big investments and new technologies are, we shouldn't discount the gains we can make through concerted, small improvements. Something as seemingly insignificant as better ways to tighten bolts on wind turbines could have a powerful effect on the efficiency of wind energy.

I have no doubt we will be able to "fill the gap," providing energy to a growing world while cutting CO<sub>2</sub> emissions. But that will require that we put every option on the table – including nuclear and coal – and examine their pros and cons without "fear or favour." It will demand talking realistically about what our future energy needs are and realistically examining how we can meet them. And the sooner we begin that discussion, the better. □