

Switch to Renewables Won't End the Geopolitics of Energy

Bloomberg

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August 21, 2017

Countries that dominate the export of rare-earth minerals will be the petrostates of tomorrow.

In another sign that the age of fossil fuels is waning, the California State Senate has passed a bill to commit the state to use 100 percent renewable energy for power by 2045. Other states and cities -- including Massachusetts, Chicago and Atlanta -- intend to make similar switches. Proponents highlight a bevy of ways in which the Age of Renewables will improve our lives: lower carbon emissions, cheaper electricity rates, new abilities to bring power to impoverished nations ... and independence from the economic and political entanglements of volatile global oil and gas markets.

Yes, there are many reasons to be enthusiastic about a shift toward renewables. Unfortunately, an escape from energy geopolitics is not likely to be among them.

Americans and Europeans in particular are familiar with the geopolitical downsides of a heavy reliance on fossil fuels. Even though energy embargoes are extremely rare, and hardly ever in the interest of the producers, the specter of the 1973 Arab oil remains. For many in Eastern Europe, the 2006 and 2009 gas cut-offs to Ukraine by Russia are an equally disturbing memory. Simply the threat of such actions carries political weight.

For other nations, particularly in Asia, reliance on energy supplies coming from afar, through numerous transit chokepoints such as the Strait of Malacca between Indonesia and Malaysia, is a permanent worry. And, of course, there are the volatile politics of the Middle East and other energy-producing countries such as Nigeria and Venezuela.

Why won't an embrace of solar, wind and the like relieve us of all such geopolitical concerns? First, a shift to renewables in the power grid, as with the California plan, will only go so far until our transportation sector is radically changed by electric cars becoming more of the norm. As long as most of the energy used in transportation is petroleum-based, more renewables will have little impact on the geopolitics of oil (or its consumption).

More importantly, a shift to renewable energy could well bring its own complications in the geopolitical domain. This should come as no surprise. Think of the many such wrinkles that have come with the adoption of nuclear energy. For instance, as the world has seen with Iran, the enrichment of uranium for civilian purposes can provide a cover for efforts to pursue a nuclear weapon. Moreover, historically, every big shift in the global energy mix -- from wood to coal and from coal to oil -- has brought with it its own geopolitical ramifications. Renewables will be no exception.

The ways in which a future more dependent on renewables will bring both good and bad geopolitical karma is the subject of a new report I issued with David Sandalow of Columbia University and Indra Overland of the Norwegian Institute of International Affairs.

Among the most interesting of possible trends we highlight is the idea that a more renewable-heavy future will likely bring with it new forms of the "resource curse" -- the phenomenon that political and economic development in many resource-wealthy countries seems stymied when compared to resource-poor ones. In many resource-rich nations, economic growth is actually slower and political institutions are more likely to be repressive and nondemocratic.

In the world of fossil fuels, this curse has generally applied to big producers of oil and gas. In a world heavier on renewables, the curse will probably not be so relevant for producers of power; solar, wind and geothermal energy are more likely to be generated and consumed within the borders of a country than to become profitable exports and generators of huge windfall cash flows. Rather, we may see this curse surface in countries rich in the materials required to produce the components that make renewable energy possible.

Many of these resources are rare-earth metals and other commodities deep underground. For example, indium and cobalt -- neither is technically a rare-earth

metal, but they are still relatively hard to come by -- are essential for making solar panels and batteries.

China provides approximately half of the indium consumed globally today, whereas the Democratic Republic of the Congo is the source of more than half the world's cobalt. The big producers of lithium, another material essential for the production of batteries, are Argentina, Australia, Chile and China. Yet Bolivia's large untapped reserves of lithium could catapult it into this league in the future. Tellurium is not a rare-earth mineral, but it is another key component of solar panels. The U.S. has imported most of this material from Canada, but relies to some extent on Belgium, China and the Philippines.

By some estimates, China supplies as much as 95 percent of all the rare-earth elements in the global market. Given Beijing's dominant position, the world should expect repeats of the 2010 episode when China halted the sale of rare earths to Japan -- where they are vital for the production of solar panels and batteries -- in the wake of a maritime dispute.

Policy prescriptions are in some cases obvious. But it will take time for efforts to bear fruit, so there is a need to act quickly. For example -- staying with the China-Japan example -- in order to stem the political power that producers might get from their rare earth and other critical elements, the U.S. should reassess whether its current efforts to mine these materials are sufficient.

The reality is not that only a small number of countries have these resources, but that only a few actually produce them. The U.S., too, is rich in many of these resources; the U.S. Geological Survey estimates that the United States possesses 13 percent of global rare-earth reserves, 14 percent of global tellurium deposits, and 3 percent of the world's indium reserves. Yet, in recent decades, America has found it too expensive to develop these materials, especially given Chinese production, which is part of a centralized industrial policy. The U.S. federal government may need to return to more expansive stockpiling of these materials, or provide more backing to domestic production.

There are lessons here not just for U.S. industry, but also for American foreign policy. For instance, the majority of the world's cobalt reserves are believed to be in the Democratic Republic of the Congo. Thus it would benefit U.S. policymakers to look at the

African country as not only a humanitarian crisis and failed state, but as a more pressing a strategic priority.

Finally, and most important, Washington could do even more to encourage innovation -- in this case, by supporting more research into the possibility of recycling rare earths and non-rare-earth elements. For example, funding for the Critical Materials Institute -- set up in 2013 under the Department of Energy to help overcome obstacles to the embrace of clean energy -- will be eligible to appeal for more funding next year. Given the Trump administration's apparent lack of interest in renewables, it may be tempted to terminate the program. But doing so on these grounds would be a mistake; such efforts to reduce constraints on supplies of critical materials will only become more important as renewables muscle their way into the global energy mix.

The private sector, too, can play a role. Just see Apple's recent announcement that it aspires -- eventually -- to stop relying on mined minerals and instead to use only recycled material. This goal will inevitably spark more innovation as the company seeks viable substitutes for such materials.

This question of new dynamics around critical resources is just one of many examined in our new report. But none of the potential dark sides is a reason to halt or slow the momentum toward a more renewable energy future. The benefits will likely outweigh the costs. Yet, policy makers need to start thinking seriously and objectively about the geopolitical contours of a future more reliant on renewable energy, and how to prepare for it. It is coming, sooner or later.

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