

Germany's Energy Transition: a Blueprint for European Energy Security?

by Lisa Schmid



About the Author

Lisa Schmid is an Energy and Ecology Policy trainee at the Heinrich Böll Foundation North America in Washington, DC. She holds a Bachelor of Arts Degree in Political Science and Public Administration from the University of Konstanz.

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Author: Lisa Schmid

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Heinrich Böll Stiftung

Washington, D.C. Office

1432 K Street, NW

Suite 500

Washington, D.C. 20005

United States

T +1 202 462 7512

F +1 202 462 5230

E info@us.boell.org

www.us.boell.org

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When the Russian foreign ministry [threatened to increase gas prices](#) in late July this year, you could hear European leaders holding their breath: although Russia has used its gas exports as political leverage on numerous occasions before – especially against Ukraine and thus inevitably towards Europe –, the dependence on Russian gas still is an issue of concern for the European Union. So far, efforts to correct this have remained half-hearted and tampered by political bargaining. What's more, this resource dependence has repeatedly forced the European Union to take a hesitant position on issuing sanctions or pursuing other more determined political strategies with Russia – essentially leading to a loss of European political independence. What the European Union needs is a strategy for more energy independence, and thus, for more energy security. International commentators often forget, however, that the long-term solution to this problem has already been found: prioritizing domestic and European renewable energies. In the foreseeable future, transforming and diversifying European energy supplies will result in a significant reduction in European dependence on foreign oil and gas imports, while at the same time reducing greenhouse gas emissions. As such, a European clean energy transition would be, above all, a security project. A number of European countries are already pushing ahead: Germany, for example, has started to embark on such a path with [ambitious goals](#) – a complete phase-out of nuclear energy by 2022 and an at least 55 percent share of renewable energy in electricity production by 2035. I argue that Germany's energy transition significantly improves the country's future energy security while ensuring universal energy access at affordable prices.

Transforming and diversifying European energy supplies will result in a significant reduction in European dependence on foreign oil and gas imports, while at the same time reducing greenhouse gas emissions.

Not everyone in Germany views the energy transition as a security project. Quite the contrary: as power supplies from intermittent renewable energy sources, such as wind and solar, are more volatile than that from conventional fossil fuel sources, it is often feared that the clean energy transition will, in fact, weaken the stability of Germany's power supply. Since Germany's heavy industry depends on stable energy supplies more than anything, consistent supply security lies at the heart of the country's economic policy. To date, renewable energy sources make up 28 percent of Germany's electricity mix without jeopardizing security of supply in any way (Germany even

has the [most reliable grid system in the world](#) with only 10-15 minutes of power outages per year on average). When it comes to the most suitable transitional energy mix, international energy experts agree that the best complement to an increasing share of renewables is flexible gas. Today, Germany is still heavily dependent on gas imports: in 2013, more than [four-fifths](#) of the gas consumed in Germany (in addition to 11% German domestic gas) was imported from Russia (31%), Norway (24%), the Netherlands (23%), Denmark and Great Britain (together 11%). This situation casts doubt on the vision of an energy self-sufficient Germany, and the energy transition – with its need for more flexible gas-fired power plants – appears counter-productive to the country's energy independence. This only holds true for the short-run, however. [A recent study](#) by the German Fraunhofer Institute (available only in German) goes as far as to claim that Germany can, in fact, be independent from Russian gas as soon as 2030 and be completely independent from foreign gas imports by 2050. If this were the goal, however, Germany would have to increase its energy efficiency in the heating sector substantially, implement alternative heating methods such as heat pumps, as well as develop renewable gas substitutes such as biogas and power-to-gas. Gas independence for Germany is a realistic goal, if the country ambitiously pursues this path. By enhancing energy efficiency alone, the need for gas imports could be reduced relatively quickly: Germany has set the [target of reducing its electricity consumption](#) by 25% by 2050 compared to the 2008 level. It therefore already has an ambitious roadmap in place – it only needs to be made a reality. The Fraunhofer report is very clear that a slow, unambitious energy transition, in contrast, would enhance import dependence and threaten Germany's energy security.

Germany can, in fact, be independent from Russian gas as soon as 2030 and be completely independent from foreign gas imports by 2050.

In order for these approaches to be successful, however, a paradigm shift is needed when thinking about energy supply. Instead of focusing on centralized power generation covering Germany's base load needs at all time, the energy discussion should instead cover questions on how a more flexible energy system with decentralized supply and demand could be created. In Germany, this discussion is already well underway, to the point of seeing a decentralized energy structure to boost the country's energy security in itself. Pursuing such a decentralized energy transition also means rethinking the traditional energy producer and consumer model, as more and more citizens, cooperatives and municipalities now produce and consume energy at the same time. These new players in the energy system, the so called "prosumers," may be members of a local energy cooperative, heating their water with solar power or using photovoltaic systems on their roof to cover their own electricity demand. To put this into perspective: one in every sixty Germans is now producing energy. By the end of 2013, there were [888 registered energy cooperatives](#) in Germany, twice as many as in 2010. These decentralization developments do not jeopardize but enhance security of

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supply over centralized power plants. This is because a decentralized system is even more resilient to external shocks than a centralized system. The German grid remains one of the most reliable grid systems in the world, even with an increasing influx of intermittent renewable energy. The vision is clear: Germany will increasingly become a scattered landscape of "energy islands" independent from centralized facilities, some only for short periods of time, some permanently. In order for such a transition to succeed, however, better infrastructure investments in smart grids technologies, energy efficiency and energy services are needed.

Independence from gas imports and a decentralized supply system strengthen Germany's energy security. German energy supply security, however, needs to be regarded in a European context. On the one hand, the country has to comply with EU energy and climate regulations, while on the other, the transformation of Germany's energy system has impacts on its European neighbors and beyond. Much of the international discussion on the German energy transition has been focused on the nuclear power phase-out, which is often perceived as being an irrational step. Many of the other positive impacts that the energy transition has had on Germany's economy – such as the build-up of the clean-tech sector "made in Germany", the [380,000 jobs created](#) in the renewables sector and the [lower wholesale electricity prices](#) – have been widely neglected. These advantages can only really reach their full potential if Germany is joined by other countries in its attempts to modernize their energy systems. It is important, too, to note that Germany's energy transition on its own will have no significant impact on global warming. While climate change is a highly debated issue, energy security and economic growth are not. Energy security in particular could motivate other countries to modernize and clean up their energy systems, opening up new paths in the global fight against climate change. This way, livelihoods and living environments of millions of people around the world will be saved and money otherwise spent on climate change adaptation measures could flow directly to local and rural communities. The cost of limiting global warming to 2°C would require \$110 – 275 billion for developing countries in climate mitigation; this shows the huge financial impacts of climate change ([Oxfam 2010, "Climate Finance Post-Copenhagen"](#)). Of course, these are long-term perspectives, but climate change is already a threat multiplier and a huge financial burden to many developing countries today.

More than anything else, clean energy transitions are security projects. Too often is the German energy transition perceived in a one-sided and slightly irrational path: too much attention is attributed to the nuclear phase-out after the 2011 Fukushima accident, dwarfing any larger reasoning behind Germany's decision to prioritize renewable energy in its future energy mix. If this message was better understood by other European countries,

their vulnerability to Russia's gas poker would significantly decrease. True, the initial motivation for the nuclear phase-out and the subsequent energy transition were the jeopardized nuclear security through the catastrophe in Fukushima. So, security concerns about nuclear power plants and the unresolved question on nuclear waste storage dominated Germany's initial energy discussion in 2011. European decision makers today, however, should embrace the clean energy transition security narrative for three reasons: first, the dependence on Russian gas imports not only threatens European energy security but also ties the hands of political leaders when it comes down to adequately reacting to crises such the current conflict in Ukraine. Second, critics of the energy transition should understand that a decentralized grid is not a threat to supply security but actually makes countries like Germany more resilient towards external shocks. Third, understanding the German energy transition as a security project in addition to a response to global warming concerns would encourage other countries to rethink their energy strategies as well – on the European level and beyond.