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# 4 Myths About the German Energy Transition



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**The German Energiewende (Energy Transition) is one of the—if not the—world’s most ambitious national attempts to systematically overhaul the production of electric power.** A massive undertaking, it has inevitably involved challenges. But it would be wrong to mistake the challenges that emerge in any national energy transition at this unprecedented scale as failures. The challenges are nothing more than a clear indication of just how far reaching the German Energiewende is.



Where is the German energy transition today?

- The challenge now for sustainable energy advocates is to focus attention on heat (natural gas usage) and the transportation sector, as was originally conceived, along with the phase-out of coal-fired power.
- A societal consensus has been reached in Germany to phase out nuclear power. Although the timing of the phase-out may come up again, the primary issue now is who assumes the long-term liability of decommissioning and disposal costs: the industry, the state, or both.
- Federal government legislation has been adopted to smooth out and even slow — but not stop — the transition. The provisions will take effect on August 1. It is also abundantly clear that the energy transition will continue. The assumption for those following its progress is that the Energiewende is inevitable. It may ebb and flow. But there is no stopping it. Only the pace of change is now in question.

As for the challenges faced by and created by the Energiewende, they are not as insurmountable as they are often depicted by some commentators here in the US. A transition of this kind does not occur without ripples, without those financially threatened by it mounting a concerted defense. As it happens, the US is undergoing an energy transition itself. The difference is that it is not stated national policy. State governments, public preference, entrepreneurs, and broader market investment patterns are the primary forces moving us, as well, inevitably to a sustainable electric grid. Perhaps at a slower, more uneven pace but a perceivable shift is nonetheless occurring in this nation.

The Civil Society Institute does not claim to be the ultimate authority for the German energy transition in the US. However, we do assert that there is a need for the U.S. news media, policymakers, and the public to take a closer and open-minded look at what is going on in Germany. It is our hope to assist in initiating a more balanced discussion because the German experience with respect to energy policy is truly unique and impressive.

The following provides an alternative perspective to the negative perceptions in the US of the German energy transition.

## MYTH 1

# German Energy Costs are Very High and Spiraling Out of Control

Consumers are typically the canary in the mineshaft when it comes to discomfort with energy policies that result in higher prices. According to a 2013 survey, 69% of the German population supports that nation's energy transition.<sup>1</sup>

German electric rates are not out of control. Here is a comparison between average electric rate increases from 2008 to 2012 between the entire EU, Germany, and France, since early critics of the German energy transition once pointed to France's nuclear dominance as their preferred alternative:

- 18% for the EU;
- 21% for France; and
- 22% for Germany.<sup>2</sup>

Also, affordability does not appear to be that different between Germany and France in terms of customers' ability to pay heating costs, winter being peak electric demand in Europe.<sup>3</sup>

Customers pay bills, not rates. And rates do not necessarily completely reflect bills paid. Increased energy efficiency and overall lower usage assists with more affordable bills. As of 2010, the following are approximate average annual kilowatt-hour usages in:

- Germany: 3,500;
- France: 6,300;
- UK: 4,400;<sup>4</sup> and
- US: 10,800 (in 2012).<sup>5</sup>

And it is important to keep in mind that the Germans are keeping industrial power costs artificially low. A policy decision keeping bills higher for households than they should be exempts 1,500 to 2,000 large industrial electricity users (including coal mining operations) from paying the public benefits charge for renewables. This exemption that equates to 30% of German electric demand is worth 5 billion

euros per year.<sup>6</sup> The government's current proposed changes to the law will do little to change that.<sup>7</sup>

Although the energy transition has edged up retail rates, it has held wholesale electricity costs. Germany has an overcapacity of power, and marginal costs of wind and solar are lower than conventional power plants. Manufacturers in Germany and in neighboring countries are benefitting from this current trend.<sup>8</sup>

As for the criticism of subsidies for renewables in Germany, nuclear power is subsidized heavily in Europe and the US.<sup>1</sup> The French nuclear sector is state run, for instance.<sup>2</sup> England has proposed something similar to a FIT (feed-in tariff) to finance its Hinkley nuclear plant that includes adjustments for inflation.<sup>9</sup>

However, the costs for solar PV and wind continue to decrease while nuclear construction here and in Europe is mired in cost overruns and delays<sup>3</sup>, with costs continuing to escalate. A recent study comparing the costs of nuclear, using the financing mechanism for the planned Hinkley nuclear power plant in England, found that solar PV is 20% cheaper, even when taking into account integration costs.<sup>10</sup>

Finally, the energy transition does not appear to be damaging the German economy. Last year, the country experienced record tax receipts and is the strongest economy in the EU.<sup>11</sup>

1 In the US, the Price-Anderson Act shifts the bulk of accident costs to the U.S. taxpayer. There are also loan guarantees for nuclear power plants in the US. State governments inevitably pass CWIP (construction work in progress) laws to force ratepayers to pay up front for financing costs plus return during construction to leverage otherwise unavailable private financing.

2 According to the World Nuclear Association, the two French nuclear companies, Areva & EdF, are 90% and 85% government-owned, respectively. (<http://www.world-nuclear.org/info/Country-Profiles/Countries-A-F/France/>)

3 For instance, the Okiluoto plant in Finland and Flamanville plant in France, both estimated at 3.5 billion euros, are now estimated at 8 billion each.

## MYTH 2

# Greater Reliance on Variable Wind and Solar in Germany is Threatening Grid Reliability

A 2012 assessment by the Council of European Energy Regulators<sup>4</sup> (CEER) ranked Germany's electric grid the third most reliable in the EU—ahead of nuclear-dominated France and slightly better than the Netherlands and Switzerland, countries that do not have large amounts of variable power.<sup>12</sup>

In a 2011–2012 executive opinion survey by the World Economic Forum, Germany ranked 19<sup>th</sup> worldwide in reliability, which may seem low until it is put in context: the US ranked 33<sup>rd</sup>.<sup>13</sup>

A key aspect of German energy policy is energy efficiency. And there is much more industrial efficiency to be had with quick paybacks.<sup>14</sup>

Storage capacity is expanding, particularly in homes.<sup>15</sup> Some analysts are pushing for a capacity market for storage technologies to increase grid flexibility to accommodate more renewables.<sup>16</sup>

The German government also wants to expand combined-heat-and-power (CHP) from 15% to 25% of generation. Some analysts assert that increased CHP projects can cover power demand in the south, where there is a paucity of power. In the north, there is overcapacity.<sup>17</sup>

Affordability does not appear to be that different between Germany and France in terms of customers' ability to pay heating costs, winter being peak electric demand in Europe.



<sup>4</sup> The CEER used SAIDI (the System Average Interruption Duration Index), which tracks grid downtime with and without exceptional events such as storms. If exceptional events are left out, grid reliability can be compared.

### MYTH 3

# Germans are Facing Possible Energy Shortages Due to Shifting from Nuclear Power

There is an over-capacity of power in Germany.<sup>18</sup> Moreover, options abound with respect to smoothing the transition.

Power export statistics show Germany's fossil generation is being squeezed by wind and solar capacity. In the winter of 2013, Germany experienced record power exports. Germany exported coal-fired power to Denmark, France, and the Netherlands because of the unusually cold weather.<sup>19</sup>

However, a warmer winter demonstrated how renewables are offsetting conventional generation when foreign demand for power slumps and renewables generation is robust. In the first quarter of 2014, use of natural gas (keeping in mind 50% of homes heat with natural gas), coal, and nuclear power declined:

- 24% for natural gas;
- 11% for hard coal;
- 4% for brown coal; and,
- 4% for nuclear plants.<sup>20</sup>

On an interim basis, some fossil plants are considered must-run, and Germany is purchasing power as additional transmission lines and renewables are being deployed.<sup>21</sup>

There is an ongoing discussion of taking coal-fired plants out of the market because they are not flexible technologies (cannot readily ramp up and down to compensate for wind and solar variability) and therefore are not compatible with variable wind and solar technologies. The idea is to create a strategic reserve so that coal-fired power is there when needed, such as during winter peak demand, and not running constantly.<sup>22</sup> Some consider such a reserve as a way to build flexibility into the grid while systematically decommissioning coal plants.

The energy transition does not appear to be damaging the German economy. Last year, the country experienced record tax receipts and is the strongest economy in the EU.



## MYTH 4

# The Shift from Nuclear Power has Backfired in Terms of Climate by Resulting in a Huge Shift in Germany to Coal

Anyone listening to U.S. critics of Energiewende might assume that Germany has returned to the pre-nuclear boom days for coal. Nothing could be farther from the truth.

Meeting the demand for *foreign* coal-fired power pushed up German carbon emissions by a minuscule 3% in 2013.<sup>23</sup> But exports in the first quarter of 2014 were only 30% of last year and, as shown above, fossil and nuclear generation dropped in Germany.<sup>24</sup> Experts predict that carbon emissions from coal-fired power plants will decline slightly in 2014.<sup>25</sup> The coal phase-out is not likely to begin until 2022. The factors cited are continued build-out of solar and wind in Germany, better weather for renewables, the fact that wind and solar will “increasingly offset power from coal,” and that no nuclear plants are slated for decommissioning this year. The only caveat is that exports of coal-fired electricity may increase.<sup>26</sup>

In addition to nuclear reactors, coal and natural gas plants are being decommissioned or temporarily shut down.<sup>27</sup> These plants are becoming increasingly uneconomic as deployment of renewables expands.

As for new coal-fired power plants, more than 20,000 megawatts (21 plants) of coal-fired plants have been cancelled in Germany since 2008. Five are “on ice.” Eight are in various stages of development, some of which are facing continuing delays and one of which began operational tests last year. Three are in initial planning stages, but add up to only 2,680 megawatts.<sup>28</sup>

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## ENDNOTES

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