

# German Vulnerabilities of its Energy Security

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Since the end of the 1990s, international energy experts have stressed the increasing strategic importance of supply security in the 'energy triad' to which economic competitiveness and environmental compatibility also belong. But only in the aftermath of the winter 2005-2006 gas conflict between Russia and Ukraine have the future security of German and European energy supplies become the focus of a broader political debate, raising new problems and challenges.

In April 2006, the German government initiated a national summit with its ministries and the German energy companies. It established three working groups and a process of continuing discussions with the goal to develop a long-term national energy concept by 2008. As the result of those discussions, Germany's government has emphasized energy efficiency as a top priority in a new national energy security concept, which also envisages the diversification of its energy imports, including gas by building new pipelines and a liquefied natural gas (LNG) terminal in Wilhelmshaven.

During the German Presidency of the European Union in the first half of 2007, the European Council agreed on an integrated climate and energy policy and an 'Energy Action Plan' for the next years (2007-2009). The EU-27 states were also able to agree on three "20 percent objectives":

- Energy efficiency should be increased by 20 percent across the EU;
- The goals of the Kyoto protocol should be exceeded and carbon emission should be reduced by 20 percent by 2020 compared to 1990 (if other industrialized countries such as the U.S., India, and China commit themselves to similar policies, the EU would be willing to reduce emissions by 30 percent);
- Additionally, a 20 percent share of the energy mix should be generated from renewable energy sources;
- Moreover, 10 percent of European transport fuel should be provided by renewable energy sources, primarily with biofuels as its main component.

This is currently the most ambitious strategy worldwide that integrates the twin major challenges of energy security and mitigating climate change. But given the new emphasis on the need for an active German energy foreign policy and its traditional close energy partnership with Russia, particularly of Germany's gas companies, the significant policy

changes have also created four new major problems, conflicts of goals, and contradictions in its integrated climate and energy policy.

### **1. Climate Protection Versus Economic Competitiveness**

Going even beyond the EU targets on mitigating climate change, the German government has now agreed to reduce its Greenhouse Gas Emissions (GHE) up to 40 percent by 2020 (from the 1990 level). During the next twelve years, the government expects that industry and private people will invest some €313 billion for climate protection. With offering the difficult implementation strategies of Germany's climate protection targets, the growing challenge is balancing these climate protection targets with its future economic competitiveness and with realistic modernization efforts of the private industry and its citizens alike.

A particular problem has been seen in subsidizing solar electricity. The present subsidies have contributed to finance jobs in the solar industry of Japan and other countries rather than in Germany itself because no other country in the world is subsidizing solar electricity as much as Germany. Although China has become the largest producer of solar cells, for instance, it is mostly exporting them because solar electricity is too expensive and not competitive enough compared to fossil energy sources in China. According to independent economic analyses, German consumers will need to pay €62-100 billion in subsidies over the next twenty years—three times the present declining per-capita subsidies of hard coal in Germany. Given its inefficiency with Germany's weather by contributing to just 0.6 percent of the national electricity consumption of 2006, independent economic experts as well as economic experts from the CDU have called for a 30 percent reduction of these subsidies. However, a recent government decision has agreed only to reduce those subsidies to around 8 percent annually by 2011.

Last July, the Economic Ministry went so far as to declare that Germany won't be able to fulfill the targets of mitigating climate change by reducing Germany's GHE by 21 percent by 2020 on the basis of the 2005 levels without shrinking economic growth and losing jobs. Indeed—without providing higher subsidies for older buildings, those climate protection targets will be difficult to achieve. But even with higher subsidies for individual homeowners, they will face great difficulties to compensate the necessary investments in energy efficiency technologies (on average, homeowners need to invest at least €45,000) with higher rentals (realistically only up to 11 percent according to some new analyses) in times of already rising energy and living costs for their tenants. And it also remains uncertain whether older homeowners will pay for new expensive credits for modernizing their houses and flats in

order to improve energy efficiency when they will benefit financially only in twenty years or even later.

## **2. Climate Protection Versus (Gas) Supply Security**

Germany's energy policies are to a certain extent still very idealistic, ambitious, provincial, and overly optimistic at the same time. It has long been a leader in the area of renewable energy in order to reduce carbon emissions and phasing out nuclear energy. As the world's biggest wind power systems producer (producing 37 percent of all systems and components worldwide), Germany is benefiting more than others from the current global expansion of wind power and other renewable energy sources. The coalition agreement between Germany's coalition government parties stipulated targets of a 4.2 percent share of renewable sources in primary energy consumption (PEC) by 2010, and 10 percent in 2020. As the result of its Renewable Energy Sources Act (*Erneuerbare-Energien-Gesetz/EEG*), renewables already accounted for 5.8 percent of the Primary Energy Consumption (PEC) and 12 percent of electricity generation in 2006. The German Ministry for Environment, Nature Conservation, and Nuclear Safety (BMU) hopes to achieve 16 percent of PEC and 30 percent of electricity generation by 2020. However, it also creates new problems for Germany's base load supply and economic efficiency.

Furthermore, it does not answer the question where the rest of the energy demand will come from and to what extent the plans for phasing out nuclear energy will increase the dependencies on gas imports from Russia or from the unstable Middle East—and, therewith, threatening Germany's future energy supply security. The recent decision of the German government of giving up the 10 percent biofuel target as the result of the worldwide crisis of food prices and increasing global criticism of being too costly and ineffective has put even more pressure on realizing the ambitious German and EU climate protection goals by 2020. In the mid-term perspective, however, a second generation of biofuels, comprised of plant waste such as straw or crops that do not compete with the food production, offers a way out of the present problem. As a consequence of the present dilemma, the German government now aims to compensate the biofuel targets by expanding wind power even more. Although the expansion of renewables strengthens Germany's supply security in general, a further expansion of wind power will lead to even higher gas consumption because the reserve capacity (when the wind is insufficient) will rely primarily on gas turbines.

The future overall supply security and energy policy options were already limited by Germany's decision to end its domestic hard coal production (*Steinkohle*) until 2018. Although the decision does not imply another exit strategy from the overall coal production, it

will make Germany even more dependent on energy imports. The government's decision is based on the assumption that the principal conditions of the worldwide coal market (cheap prices compared to other fossil resources and a stable availability of coal worldwide) will not change in the next few decades. However, as new studies in Europe and the U.S. - as well as trends over the last twelve months - are indicating, this assumption might be an overly optimistic scenario, which even ignores present strategic developments in the global coal markets.

Moreover, by emphasizing the need for a national, European, and global policy on climate change, it created the impression that giving up the declared need to preserve the balance in the triangle of objectives in energy policy and subordinating energy policy to environmental protection and climate change policies were a single determining factor. At the same time, the anti-nuclear movement of the 1970s and 1980s has developed into a new anti-coal movement that is calling for an end of coal as a national energy resource altogether. In addition to the exit strategy of nuclear power, it would further narrow the national energy mix. Consequently, it will also lead to higher gas imports from Russia and politically unstable countries, weakening its national security of energy supply.

But given the fact that Russia itself is facing a gas crisis and has officially announced that it will rely much more on the expansion of coal and nuclear power in order to compensate for its unanticipated increase of domestic gas consumption and to maintain its gas export obligations, Russia will produce even more GHE (i.e., CO<sub>2</sub>) as the result of Germany's unwillingness to modernize its coal plants and by raising Germany's gas imports from Russia. As the net result, by relying even more on gas consumption in the case of drastically lowering its coal consumption, Germany might find it easier to achieve its emission reduction plans in the light of the EU's newly declared targets, but simultaneously will undermine its major policy objectives of its global climate change strategy by promoting higher CO<sub>2</sub> emissions in Russia. Furthermore, both the German Energy Agency (DENA) and the energy industry have repeatedly warned that without a large-scale modernization of Germany's existing and particularly older energy plants, an electricity gap may develop by 2012, which will increase up to 12,000 Megawatts (equivalent to fifteen large energy plants) by 2020.

### ***3. Germany's Increasing Isolation on Nuclear Power***

Although the Merkel government has recognized the manifold challenges of energy supply security in the twenty-first century and is promoting an active energy foreign policy on the national as well as EU level, it has upheld the promise made to its coalition government partner, the SPD, to phase out nuclear power by 2021. At the same time, it has called for

greater investment in renewable energy sources and steep cuts in GHE, but also a reduction of Germany's rising dependence on Russian fossil fuels.

Meanwhile, Merkel's own political party and Economy Minister Michael Glos have warned that the EU will not be able to fulfill its targets on emissions unless more member countries favor nuclear energy, including Germany. Following the arguments of the European Commission, many German and international energy experts, energy companies, Deutsche Bank, and others have all warned that Germany will experience significantly higher electricity prices, becoming even more dependent on gas imports from Russia and fail to meet GHE targets if the anti-nuclear policy will be maintained.

A study by the German Institute for Economic Research (DIW) in Berlin concluded in the summer of 2007 that the climate protection measures of the German government and the EU last March will cost Germany economically around €1.9-5.7 billion per year until 2020, depending on a fair European burden-sharing (taking into account the emission reductions achieved to date in the different EU-27 member states; for Germany it would mean reducing 31 percent of its emissions on 1990 levels) and implementing a comprehensive package of climate protection measures domestically. But it also warns that it would be very difficult for Germany to achieve its reduction target by phasing out nuclear power. Germany's present nuclear power plants reduce overall emissions by 150 mt CO<sub>2</sub> per year, which is equivalent to the entire CO<sub>2</sub> emissions of German traffic.

#### ***4. Strategic Energy Partnership with Russia Versus Diversification of its Gas Supplies and Russia's Encirclement Strategy of the EU***

Germany and the EU might be forced to import even more pipeline gas from Russia in the next decade at a time when Russia itself is facing an emerging gas crisis domestically, despite the fact that it has the largest gas reserves in the world. Russia has increasingly become dependent on gas imports from Central Asia and the Caspian region (60-80 bcm) in order to satisfy domestic gas consumption and maintain high-price exports to Europe. At present, one third of all European gas imports from Russia are supposed to come de facto from Central Asia.

Furthermore, at present Russia is trying systematically not only to undermine the EU's Nabucco gas pipeline project (the first independent pipeline from Central Asia to the EU directly without going over Russian territory), but also the EU's wider diversification plan for its future gas supply (such as increasing imports from North Africa or the Middle East).

The aftermath of the EU spring summit in March 2007 has seen European energy companies - with the backing of their respective governments (such as Hungary, Austria, Italy, Greece, and Bulgaria) - intensify their relations with Moscow. In the light of their bilateral energy deals at the expense of other EU member states and the introduction of a common energy policy and unified energy markets, the European Council conclusions run the risk of becoming political lip service. Short-sighted national special interests are threatening a unified approach to the EU's external energy policy.

Under these circumstances of chronic under-investment and delays of commissioning in new gas fields at home, nearly stagnant production over the past few years, and fast-growing internal consumption, it has also become increasingly doubtful whether Russia will be able to fill *both* the Nord Stream (2 x 27.5 bcm a year) and the South Stream pipeline projects (with a design capacity of 31 bcm annually)—a fact often overlooked in Germany's discussions. They are officially declared to be pursued “more or less” synchronically and complementary, in addition to Russia's contracted gas export obligations via the Yamal-pipeline, Ukraine's pipeline system, and the Blue Stream pipeline in the Black Sea. Both pipelines, Nord Stream and South Stream, are presently supposed to be commissioned around 2013. But neither Russia nor Central Asia (including Turkmenistan) have currently the 31 bcm a year for the South Stream pipeline.

The Nabucco and the South Stream pipelines compete with each other for Central Asian gas resources, overlapping transit routes, and national markets of individual EU member states in Central and South-eastern Europe along those routes. But South Stream cannot pose either a commercially competitive alternative to Nabucco due to the exorbitant cost (more than €20 billion) of the overall South Stream project (up to the high-price level of LNG) with a technologically and financially much more challenging seabed pipeline section across the deep Black Sea than Nord Stream and even the implemented Russian-Turkey Blue Stream pipeline through the Black Sea. In addition, the implementation of the seabed section would also require cooperation from Ukraine and Romania. Although they don't have an official veto against South Stream, Gazprom needs to conduct extensive studies of the project's overall impacts on environment, shipping, and maritime security generally. Similar modifications to the originally proposed route and costly delays like in the Nord Stream case can also threaten the South Stream project or at least lead to very similar problems, but on a much higher overall cost level.

The resulting pipeline rivalry in Central and Southeastern Europe between the EU and Russia has led to increasing tension between the recognized need for a common EU energy

and gas market and individual EU member states acting in their own declared long-term (but in reality short-sighted) energy security interests. This tension is at the core of a growing European rift over how to deal with Russia and its newly induced self-confidence as the self-declared energy superpower of the twenty-first century who is still able to exploit the asymmetric energy dependencies of the EU and its individual member states.

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