On July 1, the German Chancellor Angela Merkel announced an ambitious policy strategy to curb greenhouse gas (GHG) emissions up to 40% by 2020. Accordingly, energy producers should increase energy efficiency by 3% each year to make energy conservation the core of her energy and climate protection policies. While her initiative has been welcomed by environmentalists, it has been heavily criticized by the energy industry.

As a former environmental minister during the Kohl-era, Merkel feels clearly committed to give environmental policies a more prominent part to her Christ Democratic Union's party's policy program. But in her view, the party needs also to project a modern image for centrist voters, particularly for a more environmentally conscious younger generation, in the light of forthcoming elections.

Already in April 2006, Merkel's German government initiated a national summit with its ministries and German energy companies to develop a secure, environmentally friendly and economically competitive policy after the Russian-Ukrainian gas conflict. It established three working groups which have been tasked to develop a long-term national energy concept. As a result, Germany's government has emphasized energy efficiency as a top priority in its new national energy security concept. But it also seeks to strengthen Germany's future energy supply security by diversifying its energy imports, including gas, by building new pipelines and by constructing Germany's first LNG-terminal in Wilhelmshaven.

Merkel's national climate protection plan goes even further than the EU's declared climate protection goals. During her German Presidency of the EU in the first half of 2007, the European Council agreed on an integrated climate and energy policy, an 'Energy Action Plan' for the period 2007-2009 and on three 20% objectives which have come to be known as the 20-20-20 Plan:

- Energy efficiency should be increased by 20% across the EU;
- Carbon emission should be reduced by 20% by 2020 compared to 1990 (and by 30%, if other industrialized countries such as the USA, India and China commit themselves to similar policies);
- 20% of the overall energy mix should be generated from renewable energy sources.

Moreover, 10% 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 climate change mitigation. But these new energy policy and climate protection objectives have also created four new major problems and reflect contradictions in addressing the twin objectives of energy security and climate protection.

1. Climate Protection versus Economic Competitiveness

In order to reduce its GHG emissions by up to 40% by 2020, German industry and private individuals need to invest some 313 billion Euros for climate protection over the next 12 years. The implementation strategies seek to balance climate protection targets with future economic competitiveness and realistic modernization efforts carried out by private industry and citizens alike. In this context, economic experts have increasingly criticized high subsidies for solar electricity, which have contributed to finance jobs in the solar industry in Japan and in other countries rather than in Germany itself. No other country in the world is subsidizing solar electricity as much as Germany. German consumers will pay 62-100 billion Euros in solar subsidies over the next 20 years – which is three times the present declining per-capita subsidies for hard coal in Germany. Given its inefficiency and uncertainty regarding Germany's weather patterns, solar contributed just 0.6% to the nation's electricity supply in 2006. Experts have called for a 30% reduction in these subsidies. However, a recent government decision agreed only to reduce these subsidies to around 8% annually by 2011 due to federal party interests.

Furthermore, the Economic Ministry went so far as to declare that Germany won't be able to fulfill the targets of mitigating climate change without shrinking economic growth and losing jobs. Indeed - without providing higher subsidies for older buildings, those climate protection targets will be difficult to achieve for two reasons. Firstly, even with higher subsidies for private homeowners, it is still doubtful whether the necessary investments in energy efficient technologies (on average, homeowners need to invest at least 45,000 Euros) at a time of already rising energy costs and in general in view of the overall increase in the cost of living. Secondly, it remains especially uncertain whether older homeowners will pay for new expensive credits for modernizing their houses and flats in order to improve energy efficiency when projected cost recovery for these outlays is at least 20 years if not longer.

2. Climate Protection Versus (Gas) Supply Security

During the last decade, Germany's energy policies have concurrently been idealistic, ambitious, provincial and overly optimistic. Germany has long been a leader in the area of renewable energy in order to reduce carbon emissions and in phasing out nuclear energy. As the world's biggest wind-power systems manufacturer (producing 37% of all systems and components worldwide), it benefits more than others from the current global expansion of wind-power and

other renewable energy sources. The agreement between Germany's coalition government parties stipulated targets of a 4.2% share of renewables in primary energy consumption by 2010, and by 10% in 2020. As the result of its Renewable Energy Sources Act, renewables already accounted for 5.8% of primary energy consumption and 12% of all electricity generated in 2006. The German Ministry for Environment, Nature Conservation and Nuclear Safety (BMU) hopes to achieve 16% of primary energy consumption and 30% of electricity generation by 2020 through these means. However, these goals create new problems for Germany's base load supply and economic efficiency.

Furthermore, the question remains where the rest of the energy supply will come from and to which extent plans for phasing out nuclear energy will increase dependencies on gas imports from Russia or from the unstable Middle East – and, therewith, threatening Germany's future energy supply security. The recent government decision to give up the 10% biofuel target as the result of the worldwide crisis in 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 until 2020. In the mid-term however, second generation biofuels, comprised of plant waste such as straw or crops that do not compete with food production, offer a way out of the present problem.

As a consequence, the German government now aims to compensate for reduced 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 and imports (from Russia) because the reserve capacity (when wind is insufficient for power generation) will rely primarily on gas turbines.

Future overall supply security and energy policy options had already been limited by the government's decision to end German domestic hard coal production (Steinkohle) by 2018. Although the decision does not imply another exit strategy from overall global 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 inherent in global coal markets (marked by comparatively cheap prices versus other fossil resources and a stable and availabile supply of coal worldwide) will not change over the coming decades. However, as new studies in Europe and the US as well as trends over the last 12 months indicate, this assumption might be an overly optimistic scenario, which ignores present strategic developments in global coal markets.

By emphasizing the concurrent need for a national, European and global policy on climate change, Germany's policies have created the public impression that it should give up the

declared need to preserve a balance in the triangle of objectives in energy policy and subordinate energy policy to environmental protection and climate change. Meanwhile, the anti-nuclear movement of the 1970s and 1980s has developed into a new anti-coal movement that is calling for an end to coal as a national energy resource. In addition to the exit strategy for nuclear power, should this call for shutting down German electricity generation from coal succeed it would further narrow down the national energy mix. Consequently, it may also lead to higher gas imports from Russia and weaken Germany's national security in terms of diversified energy supply.

Given the fact that Russia itself is facing a gas crisis and has officially announced its own intention to rely much more on the expansion of coal and nuclear power in order to compensate for an unanticipated rise in domestic gas consumption and in order to maintain its gas export obligations, Russia will produce even more GHG emissions (i.e. CO_2) as a result of Germany's unwillingness to modernize its coal plants. The result is that by increasing gas demand by drastically lowering 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_2 emissions in Russia. Furthermore, the German Energy Agency (DENA) and 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, and which will increase to 12,000 Megawatts (equivalent to 15 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 21st century and has promoted an active energy foreign policy on the national as well as on the EU level, it has maintained the promise made to its coalition government partner, the SPD, to phase out nuclear power by 2021. Instead, it has called for greater investment in renewable energy sources and steep cuts in GHG emissions, but also for 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 fulfil its targets on emissions unless more member countries favour nuclear energy, including Germany. As the result, Germany will experience significantly higher electricity prices, becoming even more dependent on gas imports from Russia and fail to meet GHG emission targets if its anti-nuclear policy is maintained.

A study conducted 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 between 1.9-5.7 billion Euro each year to 2020, depending on a fair European burden-sharing (31% of its emissions on 1990 levels) and in implementing a comprehensive package of climate protection measures domestically. The study also warns that it would be very difficult and costly for Germany to achieve its reduction target while phasing out nuclear power. Germany's present nuclear power plants avoid 150 mt CO_2 annually, which is equivalent to the entire sum of CO_2 emissions generated by the German use of cars and trucks.

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 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 to maintain high priced exports to Europe. At present, one third of all European gas imports from Russia are supposed to come de facto from Central Asia.

Further, Russia tries systematically not only to undermine the EU's Nabucco gas pipeline project (the first independent pipeline from Central Asia directly to the EU without traversing Russian territory), but also to defeat the EU's wider diversification plan for future gas supply such as by increasing imports from North Africa or the Middle East.

In the light of bilateral energy deals between individual EU-member states and Russia, short-sighted national special interests are threatening a unified approach to the EU's external energy policy.

Under these circumstances in a Russia plagued with chronic under-investment and delays of commissioning in new gas fields at home, declining production during this past year and fast-growing internal consumption, it has also become 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). This is a fact often overlooked in German discussions. These pipelines are officially declared to be pursued "more or less" simultaneously. They are also seen to be complimentary to one another. These planned pipelines are in addition to Russia's contracted gas export obligations via the Yamal pipeline, the Ukrainian pipeline system and via the Blue Stream pipeline in the Black Sea. Both pipelines, the Nord Stream and South Stream pipelines, are to be commissioned in 2013; neither Russia nor Central Asia (including Turkmenistan) have currently the 31 bcm a year required to fill the South Stream pipeline.

The resulting pipeline rivalry in Central and South Eastern Europe between the EU and Russia has led to increased tensions between the recognized need for a common EU energy and gas market offset by individual EU member states acting in their own self-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 a self-declared energy superpower. In light of these observations and in view of Russia's military intervention in Georgia, its behavior has not only raised more questions regarding Europe's future energy supply security, but it has unwittingly offered Europeans the chance to hasten the process of implementing a common foreign energy policy.

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