

Latest developments in Germany's -ongoing -Energiewende

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I am aware that many countries and especially Japan -look at the progress on Germany's Energiewende . the transformation of its energy system towards renewable energy sources. And I am also aware that in this regard most countries look upon Germany in disbelief or even with distrust. In fact, the same observation can be made in Germany. Especially, the media is very critical about the progress of the Energiewende. And you find also many experts and scientists who apparently know much better than us government officials, how best to cope with the challenges and problems surfacing with the transformation of our energy supply and distribution system.

They see a highly industrialized country, dependent on global exports, planning to phase out not only nuclear power but also, to a large extent, fossil fuels as well. Can that really work? Does it spell the end of Germany as an industrialised nation? Isn't the current debate in Germany on reforming the Renewable Energy Sources Act (RESA) proof that the Energiewende has failed? Is Germany actually in the process of phasing out the Energiewende itself?

Let me say right from the start . Germany is not backing out of the Energiewende project. There is absolutely no reason to do so, even if there are detractors who would love to see it happen. You should not refrain from asking what their interests might be in calling the Energiewende a failure. The upcoming revision of the Renewable Energy Sources Act (RESA) . which by the way is part of a regular review process every three to four years in order to adjust feed in tariffs and other regulations . is simply intended to make the path and timeframe of renewable energy expansion more predictable, thus keeping the costs for industry and consumers at an

acceptable level.

To give you a clearer picture, I would like to explain in more detail what we have achieved so far and the outlook for the future.

[Folie 1]

The first Renewable Energy Sources Act (RESA) was adopted in 2000. At that time the share of renewables in electricity production was almost non-existent. Within 14 years renewables (wind, pv, biomass, hydro power, some geothermal) were contributing around 25 percent to gross electricity consumption. Our target is an 80 percent share by 2050.

This targets stems not only from phasing out nuclear energy but is linked to our goal of reducing CO2 emissions considerably for climate protection reasons.

[Folie 2]

By the end of 2012 Germany had the following installed capacity from renewable sources:

- . 33,000 MW Photovoltaics
- . 31,000 MW onshore wind
- . 7,500 MW biomass
- . 5,600 MW hydropower
- . 435 MW offshore wind
- . 12 MW geothermal power

[Folie 3]

These installations produced 143 TWh of electricity,

[Folie 4]

equivalent to the electricity generated by 13 nuclear power plants.

[Folie 5]

Of the 17 nuclear power plants formerly in operation in Germany, 8 have now been taken from the grid -representing a capacity of around 9,000 MW. The remaining 9 nuclear power plants produce a gross electricity volume of

around 97 TWh.

The next two nuclear power plants will be decommissioned in 2015 (Grafenrheinfeld) and 2017 (Gundremmingen B). Germany's last nuclear power plant will be shut down in 2022. With respect to the critics of the Energiewende I want to stress here very strongly that at no point has supply security been compromised. There have not been any black outs nor is there ground to suspect that we have a shortage in energy supply.

What we see however is, that grid operators have to focus more on grid management and short term supply and demand forecasts in order to run the system. Over the past 14 years, the total cost of supporting renewable electricity grew up to 24 billion euros per year. Here I must point out that the Energiewende was accelerated in the wake of the accident at Fukushima: this has meant stepping up our renewable energy expansion, leading to a significant increase in costs. At present, the cost of renewable energy support for an average household is around 18 euros per month.

Speaking of costs . which are also a major point of critique in the context of the German transformation strategy . I do not want to deny, that now with a share of around 25 percent renewables in gross electricity consumption is the time to carefully review the system in order to improve cost efficiency. But I would also like to stress that the renewable support system based on feed-in tariffs was very successful.

Not only in expanding renewables and bringing them to the point where they are now, but it also in developing the industries and employment and thus contributing substantially to domestic value creation.

Especially in the wind sector it helped creating successful export markets. And last but not least, many electricity consumers who are renewable electricity producers at same time (farmers, members of community power associations, private actors, SMEs) benefited from the revenues guaranteed by the feed-in tariff.

Thus, there are not only costs, but also benefits to the economy and the people!

[Folie 6]

Back to the challenges and next steps:

To integrate renewable electricity into the grid, we need to expand the extra high voltage network by around 10 to 15 percent. This will cost in the region of 22 billion euros over the next 20 years. Furthermore, the distribution grids need to be expanded and in parts modified to support smart grid technology . i.e. equipped with communication and control systems.

In total, costs for upgrading the grid will probably total around 42 billion euros over the next 20 years -about 2 billion euros per year. Certainly, an affordable amount for such a nation-wide project. This upgrade will allow a 50 percent renewable share in gross electricity supply to be reliably integrated into the grid. And again, some people see that as a problem or as an economic burden. They cite for example extra costs and conflicts where grid extension projects are being held up during implementation.

I am convinced that these conflicts can be solved when we discuss openly why we need this and make clear that grid extension is a necessary part of the Energiewende as well as a modern, reliable grid for the next century.

People tend to forget that a considerable part of the costs and projects would have been necessary even without the transformation of energy system, just for maintenance and modernisation.

The European energy market is only possible with these grid extensions. Thus, the German Energiewende is an important element accelerating the integration of the European energy market rather than obstacle.

[Folie 7]

What we see here is a very interesting development, critics also tend to overlook. The price of a kilowatt hour of electricity on Germany's electricity exchange has fallen by around 40 percent since we shut down nuclear power plants in 2011.

Electricity is currently traded on the German exchange at around 3.4 cents/kWh.

And I would like to add another example why not everything can be wrong with the way Germany promoted renewables in the past and revamps its energy system:

Just recently, Great Britain guaranteed the operators of a new nuclear power plant a price of 10.9 cents per kilowatt hour for the next 35 years. Not only is that 3 times the going rate for electricity on the German electricity exchange, it is also significantly higher than the current tariff for wind-generated power in Germany, which is less than 9 ct/kWh.

It may sound absurd, but the problem with the transformation of Germany's energy system is not that it was unsuccessful, but that it was too successful.

The expansion targets were met far more quickly than originally expected.

This can be attributed to three causes:

- Global overcapacity in photovoltaic systems
- Global overcapacity in wind turbines
- Ambitious expansion plans of the German Lander following Fukushima.

But of course, I do not deny that there are issues and developments that need to be addressed.

The rapidly and sharply rising share of renewables in the grid, however, is a contributing factor in the massive drop in wholesale electricity prices, which in turn has led to a dramatic increase in differential costs for renewables.

[To clarify: the EEG guarantees plant operators a fixed tariff for each kilowatt hour fed into the grid. The power generated is sold on the electricity exchange and the difference between the proceeds from the sale and the fixed tariff is referred to as differential costs. In other words, the lower the rate on the exchange, the higher the differential costs for renewables. These are the costs that have to be covered by

electricity consumers.]

And yet, electricity from conventional power plants is no longer cheaper than power from renewable sources. The rapidly growing renewables' share in Germany's electricity supply means that the grids also have to be expanded very quickly. This, as I already mentioned, is quite difficult to achieve as it requires long timescales for planning and approval.

[Folie 8]

It is because of the sharp rise in differential costs and possible planning uncertainty for grid expansion that we want to draw up a new Renewable Energy Sources Act (RESA), established on the review of the past development and achievements.

Nevertheless, we have no intention of deviating from our original goal of covering about 80 percent of our gross electricity consumption from renewables in 2050.

On the other hand, we are not aiming to achieve this target much before 2050 either, as would probably be the case if we kept up the current rapid pace of expansion. May I therefore clearly reiterate at this point that the revised Renewable Energy Sources Act (RESA) will not call the objectives of the Energiewende into question.

It is just the next, necessary, step to adjust policies to expand renewables from more than 20 percent share in gross electricity consumption to more than 40 percent in 2025.

So what exactly do we want to change? I would like to mention just 10 points here:

1. We want to give the expansion a more specific timeframe: we aim to raise the renewables' share to between 40 and 45 percent by 2025 and to 55 to 60 percent by 2035.
2. We want to lay down binding expansion corridors for the different renewable sectors. For instance, we are planning new wind and photovoltaic capacities of 2,500 MW per year each, while for offshore wind

we are aiming for 6.5 GW by 2020 and 15 GW by 2030.

3. The expansion corridors are also taken as a basis for the upgrading of the grid, thus significantly increasing planning certainty for grid expansion.
4. To keep track of old and new renewable energy installations, we will introduce a register of installations. The purpose of this register is to monitor whether the expansion is proceeding in line with the envisaged corridor, and to allow necessary measures for integrating new renewable installations into the energy system.
5. We monitor closely the price development of renewable energy installations. That means that feed-in tariffs can be reduced without jeopardising the expansion target. Essentially, the excessive support of the past will be eliminated. This particularly applies to wind turbines in wind-rich locations. (PV FiT has already been reduced considerably in 2012)
6. The use of biomass will be significantly restricted to the use of organic waste material. There are basically two reasons for this:
 - a. Due to fuel costs, the marginal costs of biomass will always be higher than those of wind power or photovoltaics (zero marginal costs).
 - b. We want to prevent monocultures from arising in Germany, and also ensure that land used for food crops in poorer countries is not destroyed to make room for the mass production of regenerative raw materials.
7. At the latest from the year 2017 the level of support for renewables will be determined through invitations to tender. This will identify the most cost-effective form of energy generation for the respective technologies.
8. We will introduce mandatory direct marketing for all new renewable energy installations. This means that installation operators must find an electricity trader to sell their power on the exchange. This will ensure that the feed-in of green electricity is geared more to demand. For instance, output from renewable installations will be reduced when prices on the exchange are low.
9. To alleviate the burden on private end customers and SMEs we will also review privileges for industry. Companies will only be exempt from the EEG surcharge if their competitive situation genuinely justifies this.
10. We will also put an end to full exemption from the EEG surcharge which companies have enjoyed up to now if they use electricity they have

generated themselves. This step is intended to counteract the erosion of solidarity within industry. These 10 points form the core of the new Renewable Energy Sources Act (RESA).

And these 10 points should make it very clear that we are not putting an end to the Energiewende, but continuing consistently along the same path with commitment and determination.

I would like to conclude my talk by noting something that is often overlooked in discussions. Germany's Energiewende is not limited to expanding renewable energy.

[Folie 9]

Raising energy efficiency is another key aspect, comprising the efficient use of electricity, the reduction of heat demand in buildings and improved energy use in the transport sector. One important driver in this is our overall goal of climate protection.

Already, regulations have been laid down or initiatives launched for all these areas. Unfortunately, time will not allow me to describe these other elements of the transformation of Germany's energy system. I will therefore conclude my presentation at this point and simply say Thank you very much for your attention!