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Keynote

"Shared Responsibilities in a Finite World"

Ladies and Gentleman,

I am very thankful to be able to speak to you today at the Seventh German Conference. I would like to thank the organizing students for inviting me and I congratulate you for putting up this event which I am sure will lead to many exchanges, new perspectives and beneficial contacts for all of us.

Although this talk will evolve very much around Germany and the US, it's actually a global issue I am concerned with. Ever since the crew of Apollo 17 shot the first picture of the earth from space in 1972, we have a new sense of what situation we are in. We are on this limited planet together. The environmental problems and difficulties know no boundaries. Global problems will need global solutions.

Dennis Meadows` book about the "Limits of Growth" as well as its many followers have shown us that humans may shape the planet, but in the end we have to adapt to the natural habitat or otherwise we will decay. Climate change and dwindling resources are a fact we see ourselves confronted with. The sentence the Austrian Nobel-Prize Winner Konrad Lorenz once shaped "We have not inherited this earth from our parents, we have borrowed it from our children – and as I may add - Grandchildren" is more appropriate today than ever before. Let's deal with it.

We faced these challenges for decades but in 1998, Germany decided to act very specifically. With the Red-Green government some green visions suddenly became reality: Ideas like phasing out nuclear power and supporting renewable energies. This was the beginning of the "Energiewende."

All of a sudden, the simple mindset was shaken: that what fuels our society comes from the power plug or originates at a gas station. We lifted the curtain and began to see the problems behind the old ways of producing energy for heat, power and transportation.

But we still need much more ecological foresight in both our countries. We burn large amounts of coal and oil to produce our energy. Ten years ago, the global oil price was at 40

Dollar per barrel. Today, we need to pay around 100 dollars. But fossils are not only costly, they are also deadly. They are climate-killers. We need to get off our dirty business-as-usual pathway to decrease the emission gap[1] and to act in accordance within the given planetary boundaries. To achieve this, we need to turn to renewable energies.

The Energiewende is more than changing the electricity supply. It also involves heating, fuels and energy efficiency. To go towards a sustainable future, we cannot simply change the engine but we need to change patterns of consumption, production and lifestyle. We have to truly turn around.

The vast majority of Germans support the current course. All major political parties agreed on phasing out nuclear power and around 80 percent of the citizens want to exit coal until 2040 as well[2]. The rejection of the old, fossil energies is not only due to climate change. It is also a security issue . We have heard numerous reports on Russian gas policy. We know that about 70 % of global conventional oil and natural gas reserves are concentrated inside countries of the so called “Strategic Ellipse”, most of them autocratic systems, if not altogether instable states. And we have see the lunar landscapes of for example open-pits mines; I have experienced in my own own home region of North-Rhine Westphalia what it means for people to be expelled from their home villages for mining purposes.

The Fukushima-catastrophe in 2011 marked a turning point in Germany energy politics. If a nuclear disaster could happen in Japan, people reasoned, it could happen anywhere. Just a few months before, Chancellor Angela Merkel had successfully pushed for a reversal of the red-green phase-out law from 2000. She wanted the plants to run longer, but after Fukushima she had to give in to what the majority of Germans supported all along: the end of nuclear power in Germany. Of the 17 remaining nuclear power plants, the eight oldest were shut down immediately after March 11. They will never be taken into operation again. The nine remaining nuclear power plants will be closed down one after the other over the course of the next years, with the last nuclear power plant shutting down in 2022.

[1] UNEP “Emission Gap Report 2010”:
http://www.unep.org/publications/ebooks/emissionsgapreport/VisualizationMap.asp
[2] Survey by Greenpeace in April 2013:
http://www.greenpeace.de/themen/energie/nachrichten/artikel/mehrheit_der_deutschen_will_kohleausstieg/

The nuclear phase-out and going towards 100 percent renewables are two sides of the same coin. We had to substitute nuclear capacity of over 8 GW. This was no problem at all. Renewable Energy replaced 60% of the gap within a year. The skyrocketing expansion of renewables led to an increase in electricity exports. Opponents of a nuclear phase out had always argued, that we would then have to import nuclear electricity from the neighboring countries. Nowadays, we have a public debate whether we produce too much cheap renewable electricity for our neighbors. The warnings of a blackout in Germany – they sounded hollow and disappeared.

But our current system has flaws. As the amount of renewable electricity in the system increased, the prices at the electricity spot-market decreased - by 50% since 2008. Before, big power utilities planned to build around 30 coal fired power stations. Two third of them were never realised. The large companies ran into a trap by underestimating the development and lost millions. Of course, the Green warning remained unheard. Today, we have large fossil overcapacities which are not profitable. Whereas Germany has a demand of 30 to 80 GW, we have net-capacities of over 170 GW right now. This leads to large exports, low prices and the sad fact, that necessary and needed power stations – efficient gas and combined power-and-heat (CPH) plants – are not profitable. Germany is economically vital due to low electricity prices for its industry. But to keep the system healthy, the phase-out of nuclear and old fossil fuel power stations must go on.

If you talk to people on the streets, it is likely they are more concerned with their job or their house than with climate change or the energy markets. But it is still possible to win their approval for our project, as renewable energies are a massive job-creating machine. In Germany, we have almost 400.000 jobs in this sector alone.

It is important to note, that a good distribution of renewables across the country is giving political security as well as energy security. You will have a country where almost everybody knows someone who works in this field. And you will have more even out interests of local groups – like governors – as all regions are somehow involved and playing their part of the game. In Germany, no federal state is against the Energiewende. But they all have individual characteristics: some are windy,others are very sunny, some produce the windmills while others emphasize on biomass. They become competitors in a race-to-the-top. For years, local governments in Germany are proud to announce strong renewable goals. This means some security for our political course.

Traditionally, Germans have felt secure with a strong state, a caring social welfare system and well-sustained infrastructures. Today, over a million Germans went into a new direction you might not have envisioned some years ago: they became "prosumers"[3]. With their own photovoltaic systems or small heat-and-power-generators (BHKW), they turned away from the large companies. Despite still having a grid access, they are able to supply themselves with energy at certain times of the day. As we expect more leapfrogging in research and deployment of energy storage systems, this independence will grow.

To many, "independence" is a key characteristic of the archetype American and I am sure, that people between Texas and North Dakota want to go energy independent. This independence is not only limited to grid-access. It is also an independence from Saudi-Arabia, from ExxonMobile and from Halliburton. In Germany, the "prosumers" are mainly home-owners and farmers. There are regions with nine in ten adults being involved in renewable investments. But nowadays larger tenements as well as small and mid-sized businesses or supermarkets start investing in their own PV- or Wind-systems.

Ladies and gentlemen,

We Greens are deeply concerned by the world economic crisis. One of the reasons for the massive loss of capital, jobs and trust in our economic system was its inherent connection to fossil fuels. The European Union alone pays each year around 400 billion Euro for Oil, Gas and Coal. This contributes to a trade deficit in many nations. It's an issue I don't have to lecture Americans about, as you had a similar situation for decades.

Our most indebted countries – Ireland, Italy, Spain, Portugal and Greece – saw an increase in commodity prices of 50% between 2009 and 2011. Thus, the financial crisis was further fueled by a fossil crisis in Europe. Please bear in mind, that to us, Fracking rather leads to a geographical slew than to infinite oil and gas.

Germany alone, even though it has a total trade surplus, pays around 100 billion Euros for fossil imports per year. Despite the increase in prices, we are already saving five billion per year through avoided fuel-imports.

The solar energy boom is largely based on the small-scale segment. Globally, over 70 billion US-dollars of investment in small-scale photovoltaic contributed to 30% of the total investment in solar. In Germany, about half of the PV-market right now consists of decentralized, small-scale systems below 100 kWp (kilo-watt-peak). If you ever have the

[3] combination of consumers and producers of energy

chance to travel through Germany, preferably by train, you see our denuclearization-strategy very clearly: you will see solar panels on thousands of roofs and wind engines reaching into the sky.

This it what some call "energy democracy" – every one can participate and also profit economically, not only the big companies. It poses new challenges to politics, industry, and communities but it brings unimaginable opportunities. Our cornerstone was the EEG with two important regulations:

- **A feed-in-tariff** which guarantees a fixed rate over 20 years for the production of renewable energy. Japan has recently introduced the same system – as have many other countries - and I am happy you chose this road. It is the foundation of the success of the renewables.
- **A guaranteed grid-access** for renewable energies. This is necessary, because otherwise "Big Energy" – often power production and grid ownership are still intermingled – will block the new system out of fear of a decentralized system.

The growth of the renewable energy sector has also given Greens a new argument against fossil and nuclear energy that has proven very powerful in Germany.

I am often asked if the phase-out of nuclear and a soon-to-come parting from coal is not too much for Germany.

It is not.

We continue to have one of the most stable electricity systems in the world. Germany has a shortage-time of around 15 minutes a year[4] whereas the U.S. faced over 200 minutes. Most Germans never experienced a real electricity-blackout. If you set the right timetable and frame (for example with binding climate targets), the economy can adapt to change.

Of course it is one of the things hard to explain, why German emissions are on the rise again. You have a similar phenomenon in the US: emissions between 2012 and 2013 have risen, according to estimates. It happens if you don't have the entire energy-portfolio in view. We did not pay enough attention to coal, which made a stunning comeback in recent years due to low spot-market prices – thanks to decreasing demand in the U.S. – and the

[4] the tendency is still decreasing, see BNetzA: http://www.bundesnetzagentur.de/cln_1931/DE/Sachgebiete/ElektrizitaetundGas/Unternehmen_Institutionen/Versorgungssicherheit/Stromnetze/Versorgungsqualit%C3%A4t/Versorgungsqualit%C3%A4t-node.html

non-functioning of our European cap-and-trade system where the cap is still too lose to have any effect.

As explained above, the inflexible old power plants have to get off the grid to make way for renewable energies. At the same time it is indispensable for us to invest in storage research-and-development (R&D), gas and demand-side-management (DSM). In Germany, we have a clear plan for the phase-out of nuclear while we let the market and environmental regulations take care of coal.

I think politics in Germany has some major challenges in the coming month and years:

- It is urgent that we pass a low-carbon roadmap until 2050 which is legally binding and therefore gives planning reliability to businesses, funds and other private investors. I have therefore introduced a "climate change bill" with a number of measures into parliament that was defeated last year. [I can give out an English version of it later on.]

- Second, we have to re-new the hardware as well as the software of our system. We need new grids to transport energy as the distribution of Renewables differs much from that of centralized fossil sources. And we need to massively scale up our research programs because we will soon need solutions for storage, new mobility concepts as well as the integration of the heat and electricity sector.

- But the "software" of the system is at least as hard to deal with. Nowadays, "secured capacity" is replacing electric energy as the prime product we will have to pay for. This is because the wind and sun do not send a bill – they only have decreasing upfront investment-costs. We have to change our electricity markets in a way that fits these new requirement. By doing so, we give innovative businesses who produce storage technologies finally the chance they deserve. And we reach out to companies who want to participate in DSM-arrangements.

Apart from these challenges, there is a simple truth we have to keep in mind: Energiewende means a change of power. Big companies will change or diminish, people will lose their traditional jobs and politicians will feel the heat. Because many towns have stakes in the German utility RWE, they have lost millions in recent years. My hometowns´ shares in RWE have fallen by over 70 percent in just a few years. But at the same time, new businesses open, green jobs are created and new interests formed. You have to decide on

what side you want to stand. It seems David against Goliath – but I am sure you remember who won that fight back in the days.

Ladies and gentlemen,

Let me turn to the topic of this conference more directly: security. Ban Ki-moon rightly stated at the Munich Security Conference two weeks ago, that "Climate change is every much a security threat as an armed group bent on plunder."

Recent reports conclude that over the next two or three decades, vulnerable regions will face the danger of food shortages, water crises, and catastrophic floods driven by climate change. These developments could demand American and European humanitarian relief or even military responses.

I often hear people framing climate change as a tragedy of the commons: we all pursue our unsustainable lifestyles, we all emit CO2, and together we all will someday pay. But in reality it is much more complex and we have to look at responsibilities and effects of climate change. Some will profit from some effects while the negative impacts, though everyone will feel them, are deeply uneven.

Experts expect up to 250 Million climate refugees until 2050[5]. These people will come to she shores of Europe and to the gates of the US. A security dilemma as well as a humanitarian disaster is unfolding before our eyes. Therefore we need to act on climate change to avoid a world turned upside down.

But we don't even have to look so far to see high insecurity. Droughts, heat waves, hurricanes, floodings or extremely cold winters including power blackouts have become more common in recent years. And it doesn't matter if you look to Germany, the US or Australia – everywhere people struggle with those kind of events.

Apart from the above, we have a more home-made security threat standing in the backyard: nuclear power. The arguments against it are well known:

1. **Nuclear power is too dangerous** for the people, for investors and for the world. Chernobyl and Fukushima prove the point.

[5] Christian Aid (2007). 'Human Tide: The Real Migration Crisis' (CA: London)

2. **There is no safe solution for the radioactive waste**. After more than fifty years of nuclear power generation we still have no storage facilities in sight which is safe for one million years. We neither have an answer on *where* or *how* to store. We do not even now how the world looks like in 500 years and what kind of society will exist.

3. **Nuclear power is the first step toward nuclear weapons**. Just look at North Korea, Pakistan or Iran. In order to gain credibility when arguing against them having the nuke, we have to phase-out as well.

4. **Terrorist attacks are possible**. But even after 9/11, no single nuclear power stations can withstand the crash of a large passenger plane. And I do not believe that tricks like obscuring them in smoke will work.

5. **And nuclear energy is an impediment to economic growth**. It retards innovation, stalls new investment and obstructs job creation in the renewable energy sector!

But also technically, nuclear power is the enemy of the decentralized and fluctuating renewable energies. Big nuclear power plants are too slow and inflexible to be turned on and off quickly. And they are too expensive to keep them idle over long periods of time.

Energy infrastructure in general is more vulnerable to attacks or natural disasters if centralized. And in more central systems, a disruption affects larger parts of the system. We fear the human error when it comes to nuclear power, while PV increases private energy security. We have seen wars about oil wells but never about wind mills.

Finally, I would like to draw your attention to the following observation. We face the various security risks of our time very differently.

- The hunt for natural resources as well as the risk of weapons of mass-destruction lead to the invasion of Iraq and which alone costs the USA hundreds of billions of dollars. More targeted programs against these WMDs amount to millions.

- International terrorism is one of the diffuse challenges. It is hard to identify a target and invest in a specific response. This might be reason for the billions and trillions spend on counter-terrorism activities at home and abroad.

- I have already mentioned the economic crisis and despite all efforts, a new crisis is still possible. Nations have made some efforts to clean up the mess done by large banks and to prevent this from happening again. The US stimulus package in 2009

was 789 billion Dollar strong. In Germany, deals with shabby banks cost the taxpayers between 30 and 70 billion Euros.

- We all agree, that climate change poses the largest and most existential risk. Today, 50 percent of the Earth's population lives in coastal areas. Given a sea-level rise of about 1 meter – which the IPCC finds "very certain" – these people are endangered. In Copenhagen 2009, world leaders agreed on collecting 100 billion Dollars until 2020 for combating climate change. Half-way, we have collected only a small part of this amount.

I therefore argue, that it is not enough to identify climate change as a security issue, but we have to finally act against it. Countries that can mobilize billions for wars and banks have the capabilities to pay for climate mitigation and adaptation. This is our moral duty as well as in the interest of self preservation and the preservation of our planet for future generations.

Thank you very much and I am looking forward to the debate with you.

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