
Renewable Energies

The solution for climate change and security of energy supply

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Ladies and Gentlemen,

Thank you very much for invitation. I hope, this conference will also strengthen the friendship between Japan and Germany

It gives me great pleasure to speak to you today on the key issue of renewable energy resources and, most importantly, on photovoltaics. This conference is especially important in the context of efforts to protect the global climate and the environment, but also in its potential impact on the quest for a new energy system which could function independently of diminishing crude oil and other conventional resources.

Ladies and Gentlemen,

The growths of worldwide PV market is a very successful story.

This conference must send a clear signal that the fundamentals necessary for further expansion of renewables need to be sustained and developed worldwide. The success of the renewables industry is based on effective legislation in the fields of climate protection and innovation policy in Germany, Spain and a few other countries.

I am very concerned about the latest discussions worldwide, particularly within the European Commission, about the abolition of the most essential foundation of the industry's success, that is the discussion on moving from a feed-in tariff system to a quota or certificate system. It is crucial that you, as industrialists, recognize these business risks and take political steps in time to avert them. Once decisions in this area have been taken, it will be too late. Please do not be misled by the major successes in recent years. Such developments do not take place automatically. The conventional energy companies exert great influence against renewables and feed-in tariffs in Brussels, Paris and Berlin, as well as in Tokyo and Washington.

It is therefore essential to defend Germany's Renewable Energy Sources Act and feed-in tariffs against any attempts to undermine them. And it is very important that in other industrialized countries, too, an effective and successful policy is created to foster renewables with the assistance of feed-in tariffs. This applies especially to Japan. In Japan, there is still no consistent policy today to foster the bringing to market of all renewables, and even the photovoltaics policy which was pursued with great success in the 1990s is now stagnant rather than pro-active.

A look at similar laws in other countries reveals that the feed-in law is the most successful instrument of all.

As shown in this chart, European countries with different laws, such as quota or certificate systems, among others, have been less successful.

(Slide 2: Minimum Price System compared with Quota System, GB)

For instance, the United Kingdom has not reached Germany's level of installed wind capacity, despite the fact that it is windier in the UK than in Germany. In addition, the cost of a kilowatt-hour of electricity from wind power in the UK, at 13 cents, is almost twice as high as in Germany.

(Slide 3: PV Growth in Germany and Japan)

A comparison of the rates of growth in photovoltaics in Germany and Japan also provides convincing evidence that feed-in tariffs create more successful industrial policies than state subsidies or quotas and certificate laws. The initial successes of the photovoltaics industry in Japan have since been far surpassed by Germany. As a German parliamentarian who actively pushed for Germany's legislation on renewables and feed-in tariffs, I can only appeal to and call on Japan to resume its active role by introducing legislation on feed-in tariffs for photovoltaics and other renewable energy sources. A situation where Germany accounts for most of the photovoltaics brought to market worldwide cannot and must not continue. The debates in Germany and the EU about the abolition of feed-in tariffs are dangerous. If this idea was to gain political support, successful photovoltaics manufacturers in Japan, too, would be put at risk. I therefore urgently appeal to all companies and governments to ensure that the current rate of expansion is maintained. This means that the EU Commission's ideas regarding amendments to the Directive on Electricity Production from Renewable Energy Sources must not be implemented. And above all, I call on you to seek to ensure that other countries, too, experience

growth similar to Germany's in this field. This can best be achieved if Japan, China, India, the United States and others adopt legislation similar to the successful laws in Germany and Spain introducing feed-in tariffs for renewables.

Ladies and Gentlemen,

Renewable energy resources are highly innovative; they create new products, thereby creating new jobs, in agriculture, in mechanical engineering, and in the energy industry.

The need to replace mineral oil, natural gas, coal and uranium with renewable resources is becoming ever more obvious, although many oil corporations steadfastly maintain that no supply shortages will occur in the coming decades.

However, scientific studies, such as those from the Energy Watch Group (EWG) and the Association for the Study of Peak Oil and Gas (ASPO) – a global network of scientists dedicated to the study of oil and gas depletion – paint a worrying picture. Current studies conclude that global oil extraction passed its peak in 2006.

(Slide 4: EWG forecasts)

In the coming years, oil extraction will decline by around 3% annually, which will mean that in 2030 only around 50% of today's level of 81 million barrels per day will be produced. The International Energy Agency (IEA) in Paris is no longer capable of producing accurate oil forecasts. It claims in its World Energy Outlook (WEO) 2006 that oil extraction could increase by 30% by 2030.

(Slide 5 world oil prices and IEA price forecasts)

The IEA's long-standing inability to estimate the world's resources accurately is shown by its oil price forecasts, which have for years proven to be inaccurate. For example, as recently as its World Energy Outlook of 2004, the IEA predicted a long-term oil price of under 30 dollars per barrel in 2030. Just a few weeks ago, as the oil price soared to almost 100 dollars, the IEA's WEO 2007 was predicting a rapid drop in the price of oil in the short term, and a price of just 62 dollars per barrel in the long term – a forecast which can be considered more than far-fetched. And yet almost all governments and companies continue to believe these incorrect forecasts.

Ladies and Gentlemen,

The IEA has in recent years completely failed to accurately assess the situation for fossil-fuel resources. The time has come for you all to recognise this, and above all to recognise that fossil fuels and nuclear power will no longer be able to meet the world's energy demand in the coming years.

Those who today continue to refuse to invest heavily in renewables and energy savings will cause a serious global economic crisis, in which they too will suffer in economic terms.

Just as the global oil supply is beginning to run dry, so it is inevitable that the natural gas supply will follow soon. Natural gas is a limited resource which cannot replace oil-based energy production. Coal-based energy production, however, as the most environmentally hazardous, should be abandoned as quickly as possible.

(Slide 6 Coal production in the coming years)

The common assumption that coal will be readily available for the next 200 years is false. The Energy Watch Group has verified that within the next few decades there will already be shortfalls in coal supplies.

Finally, uranium is the most limited resource of all.

(Slide 7 Uranium peak)

A report from the Energy Watch Group (www.energywatchgroup.org) shows that in the next few years there will already be shortages in the supply of uranium required by the 439 reactors which currently exist worldwide.

(Slide 8 Uranium price)

The fact that the price of uranium has multiplied fifteen-fold in recent years is an unmistakable warning. Atomic energy meets only 2.2% of the world's energy demand.

Atomic energy will therefore never be able to compete with fossil fuel energy or renewable resources.

Ladies and Gentlemen,

Today we are already witnessing the first climatic disasters as a consequence of a rise in global temperatures of only 0.8°C. The atmosphere is already overloaded with climate gases, particularly with carbon dioxide. Any further emissions will bring about an additional increase in the Earth's temperature.

(Slide 9: Climate problems can be solved only by two strategies)

Climate protection must no longer simply imply the reduction of emissions, because this would mean further increases in the concentration of dangerous greenhouse gases in the atmosphere. Climate protection must now mean stopping the emission of greenhouse gases entirely.

(Slide 10: Oil, gas, coal are the main causes of damage to the climate)

(Slide 11: Climate-protection policies)

Climate protection can only be achieved through a clear, consistent and uncompromising policy for renewable energy resources. In particular, this means: feed-in tariff laws and tax exemption for renewables; an end to subsidies for fossil and atomic energy; campaigns for research, development and education in renewable energy resources; and an end to legal resistance during the approval process.

But, Ladies and Gentlemen, can we actually afford to abandon the use of crude oil, natural gas, coal and uranium?

There is a clear answer to this question. Precisely because the global economy is so fundamentally dependent on fossil resources, it must develop another resource base very quickly. Otherwise, the increasing depletion of oil resources, the drastic rise in oil prices and the simultaneous exacerbation of the global environmental crisis will precipitate an unprecedented worldwide economic crisis.

It is possible to make a fast total switch away from crude oil, natural gas, coal and uranium.

The natural supply of renewable sources of energy – solar, wind, hydroelectric and geothermal power, bio-energy and ocean energies – offer many thousand times the world's entire annual energy requirement. Enough solar radiation, in particular, reaches the Earth to meet today's world energy demand 15 000 times over.

(Slide 12: Supply of renewable energy; slide provided by the German Solar Power Research Association (FVS))

(Slide 13: Japan Energy)

Some years ago the German scientific advisory board ISUSI established, that even the highly industrialised Japan could completely be served by 100% renewable energies.

In the electricity sector, the German Renewable Energy Sources Act is one of the most important and most successful laws in the world for promoting renewable energies. The growth rates achieved by Germany and other countries are very high, and there has been rapid industrialisation of renewables, especially of wind energy and photovoltaics.

Slide 14: Growth rate of renewable electricity in Germany

In 2000, the Members of the German Parliament set a target in the Renewable Energy Sources Act for 12.5% of electricity to come from renewable sources by 2010. We were told that this target was unrealistic and unachievable. And yet at the end of 2007 a 14% share has already been achieved. This shows that renewables can grow much faster than is often assumed. What is crucial is the political framework, such as feed-in tariffs.

Renewable electricity is increasing at such a rate that worldwide energy demand could be met by renewables within a few decades. For example, the German Advisory Council on Global Change showed in February 2007 that two-thirds of global electricity demand could be met by renewable energies by 2030.

So you see, implementing a feed-in tariff system in industrialised nations is the most important issue in promoting electricity from wind, photovoltaic and other renewable energy sources.

A successful feed-in tariffs law needs to contain certain important details.

For example, the feed-in tariff must be paid for an extended period, at least 20 years. This provides the necessary security for investment. The feed-in tariff must also be high enough for investment to be profitable.

The introduction of the Renewable Energy Sources Act in Germany has continued to be controversial. However, substantial counterarguments have been lacking.

None of the counterarguments are sound. The initially high costs for renewables will fall in the coming years, thereby allowing them to be carried by the production economy. Similarly, the law does not deal with subsidies, because tax funds are not involved in any way. The Renewable Energy Sources Act is financed solely through private capital, without any public funding. The state merely creates the framework which enables investment in renewables to become profitable in economic terms. The market alone does the rest. Thus no subsidies are paid through the Renewable Energy Sources Act. The introduction costs for renewables are also minimal. The additional costs for a typical household in Germany would be less than 2 euros per month.

Due to the major advantages of feed-in tariffs for renewable energy resources, especially for wind, biogas, photovoltaic and geothermal sources, this system should be introduced all over the world.

Although the advantages of the feed-in tariff system for renewables are well-known, it still faces resistance. The conventional fossil and atomic energy companies engage in vast behind-the-scenes lobbying for their own interests.

Ladies and Gentlemen,

The topic of photovoltaic innovations, like that of political influences, is very interesting. The PV industry as a highly innovative sector operates in special conditions in this context.

New photovoltaic materials are necessary in order to reduce further the costs of PV. Silicon research and thin film photovoltaics – including without silicon or concentrator cells – are particularly important. But development and investment in PV do not focus exclusively on the production of new PV materials. All peripheral technologies and new applications are also important.

The rapid technical advances in PV energy in Germany have been made possible by public research grants. But the development of feed-in tariffs was an even more crucial step, making corporate profits possible and in turn enabling the financing of research and innovation. Isolated government research grants achieve nothing if they are not accompanied by the introduction of feed-in tariffs, for example.

In addition to research and innovations in the area of new PV materials, research into systems integration and storage is also essential.

(Slide 15 combined power)

“Combined cycle power stations”, as they are known, are important in compensating for fluctuations in the supply of solar radiation. A combination of solar, wind, biogas and water power plants, modern storage systems and grid management allows a constant supply of renewable energies to be guaranteed.

(Slide 16: Meeting the electricity demand)

Germany already has one combined cycle power station which is able to fully meet demand for electricity around the clock.

Hardly taken into consideration by researchers, developers and investors is the use of wind and photovoltaic technology in power storage.

The classic battery, in particular, has great potential to be developed further. Future developments regarding batteries will make solar-powered transportation a reality.

Slide 17 (my solar car)

On this slide, you can see my solar car. I do not need large amounts of electricity, produced by one of the world's biggest solar farms in the background. I only need 10 square meters of PV on the roof of my home to enable my car to run 10 000 kilometers per year.

Ladies and Gentlemen,

Renewable energies will be the source of electricity for transportation in future. Biofuels are important. But they can only be acceptable if they are grown sustainably, without causing social and ecological problems. Biofuels alone will not be able to replace the oil needed for transportation. It is therefore important to focus on electric-powered modes of transport as well. Toyota, Mitsubishi and others are developing electric cars which are powered by wind or solar electricity. I can only encourage you to accelerate this promising development. The impending shortage of oil resources will drastically increase the demand for electric cars.

Ladies and Gentlemen,

Research and development are supported by state funding as well as through a proactive public policy aimed at introducing new products and technologies to the market. Also crucial is an active policy promoting innovation in various fields. This includes the vocational training of the appropriate skilled workers and engineers, as well as an active finance policy, attracting venture capital, positive tax conditions, support for entrepreneurs, and much more.

One of the main priorities of this joint effort must be the provision of adequate public support for research and development. Renewable technologies, however, still receive too small a share of worldwide spending on research and development. This in spite of the fact that, for no less than fifty years, some 80% of global public funding for energy research has been poured into work on nuclear technology, which, after all this assistance, now supplies a paltry 2.2 per cent of the world's energy requirement.

(Slide 18: Expenditure on R&D into energy)

The massive funding provided for nuclear research worldwide is in fact the biggest research flop in the world. Unfortunately, most of the research funds worldwide are still channelled into nuclear energy instead of renewable energy research. Public research funding still pays little attention to renewables. National governments must therefore considerably increase their research spending on renewables. To facilitate the worldwide transfer of knowledge, it is imperative that an International Renewable Energy Agency (IRENA) be founded. This proposal, spearheaded by EUROSOLAR and WCRE, has waited for a long time for political implementation, despite the many resolutions passed by legislatures and governments at national and international level. I would appreciate it if Japan and other countries would join in the IRENA establishment process.

Ladies and Gentlemen,
Renewable energy will prevent us from experiencing hazardous climate change and destructive oil wars. It will create new jobs and secure our energy supply. It is the key to solving some of the greatest global challenges we face as we head into the future.
Let's work together to provide even more support for all renewables.

Thank you very much for your attention.