



PHASE-OUT IN GERMANY - HISTORY AND OUTLOOK

Michael Micklinghoff
Senior Advisor

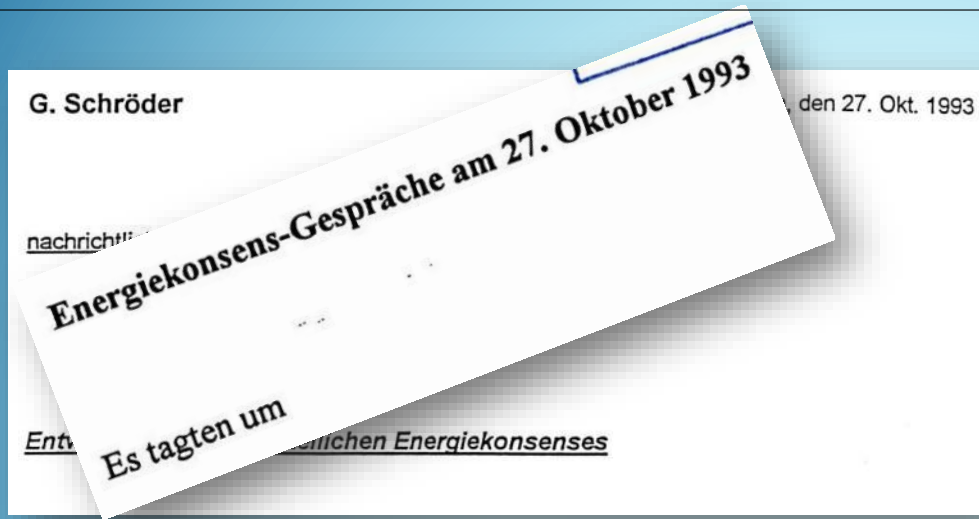
PHASE-OUT IN GERMANY – HISTORY AND OUTLOOK

1. History
2. Brief timeline of the political turnaround in energy policy
3. German Self-Assurance
4. Legal actions
5. Decommissioning
6. Outlook



HISTORY: 1993/2000

SO-CALLED “KONSENSVERHANDLUNGEN”



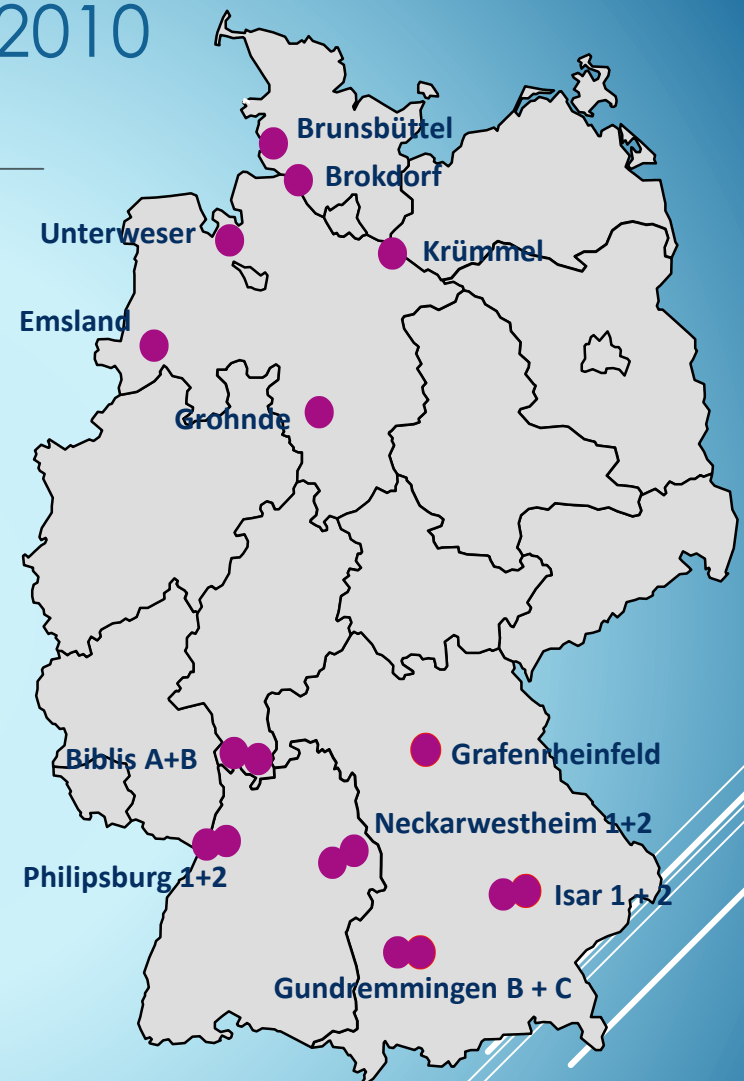
“Vereinbarung”
vom 14. Juni 2000



Each power plant gets a quota of electricity allowed to produce. The amount corresponds to a calculated lifetime of 32 year roughly. The allocated contingent can be transferred between plants.

HISTORY: LIFETIME EXTENSION 2010

		Commission	Basis	Additional years	
Older plants	1975	Biblis A	1975	2011	8
		Neckarwestheim 1	1976	2011	8
		Biblis B	1977	2013	8
		Brunsbüttel	1977	2013	8
		Isar 1	1979	2011	8
		Unterweser	1979	2012	8
Newer plants	1980	Philipsburg 1	1980	2012	8
		Grafenrheinfeld	1982	2015	14
		Philipsburg 2	1985	2018	14
		Grohnde	1985	2018	14
		Brokdorf	1986	2019	14
		Krümmel	1984	2020	14
		Gundremmingen B	1984	2020	14
		Gundremmingen C	1985	2020	14
		Isar 2	1988	2020	14
		Emsland	1988	2020	14
	1989	Neckarwestheim 2	1989	2022	14



Also a fund to push renewables was established

BRIEF TIMELINE OF THE POLITICAL U-TURN IN ENERGY POLICY

- ▶ 11. March 2011 in Japan:
Seismic event & Tsunami (14m), station black-out at “Fukushima Daiichi”, pictures of this accident are seen around the world
- ▶ 14. March 2011 in Berlin:
Chancellor Angela Merkel announces to suspend the recent legislation about the lifetime extension for the German nuclear power plants.
The Government decides to shut down 7 plants (built before 1980) plus Krümmel for 3 months (so-called Moratorium).
The German Reactor Safety Commission (RSK) is asked to perform a special safety evaluation for all 17 nuclear power plants in Germany



BRIEF TIMELINE OF THE POLITICAL U-TURN IN ENERGY POLICY

- ▶ 17. May 2011:
The RSK submits its final report about the specific safety analysis for each plant. It states that all German reactors have a very high safety standard independent of age or type. The plants are very robust with respect to external events like earth quakes, flooding etc. – not comparable to the Fukushima reactor.
- ▶ In addition to the technical safety analysis of the RSK Chancellor Merkel established an “Ethics Commission” with 17 members from research, politics, churches, commerce and society.



BRIEF TIMELINE OF THE POLITICAL U-TURN IN ENERGY POLICY

- ▶ 30. May 2011:
The “Ethics Commission” submits its final report and recommends to step out of nuclear power within 10 years. “This is necessary to avoid any risks from nuclear reactors and this is possible because there are other forms for power generation with less risks”. The competitiveness of the German industry should be taken account of.
- ▶ 6. June 2011:
The German Government (the cabinet) decides about a comprehensive body of laws regarding the future energy policy including many changes in the Atomic Law (Atomgesetznovelle):
phase-out legislation.

The goal to increase the share of renewable energy production to 50% by 2030 was already part of the action plan from 2010.

ATOMGESETZNOVELLE AS OF JUNE 2011

- ▶ Final closure of the 8 NPPs temporarily shut down during the Moratorium

Philippsburg I	(EnBW)
Neckarwestheim I	(EnBW)
Isar I	(E.ON)
Unterweser	(E.ON)
Biblis A & B	(RWE)
Brunsbüttel	(Vattenfall)
Krümmel	(Vattenfall)



- ▶ Stepwise closure of the remaining 9 plants:

2015: Grafenrheinfeld	(E.ON)
2017: Gundremmingen B	(RWE)
2019: Philippsburg II	(EnBW)
2021: Brokdorf	(E.ON)
2021: Gundremmingen C	(RWE)
2022: Isar II	(E.ON)
2022: Neckarwestheim II	(EnBW)
2022: Emsland	(RWE)



- ▶ Remaining allocated power allowance can be used and transferred. Quota expires at the end.

LEGISLATIVE TWISTS AND TURNS SUMMARY:



- **Before 2002:** Unlimited lifetime as long as safety is assured
- **June 2002:** Lifetime of the German nuclear reactors were restricted to about 32 years. Each power plant gets a quota of electricity allowed to produce.
- **October 2010:** Lifetime extension by 12 years in average
- **June 2011:** U-Turn. Fixed shut down dates. Phase-out legislation. Stranded investments...

IS GERMANY A WRONG-WAY DRIVER – AGAINST THE TRAFFIC?

- This very fast action is unprecedented.
- No other country acted that drastically.
- It was supported by
 - all political parties
 - the media
 - and the public

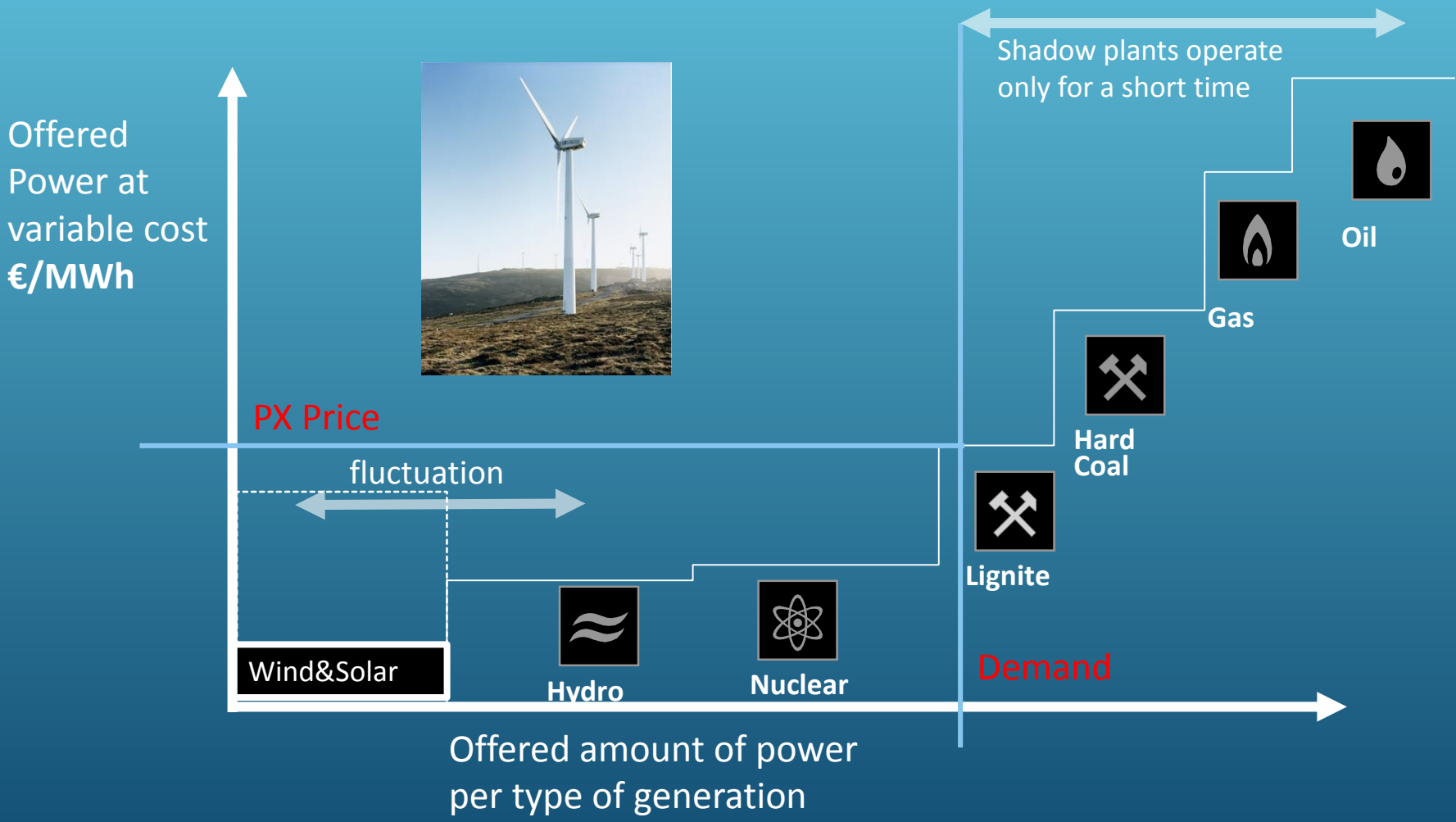


GERMAN SELF-ASSURANCE

- ▶ “He” was one of those hopelessly and immutably self-confident men, self-confident to the point of **martyrdom** as only Germans are, because only **Germans are self-confident on the basis of an abstract notion**, that is, the supposed knowledge of absolute truth.
- ▶ *A Frenchman is self-assured because he regards himself personally, both in mind and body, as irresistibly attractive to men and women.*
- ▶ *An Englishman is self-assured, as being a citizen of the best-organized state in the world, and therefore as an Englishman always knows what he should do and knows that all he does as an Englishman is undoubtedly correct.*
- ▶ *An Italian is self-assured because he is excitable and easily forgets himself and other people.*
- ▶ *A Russian is self-assured just because he knows nothing and does not want to know anything, since he does not believe that anything can be known.*
- ▶ **The German's self-assurance is worst of all, stronger and more repulsive than any other, because he imagines that he knows the truth, which he himself has invented but which is for him the absolute truth.**
- ▶ “He” was one of those theoreticians **who so love their theory** that they lose sight of the theory's object—its practical application. **His love of theory made him hate everything practical, and he would not listen to it.** He was even pleased by failures, for failures resulting from deviations in practice from the theory only proved to him the accuracy of his theory.

ENERGY ECONOMICS / MERIT ORDER

WIND & SOLAR REDUCES MARKET PRICE



LEGAL ACTIONS (FUEL TAX)

Together with the lifetime extension legislation in 2010 the government introduced a tax on nuclear fuel with the aim of absorbing part of the electricity companies' earnings.

Before and independent of the phase-out legislation claims concerning the new fuel tax were filed.

- ▶ No final decision yet
- ▶ Several provisional court decision have been issued.
- ▶ Financial court in Hamburg has passed the issue to the constitutional court.
- ▶ Also the European Court of Justice may have to deal with this issue.



LEGAL ACTIONS (MORATORIUM)

- ▶ April 2011:
RWE files a claim at the administrative court concerning the temporary shutdown order (moratorium) for Biblis NPP
- ▶ February 2013:
Court decides in favor of RWE (shutdown order was not justified). Basis for punitive damage, to be claimed in a new lawsuit (media reports: 187 million Euros)

No other claims concerning temporary shutdown orders (Moratorium) were filed in order not to deteriorate the atmosphere.



LEGAL ACTIONS (PHASE-OUT LEGISLATION)

The operators accept the political phase-out decision by parliament. However they claim that the German constitution provides compensation for such action.

- ▶ November 2011:
E.ON files a suit at the constitutional court.
- ▶ June 2012:
RWE files a suit at the constitutional court.
- ▶ May 2012:
Vattenfall as a foreign company files its claim for compensation at the international court of arbitration in Washington (ICSID)
- ▶ June 2012
Vattenfall additionally files a claim at the German constitutional court
- ▶ EnBW considers it is not allowed to go to the constitutional court as it is owned by the state of Baden-Württemberg (green prime minister)

According to some press reports the companies ask for a compensation of more than 15 billion Euros in total.



DECOMMISSIONING LICENSE

All operators go for immediate dismantling (no safe enclosure).

Irradiated fuel cannot be transported from some plants immediately.

- BWR: Isar I, Brunsbüttel ..
- Defect fuel: Unterweser ..

► E.ON submitted its application in May 2011.

Two reservations:

The company will only use the license

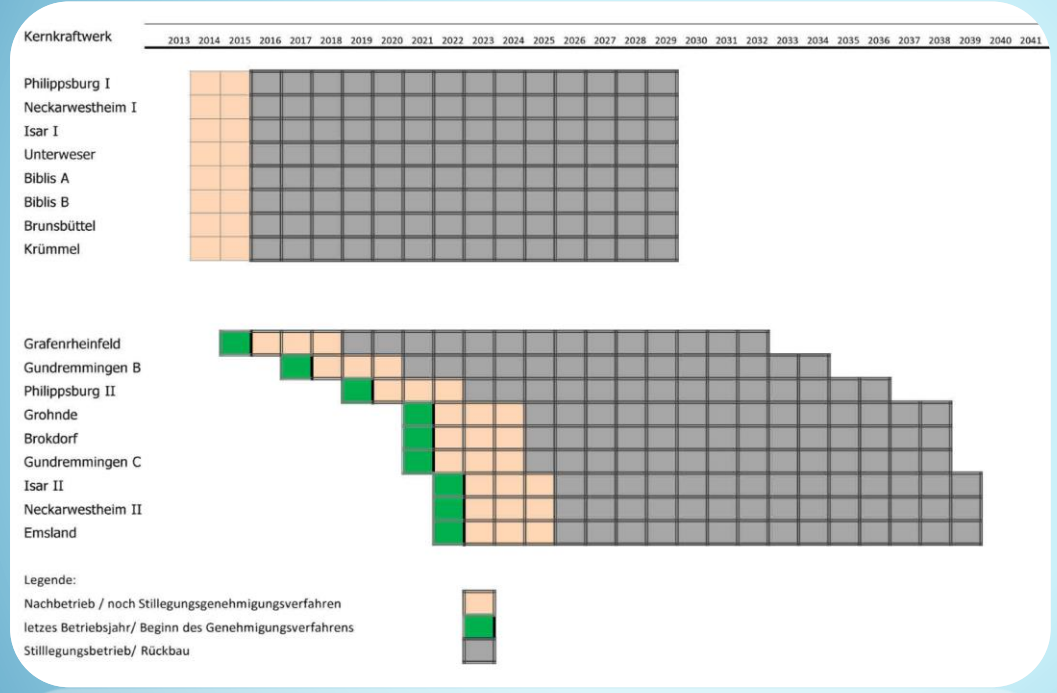
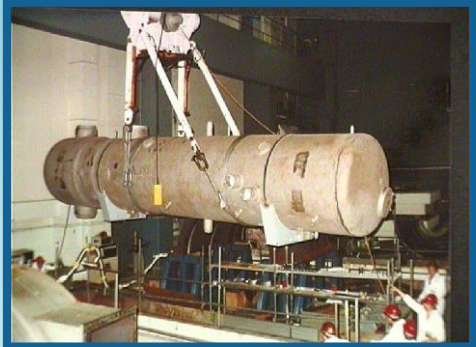
- if the constitutional court has confirmed that the phase-out legislation complies with the constitution and
- if the final repository “Konrad” is ready to accept the waste from decommissioning in due time.

DECOMMISSIONING LICENSE

- ▶ RWE first considered an application according §7 (1) AtG (!!).
Now it has submitted an application according §7 (3) AtG with similar reservations as E.ON.
- ▶ Vattenfall submitted its application for Brunsbüttel in November 2012 with similar reservations.
Krümmel is a special case!!
- ▶ EnBW submitted its applications for GKN 1 & KKP 1 according §7 (3) AtG recently (May 2013)

The licensing process might last 4-5 years.

DISMANTLING TIMELINE



All at the same time!
Is this realistic?

OUTLOOK: PHASE-OUT

The constitutional court will not decide before 2014
(federal election in Sept 2013!!)

Result is uncertain:

1. Phase-out-legislation is constitutional or
2. Phase-out legislation is illegitimate or
3. Phase-out legislation is nullified



OUTLOOK: PHASE-OUT

Consequences

1. Phase-out-legislation is constitutional
Decommissioning licensing process will proceed undisturbed.
2. Phase-out legislation is illegitimate
Compensation must be determined...
3. Phase-out legislation is nullified

....

Relation between nuclear operators and government is burdened.

However government policy is fraught with many uncertainties:

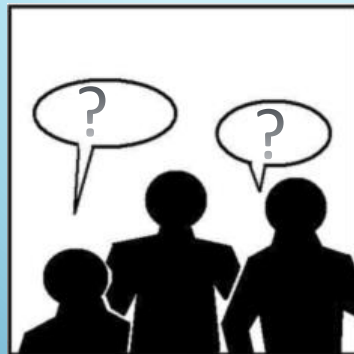
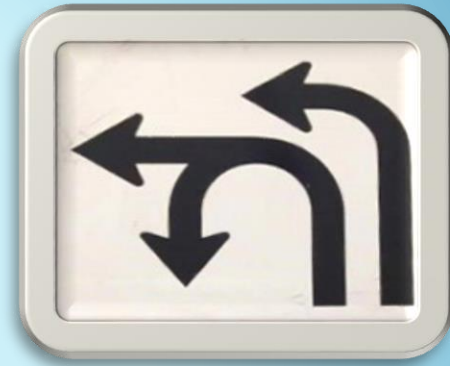
- ▶ Decisions of the constitutional court are uncertain.
- ▶ Liabilities for compensation might be high.
- ▶ Final decisions of the financial courts & European Court of Justice about fuel tax are uncertain.
- ▶ Financial basis for the search for final repository is unclear.
- ▶ Security of supply might be endangered and very costly after 2022.
- ▶ Government plans for intermediate storage need consent with the operators.
- ▶ ...

Government might be forced into comprehensive discussion with the nuclear operators.

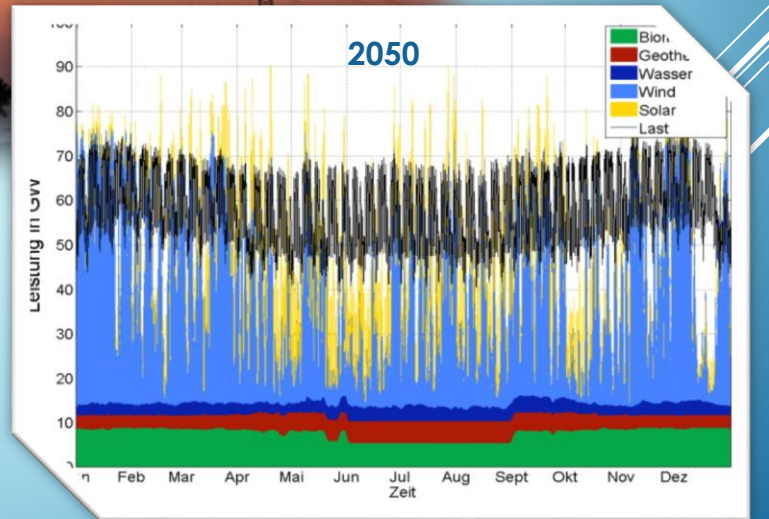
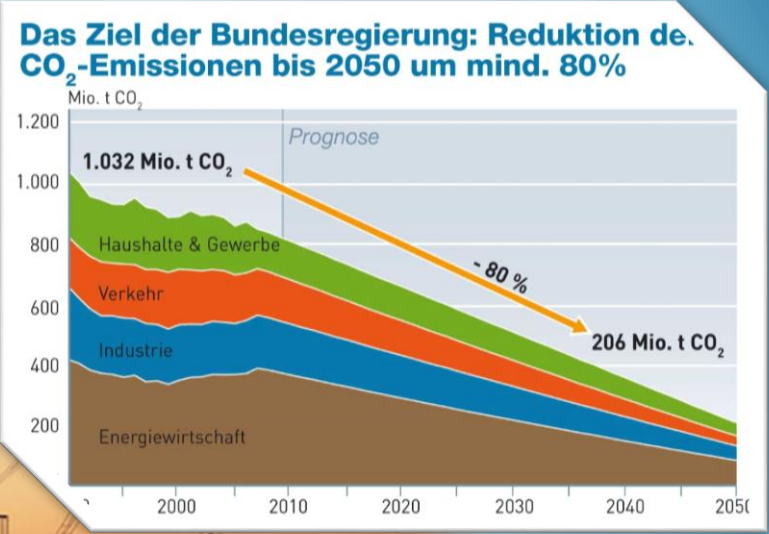
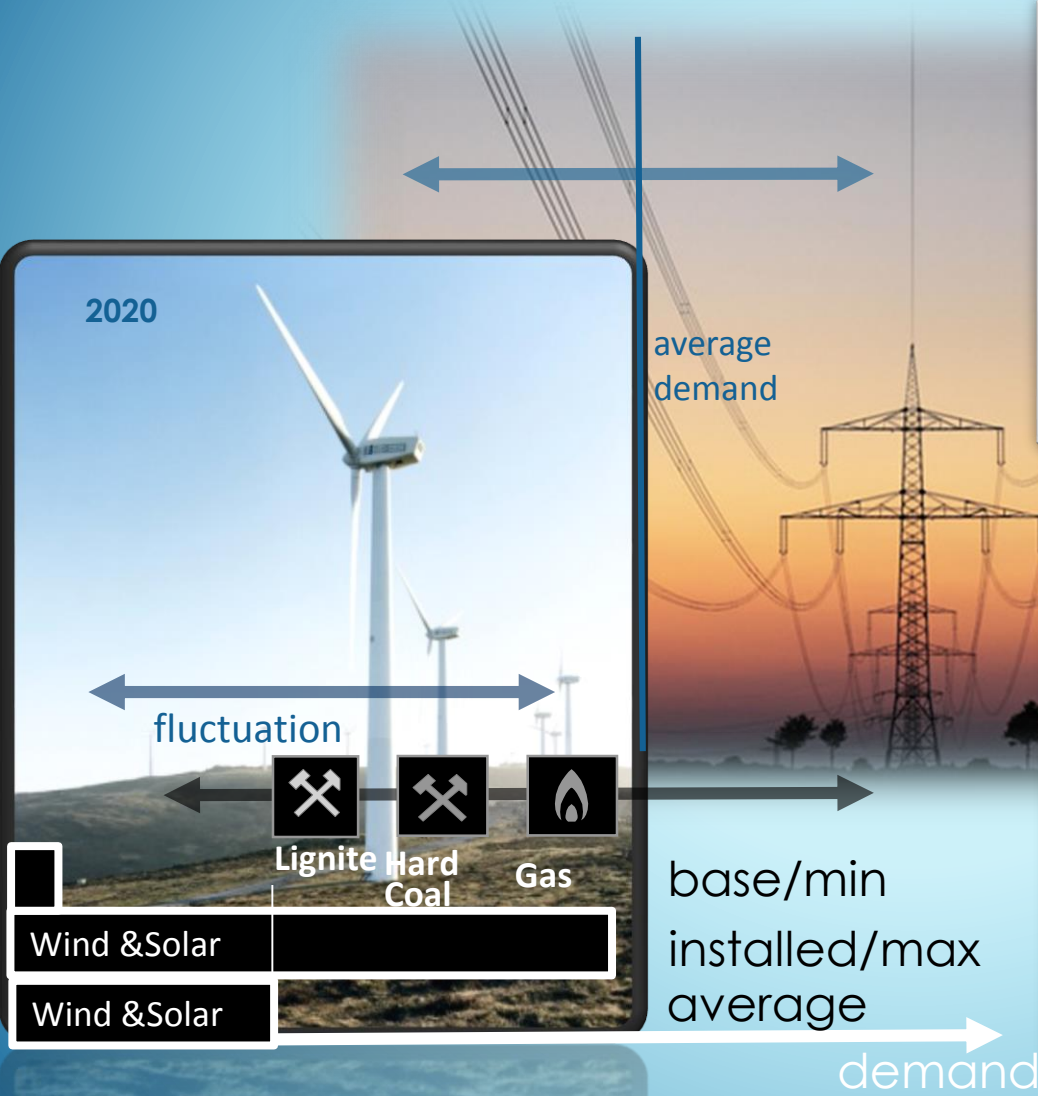
Is there

- ▶ room,
- ▶ the need,
- ▶ the opportunity,
- ▶ a chance

for a new agreement between government and industry?

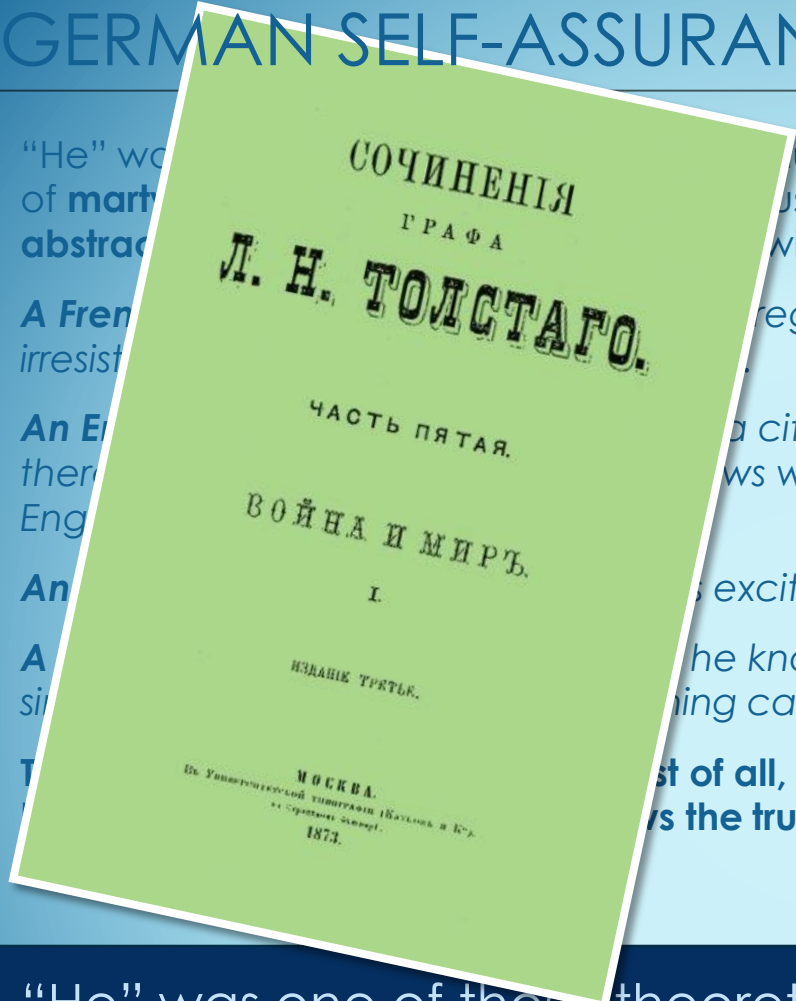


OUTLOOK: WILL THE "ENERGIEWENDE" WORK?



GERMAN SELF-ASSURANCE

- ▶ “He” was one of those theorists who so love their **theory** that they lose sight of the theory's object—its **practical application**. His love of theory made him **hate everything practical**, and he would not listen to it. He was even pleased by failures, for failures resulting **from deviations in practice** from the theory only proved to him the accuracy of his **theory**.
- ▶ A Frenchman who regards himself personally, both in mind and body, as a citizen of the best of all possible worlds, and who knows what he should do, but who does not do it, is more excitable and easily irritated than a man who knows nothing and who knows that nothing can be known.
- ▶ The most of all, stronger and more repulsive than any other, is the truth, which he himself has invented but which is for him



“War and Peace”

Tolstoy 1868