

Climate Policy of Japan and Germany in comparison

by

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„Global warming is a negative externalities at global level and therefore, it needs to be addressed at global level.“ (Jun Arima, Japan’s Energy and Climate Quadlemma, Tokyo, 1. August 2017)

Yes – from the economic point of view a global carbon price setting equal marginal costs across all countries would be an effective as well efficient solution. Nevertheless the implementation of such a global „Level Playing Field“ and the development of a global carbon market where a ton is equal to a ton will need some time.

Therefore actions on the national, regional and local level have to take place as soon as possible. „Frontrunners“ must create „blue prints“ which shows that there exists not a fundamental contradiction between Environment and Economy. The contrary is true!

Climate Action is not only able to reduce greenhouse gases, but will at the same time

- **push innovation and creativity,**
- **reduce the need to import energy from outside the country in order to decrease the dependency of the whole society and economy on foreign energy exporters.**
- **improve energy security,**
- **Reduce other air pollutants and wastes and save water resources,**
- **Keep limited substances and resources for future generations,**
- **Create economic growth and jobs inside the country,**
- **Avoid damages through heavy rainfall, storms, droughts and floodings**

Basic Data to compare Japans and Germany's Energy and Climate Change policies

The comparison of Germany's and Japan's Climate Change and Energy policies has to take into consideration:

- **the social and economic structures and perspectives**
- **the avaiiability of resources**
- **the structure and trends of the energy and Greenhouse Gas balances**
- **the lifestyles**
- **the actual infrastructure (grids, storages, district heating, load management, information and communication technologies; modal split research and development)**
- **Emission trends of GHGs and other pollutants**
- **the weather and climate conditions**
- **the structure of industrial production and power generation**
- **the status of energy efficiency and renewable policies**
- **etc, etc, etc.....**

Framework Data

Criteria	Unit	base year	Germany	base year	Japan
Territory	km ²	2013	348.540	2013	364.560
GDP	billion US \$	2015	3.365,2	2015	4.124,2
GDP/capita	US \$	2015	40.952	2015	32.479
GDP agriculture	% GDP	2015	0,5	2014	1,2
GDP industry	% GDP	2015	30,4	2014	26,9
GDP services	% GDP	2015	69,0	2014	72,0
population	1.000	2015	81.413,1	2015	126.958,5
density of population	People per km ²	2015	234	2015	348
Forests	% of the territory	2013	32,8	2013	68,5
Primary Energy consumption	kg crude oil equivalent per capita	2014	3.749	2014	3.470
GHG emissions	t per capita	2014	9,3	2014	10,1
Climate Protection Index (KSI)*	rank	2017	29	2017	60

Similarities and Differences

Similarities

- highly dependent on energy and resource imports
- limited availability of resources
- highly industrialised and densely populated
- welfare based on innovation and creativity – necessity to be at the forefront of the technological development
- Power generation traditionally based on sources and technologies which are risky and/or are creating huge environmental and climate problems
- Climate Change targets (NDCs) are very ambitious
- committed to develop a low carbon society and a low carbon economy
- Necessity to create future oriented jobs and environmentally friendly economic growth

Differences

- **Germany is located in the centre of Europe – all lines are going through Germany (power and gas hub) – Japan is isolated because there are no linkages to other countries in terms of power and gas**
- **The Transition Process is development and meanwhile structured as well as a top down and bottom up approach – Japan is searching its future energy structure**
- **Germany decided very clearly to phase out nuclear power by 2022 – The Fukushima catastrophe causes and is causing very high costs in terms of money and health**
- **The lifestyles in Germany and Japan are traditionally different**
- **Germany's power generation and energy balance is based on a broad mix of energy sources, while Japan focussed its power supply strongly on nuclear power**
- **Germany's electricity balance is dominated by coal and renewables – Japan's power generation is presently focussing on LNG and oil**

Policies

Germany's Energy Transition is addressing

- **Phase out of Nuclear Power by 2022**
- **Replacement of environmentally harmful energy sources by environmentally and climate friendly sources**
- **Improvement Energy Efficiency**
- **Integration of all relevant sectors to invent and develop synergies**
- **Change of production and consumption patterns**
- **Improvement of the infrastructure (grids, digitalisation, storages, load management, CHP/district heating)**
-

Policies

Japans energy future is not very clear. At the moment the Japanese government is focussing on

- the connection of more and more nuclear power plants to the grid,**
- the use of LNG and oil in the power sector**
- the improvement of energy efficiency**
- In terms of Climate Change Policy Japan would like to use LULUCF and carbon credits from other countries to comply with its very ambitious NDC**

The Japanese Government is working on a long term strategy on energy taking into account the energy and climate needs

Targets on Climate Change (NDCs)

Criterion	EU (Germany)	Japan
base year	1990	2013
target year	2030	2030
Mitigation target(s)	<p>at least 40% domestic (EU-wide) reduction in greenhouse gas emissions by 2030 compared to 1990</p> <p>ETS:2030 target minus 43% compared to 2005</p> <p>Non-ETS: minus 30% compared to 2005</p>	<p>26%</p> <p>(25,4% reduction by 2030 compared to 2005)</p> <p>GHG emissions in 2030: 1.042 billion t CO₂equiv.</p> <p>The overall target is splitted up into CO₂ and Non-CO₂ emissions and differentiated between the responsible sectors</p>
LULUCF	Policy on how to include LULUCF will be established before 2020	<p>Minus 2,6% reduction compared to total GHG - emissions based as well on 2013 and 2005</p> <p>P&M: forest carbon sink measures + cropland management + grazing land management + revegetation</p>
Contribution from international credits	No contribution from internationally generated emission credits – domestic action	Contribution by emission reductions and removals under the Joint Crediting Mechanism will be counted as Japan's reduction
Additional information	The overall Target has to be splitted up in two parts: ETS as European instrument covering approximately 45 - 50% of total EU's GHG-emissions and ESD (Effort Sharing Decision) which will cover all sectors and installations which are not part of the EU ETS. Decisions will be taken by EU Parliament, Council and Commission in 2017	Very detailed and differentiated assumption of contributions by sectors and numerous P&M's


The German Philosophy

- **Ambitious short, medium and longterm targets**
- **Policies and measures**
- **Transparent Monitoring and Reporting**

Three things are needed

- **Time**
- **Money and**
- **Acceptance**

Germany's climate and energy related targets

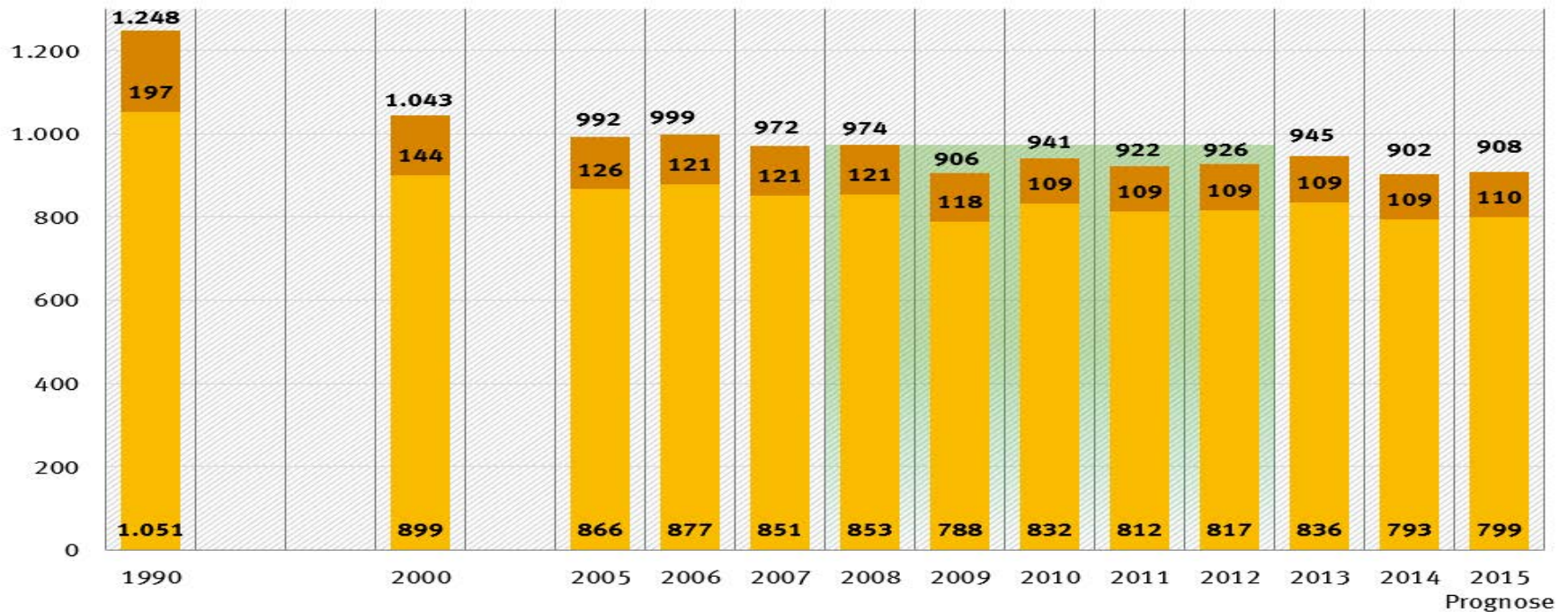
		2020	2030	2040	2050
Climate	Greenhouse gases (vs. 1990)	- 40%	- 55%	- 70%	- 80 to - 95%
	Share of electricity	35%	50%	65%	80%
Renewable energies	Overall share (Gross final energy consumption)	18%	30%	45%	60%
	Primary energy consumption	- 20%			- 50%
Efficiency	Electricity consumption	- 10%			- 25%
	Energy consumption in buildings	20% heat demand		80% primary energy	

Sectoral targets by 2030 (Climate Action Plan 2050)

Action field	1990 (million tonnes of CO ₂ equivalents)	2014 (million tonnes of CO ₂ equivalents)	2030 (million tonnes of CO ₂ equivalents)	2030 (reduction in % compared with 1990)
Energy sector	466	358	175 - 183	62 – 61%
Buildings	209	119	70 - 72	67 – 66%
Transport	163	160	95 – 98	42 – 40 %
Industry	283	181	140 - 143	51 – 49 %
Agriculture and Forestry	88	72	58 -61	34 – 31 %
Subtotal	1.209	890	538 - 557	56 – 54 %
Other Sectors	39	12	5	87 %
Total	1.248	902	543 - 562	56 – 55 %

Germany's greenhousegas emissions 1990 - 2015

Treibhausgasemissionen in Deutschland 1990 bis 2015
Prognose in Mio.t CO₂-equivalent



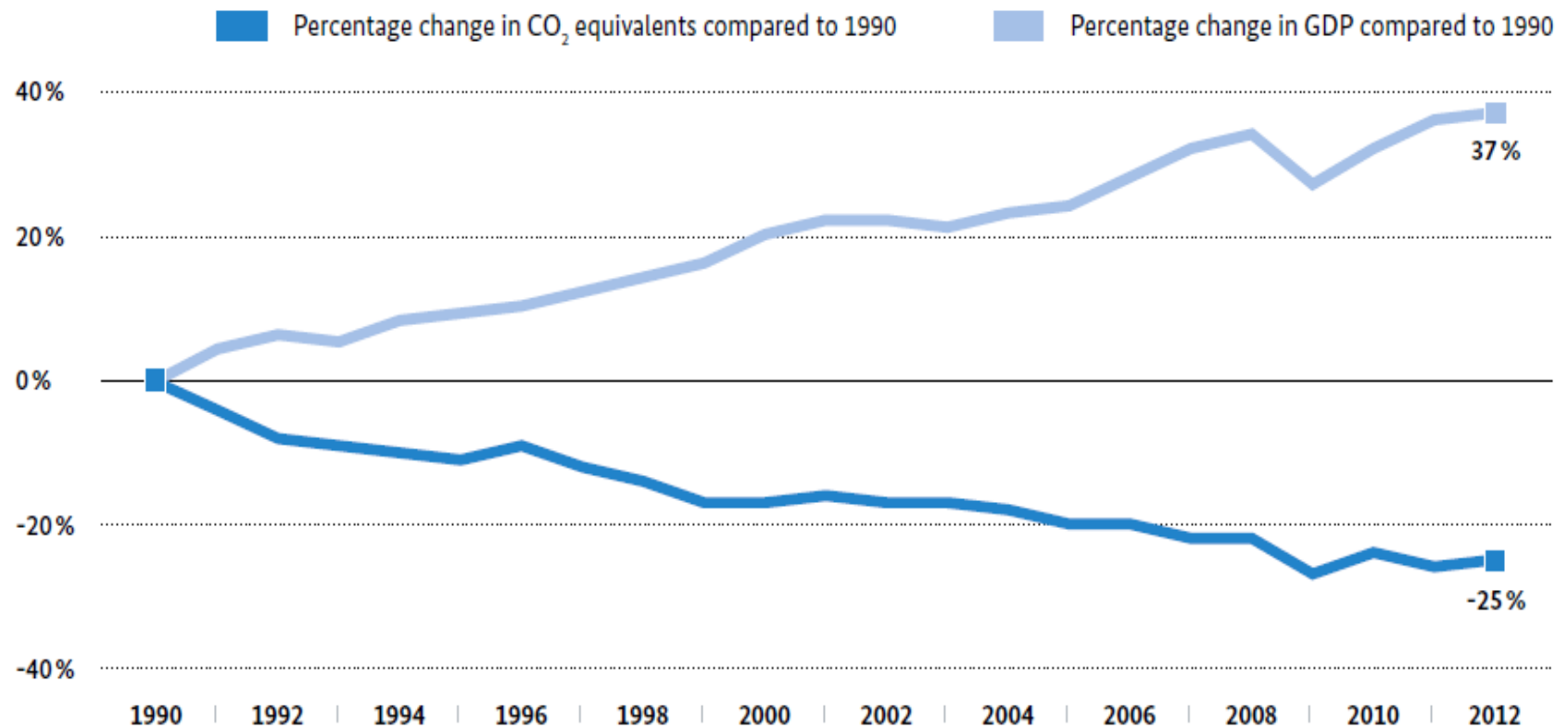
-relativ gegenüber 1990: 27,2%

■ Kyoto-Budget

■ CO₂-Emissionen

■ Summe Nicht-CO₂ (CH₄, N₂O, F-Gase)

Germany: Decoupling GDP from CO₂-emissions



Source: <http://www.umweltbundesamt.de/presse/presseinformationen/treibhausgasausstoss-im-jahr-2013-erneut-um-12>
and Working Group on Energy Balances (Arbeitsgemeinschaft Energiebilanzen): Selected efficiency indicators for Germany's energy balance

European targets

	2020	2030	2050
Greenhouse Gases	minus 20% (base year 1990)	at least minus 40% (base year 1990)	minus 80 – 95% (base year 1990)
Renewable Energies		at least 27% renewables based on the Primary Energy Balance	
Energy Efficiency		at least 27% improvement against business as usual (bau)	

Japan's Climate Change Targets

- **Kyoto target: minus 6% in the period 2008 – 2012 based on 1990.**
- **NDC: minus 26% by 2030 based on 2013* included LULUCF and the import of carbon credits from other countries****

* The overall target is splitted up in CO2 and Non CO2 emissions and differentiated between the responsible sectors

** Results of some actual macroeconomic studies: costs to comply with the NDC could be too high for Japanese economy and society

Japan: Implementation of the the Kyoto target

- Reduction is based only on LULUCF and the import of emission credits (CDM)
- Japan has achieved a 5 year average reduction (period 2008 – 2012 = Kyoto period) by 8,4%
 - LULUCF 3,9%
 - Import of CER's 5,9% (import of 371,5 million CER's - costs have been approx. 590 billion yen for the Kyoto period)
- That resulted in increase of domestic GHG emissions in the period 2008 – 2012 of 3,9% percentage pointsh

Japan's power generation with low CO2 emissions – 1990 – 2014

	Lowest share 1990 - 2010	Lowest share 2012- 2013	Highest share 1990 - 2014
Renewable Energy	9 %	11 %	13 %
Nuclear	0 %	26 %	37 %
Total	9 %	37 %	50 %

Status of Climate Change Policy

Germany

- **With the present catalogue of P&M's Germany will not be able to comply with its 2020 target**
- **Implementation is lacking in transport, energy supply and agriculture and forestry**
- **Private households, industry and small consumers contributed mostly to the CO₂ - reduction**

Japan

- **Japan did not comply with its Kyoto target. GHG-emissions are increasing**
- **Implementation of the NDC is under discussion**

Approaches to construct future oriented structures in both countries

- **Improving energy efficiency in all sectors**
- **Replacement of traditional energy sources by renewable energies**
- **Changing the infrastructure**
- **Changing production and consumption patterns**
- **Changing waste management and improving resource efficiency**
- **Inventing future oriented transport technologies, changing behaviour and offering convenient transport services to industry and consumers**
- **Using procurement strategies by governments to support markets which are emerging,**
- **Supporting Research and Development**
- **Speeding up the use of information and communication technologies**
- **Improvement of education, information and advice**

Roadmap to sustainable energy use and to combat Climate Change – a Strategic Circle

- **Analysis of the present status**
- **Identification of the opportunities and the Potential (technologically and economically)**
- **Identification of existing barriers and hurdles**
- **Development of policies and measures to remove the barriers – construction of a comprehensive programme covering all sectors and avoiding counter productive effects**
- **Implementation of policies and measures**
- **Review and adjustment of the strategy every (3 – 5) years**

Last but not least

The decision by US President Donald Trump to leave the Paris Agreement should not be taken as excuse for stepping out of the Agreement!

Parts of the US Business Sector and International Companies are right: Paris is not only a Challenge, but offers numerous chances to create new business cases.

Countries all around the world should no longer be part of the problem, but part of the solution! 196 countries agreed on that in Paris in 1995.