



The global Energiewende – Germany's experience

מהפך האנרגיה הגרמני

15th International Energy & Business Convention
Tel Aviv, 05 December 2017

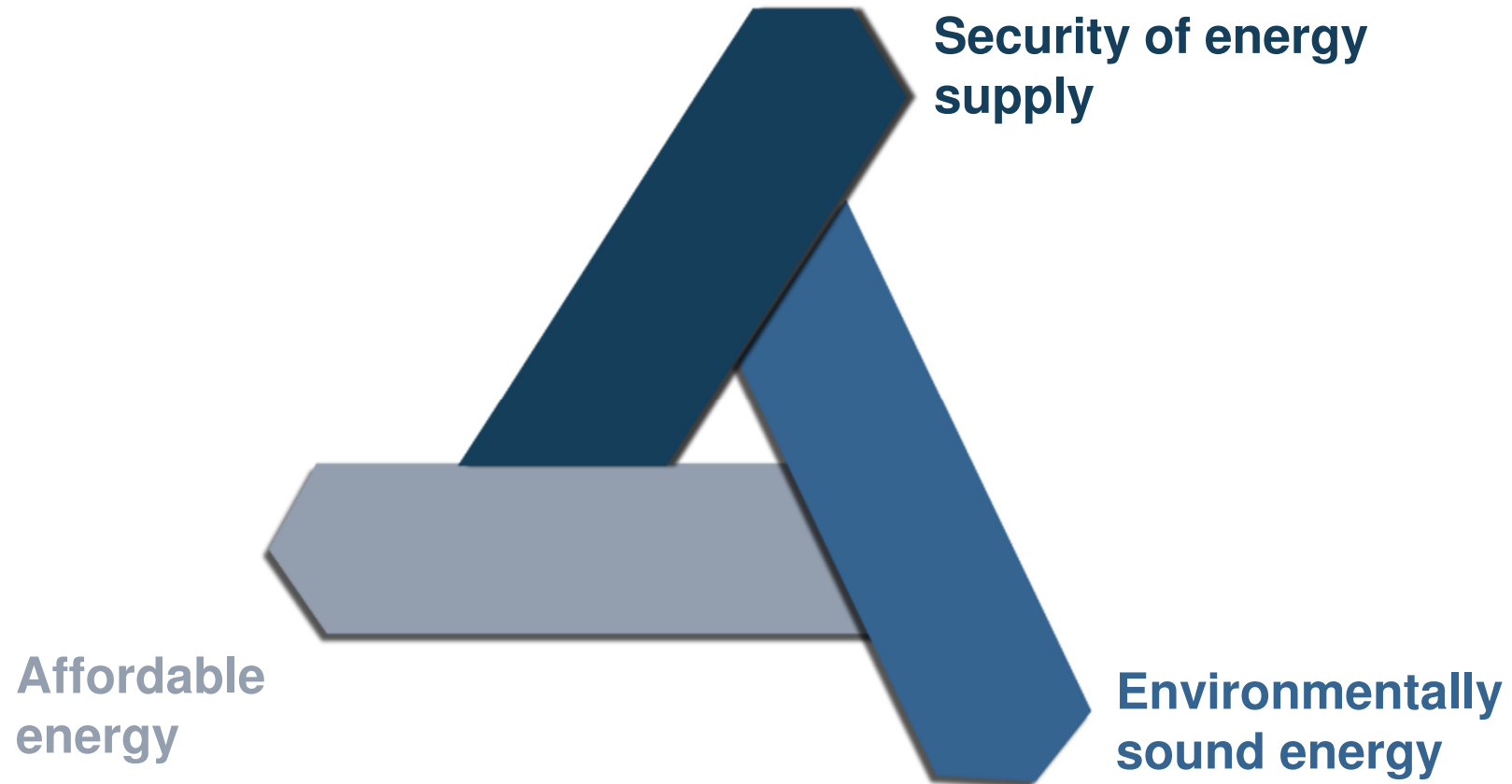
Federal Foreign Office

Dr. José Schulz

Head of division for international energy policy

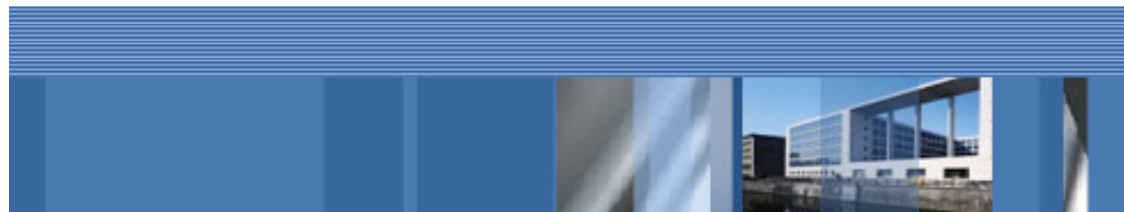


Policy and guiding principles of the Energiewende

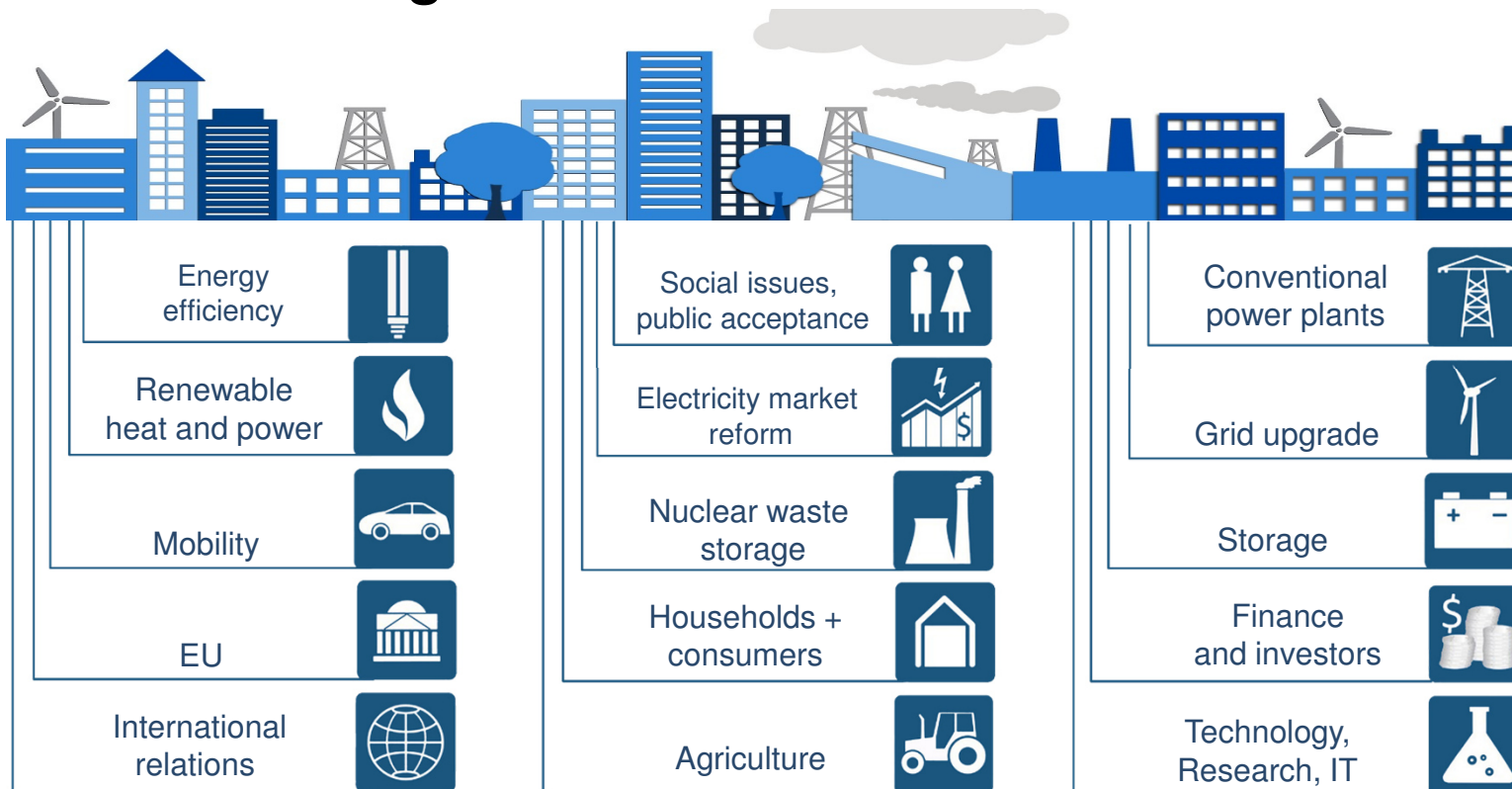


Affordability, reliability and environmental protection are interlinked and the ultimate objectives of the Energiewende and German energy policy.

Source: RENAC



What is the Energiewende?



The Energiewende is a fundamental transformation of the energy system and re-alignment of energy policy. It is multidimensional and affects many areas.

Source: RENAC



Reasons for the *Energiewende*

- ▶ Reduce dependency on energy imports
- ▶ Innovation for growth and employment: new technologies, new business models, digitization
- ▶ Reduce carbon emissions and reach climate protection targets
- ▶ Phase-out nuclear power generation
- ▶ Energy transition can be both sustainable and economically successful

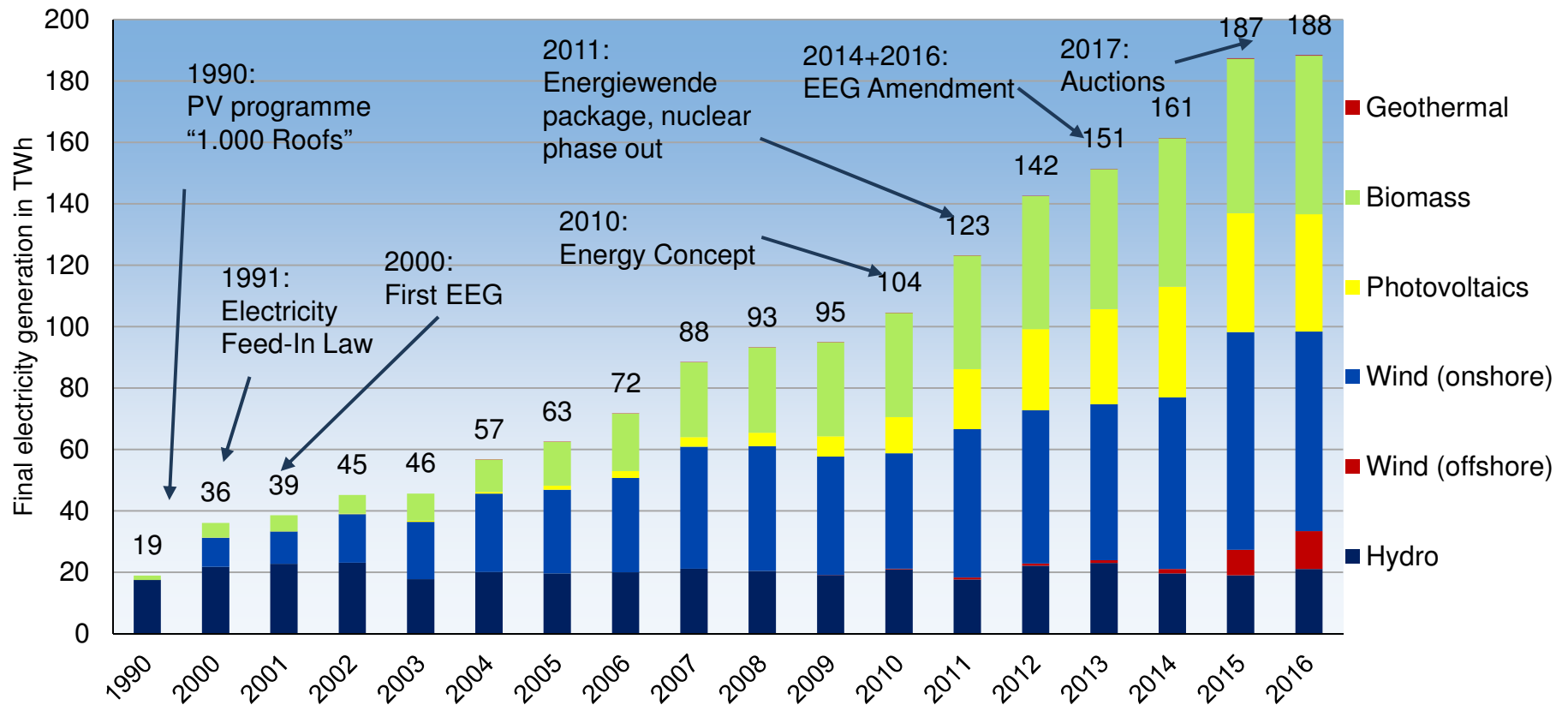


Climate protection is a strong driver for the Energiewende complemented by strong economic and social drivers for change.





The Energiewende started decades ago: Milestones



Continuously developed policy support has fostered steady growth of renewables in Germany.

Source: AGEB 2017, AGEE-Stat 2016



Installed global renewable electricity capacity (in GW)

Global installed Renewable Electricity Capacity (in GW)

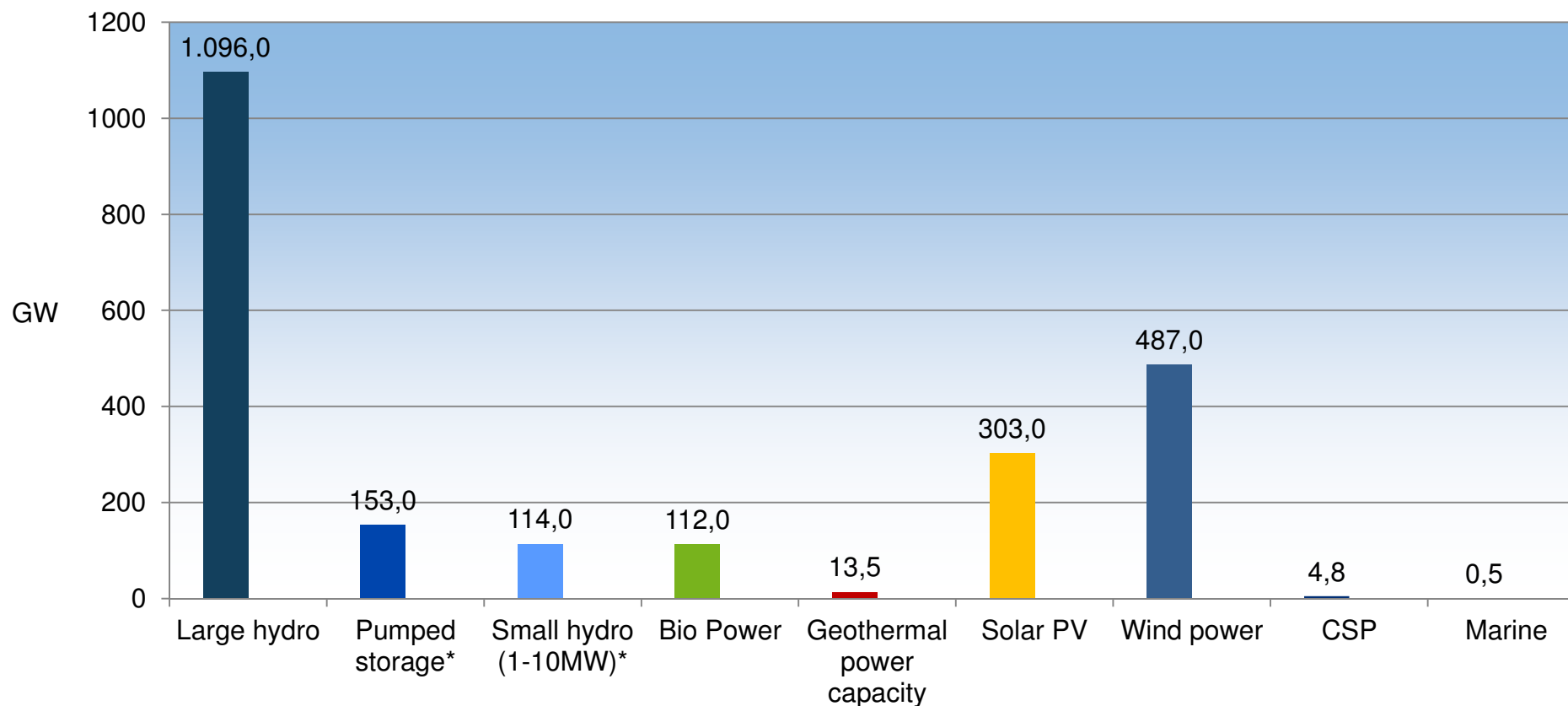


Global installed renewable electricity capacity more than doubled within the past decade.

Source: IRENA 2017, Renewable Energy Statistics

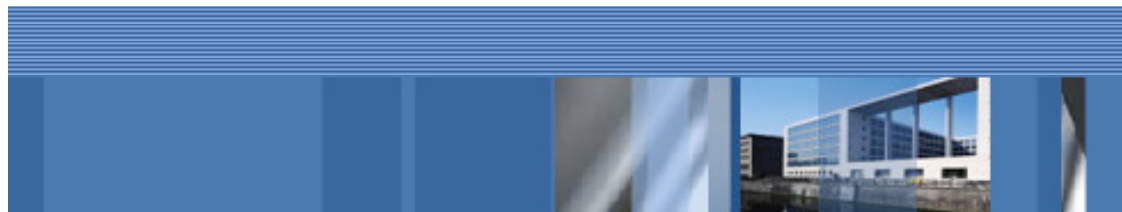


Installed global renewable electricity capacity (in GW)

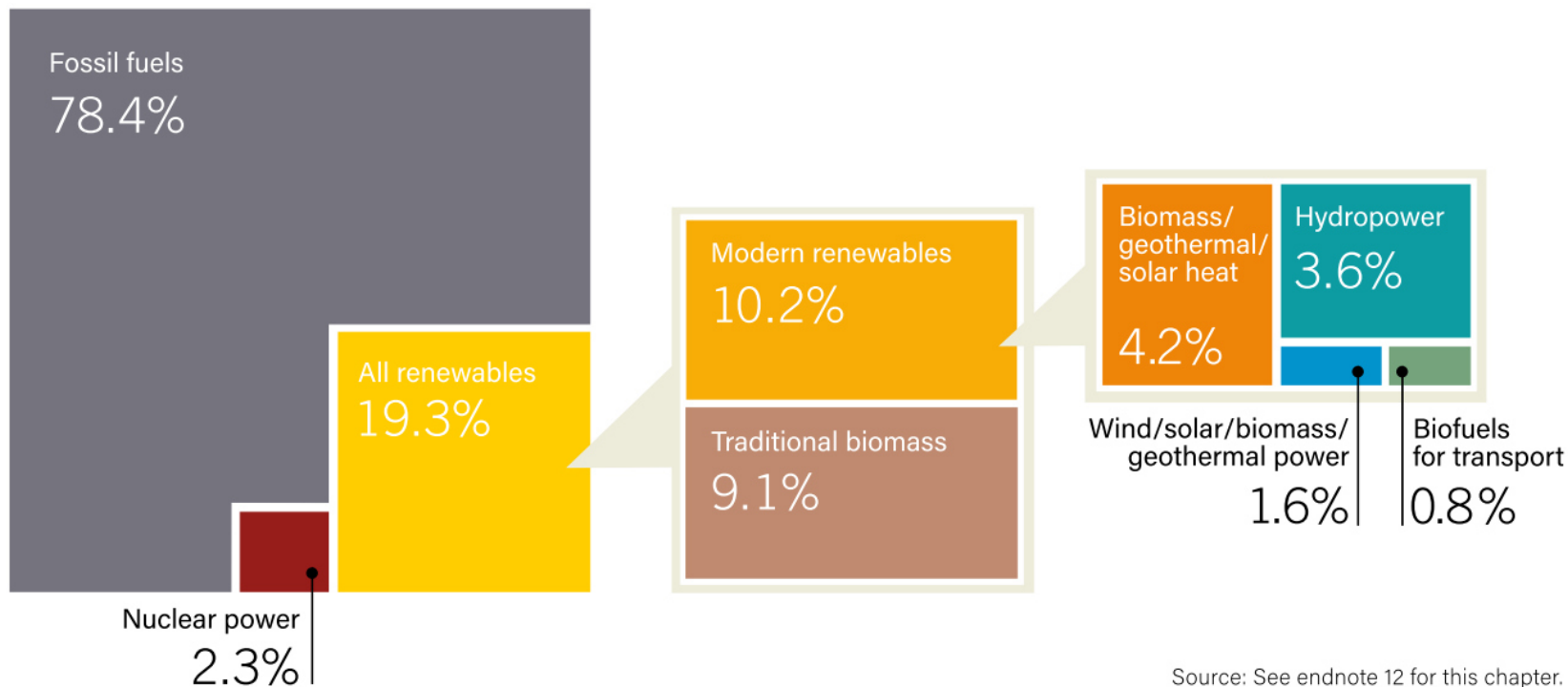


Installed renewable capacity increased continuously over the past decades.

*Source: REN21 Global Status Report 2017 * IRENA 2017 Capacity statistics*



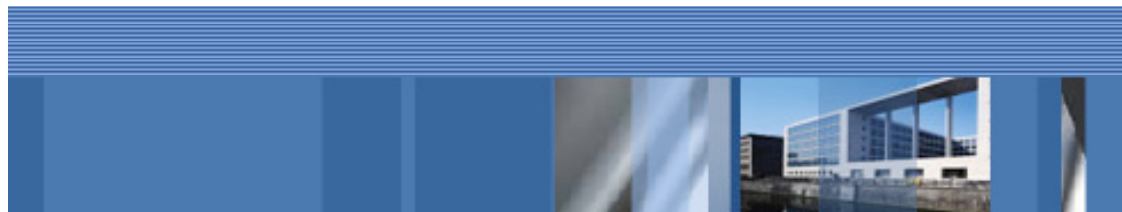
Estimated renewable energy share of global final energy consumption 2016



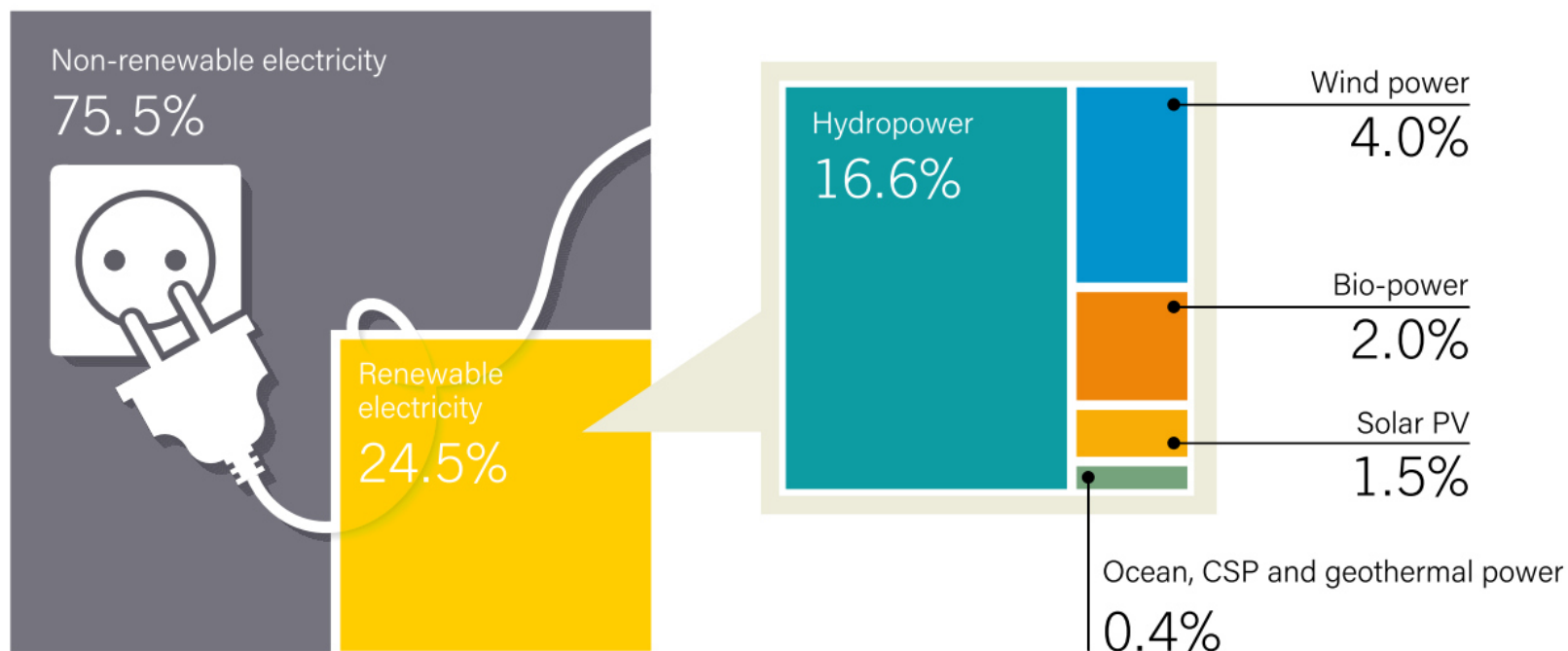
Source: See endnote 12 for this chapter.

Currently, renewables provide roughly **one fifth of global energy** demand and exceed the role of nuclear more than seven-fold.

Source: *REN21 2017: Global Status Report 2017*




Estimated renewable energy share of global electricity production 2016



Currently, renewables provide roughly **one quarter of global power** demand.



Pillars and action fields of the *Energiewende*



Renewable Energy

Key legislation:
Renewable Energy Sources Act
Renewable Energy Heat Act

- Steady growth
- Environmentally friendly

Supporting fields of action



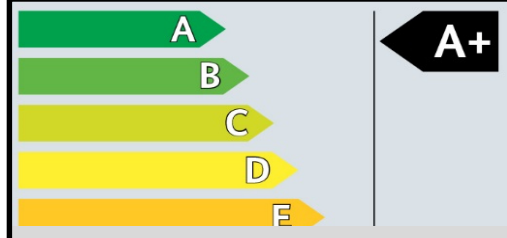
Market and system integration



Energy research and development



European energy and climate policy

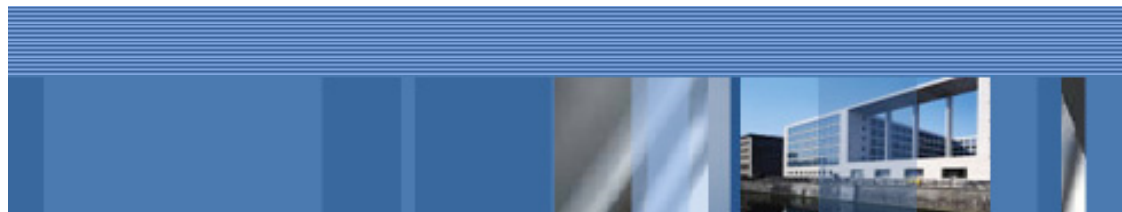


Energy Efficiency

Key legislation:
Energy Saving Ordinance
Heating Cost Ordinance

- Reduce energy consumption
- Cost-efficient

The energy transition's foundation are renewables and reduced energy consumption.



Targets of the Energiewende until 2050

		2016	2020	2030	2040	2050
Climate	% greenhouse gas reduction (vs. 1990)	-27,6 %	-40 %	-55%	-70%	-80-95%
Renewable energy	% gross final energy consumption	14,8%	18%	30%	45%	60%
	% gross electricity consumption	31,7 %	Min 35%	Min 50%	Min. 65%	Min 80%
	Share in heat consumption	13,2%	14%			
	Share in Transport sector	5,2%	10% (EU)			
Energy efficiency	% primary energy consumption (vs. 2008)	-6,9%	-20%			-50%
	Final energy productivity (2008-2015)	1,3% p.a.*	2,1% per year (2008-2050)			
	Gross electricity consumption (vs. 2008)	-4,0 %	-10%			-25%
	Primary energy demand (buildings) (2008)	-15,9%*				- 80 %
	Heat demand (buildings) (vs. 2008)	-11,1%	-20%			
Transport	Final energy consumption in transport (vs. 2008)	+1.3%*	-10%			-40%
	No. of Electric Vehicles (incl. hybrids)	199.000	1 million	6 million		

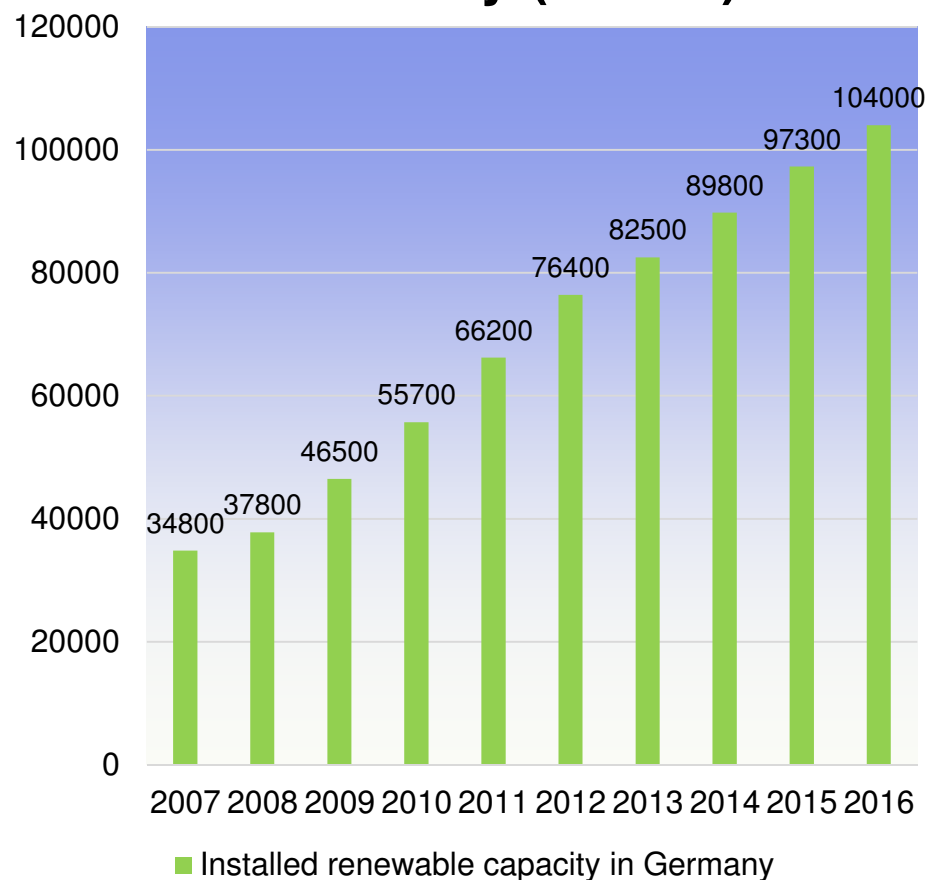
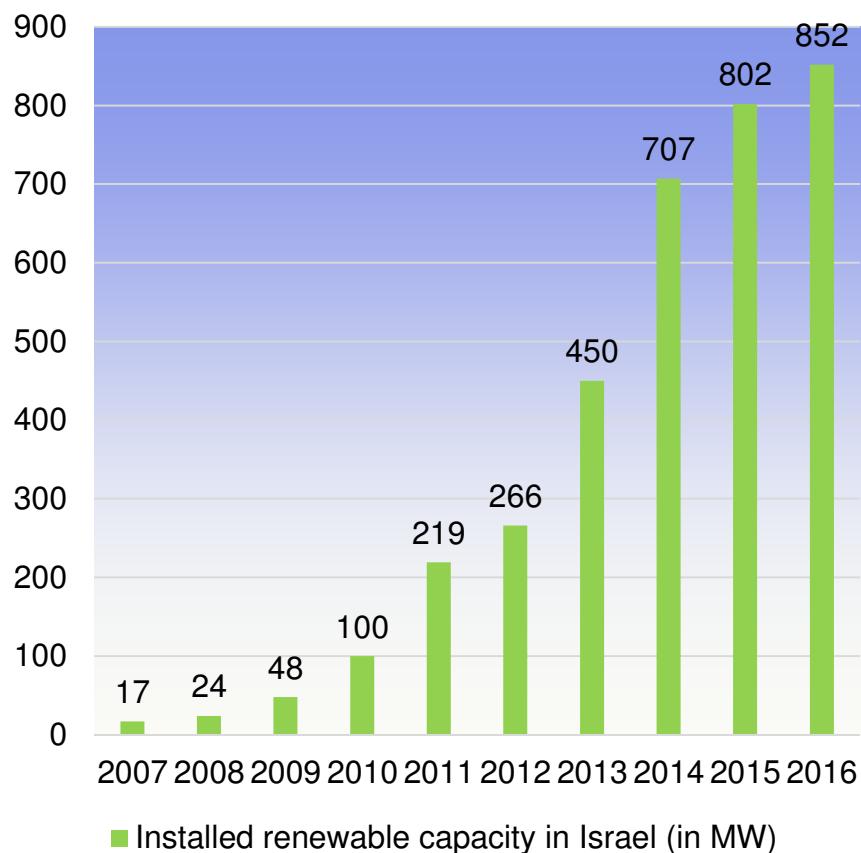
The energy transition follows a transparent, long-term strategy with specific targets.

* Data for 2015

Sources: BMUB 2016, AGEE-Stat 2016, UBA 2017, BMWi 2016, KBA 2017

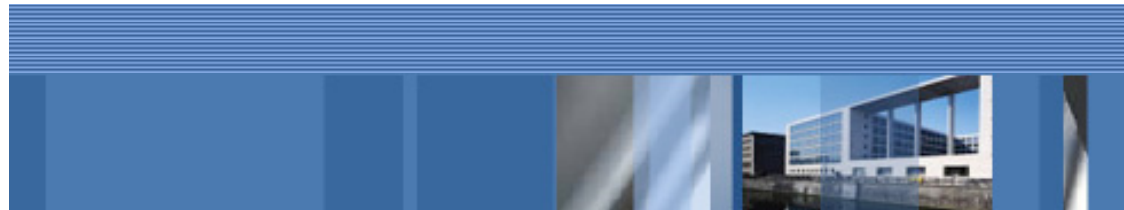


Installed renewable capacity in Israel & Germany (in MW)



Both countries witnessed substantial growth. PV plays a major role.

Source: BMWi 2017, IRENA 2017 – Capacity Statistics



Lessons learnt

- ▶ The Energiewende needs to be based on **public acceptance**
- ▶ There will be **winners and losers**. Be aware of **resistance** from established energy sector
- ▶ Broad renewable **technology mix** (PV, wind, biogas, biomass) according to the available resources
- ▶ Ensure **investment security** / No stop and go policies
- ▶ Ensure **grid access and grid integration** of rapidly growing shares of RE
- ▶ Provide **predictable** incentives, but avoid over-support
- ▶ The energy transition causes additional costs, but also huge **benefits for the economy** (jobs, avoided imports, energy security, independence, local value creation ...)
- ▶ **Distribute costs fairly** between stakeholders
- ▶ Closely **monitor development** and **adjust** if necessary



Next steps of the Energiewende

- ▶ **Coal** phase-out (decarbonization of energy sector)
- ▶ Energiewende in **heat sector** (buildings)
- ▶ Energiewende in **transport sector**
- ▶ **Sector coupling** (power, heat, transport)
- ▶ **Grid integration** of growing shares of renewables
- ▶ **Grid** modernization / expansion
- ▶ **Cross-border** interconnections
- ▶ **Electric mobility** and infrastructure

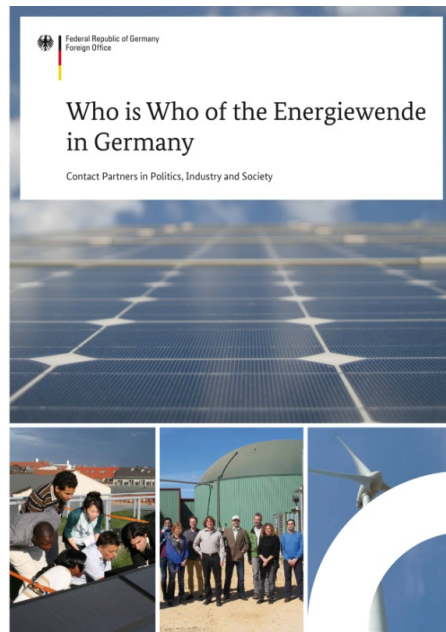


The Energiewende is a long term process with some challenges ahead.



Further information: „Who is Who” of the Energiewende

Brochure



<https://www.auswaertiges-amt.de>

Website



www.energiewende-global.com

The Foreign Office has published an information brochure, including profiles and contacts of major actors of the Energiewende in Germany. Now also Online.

Source: Foreign Office 2016

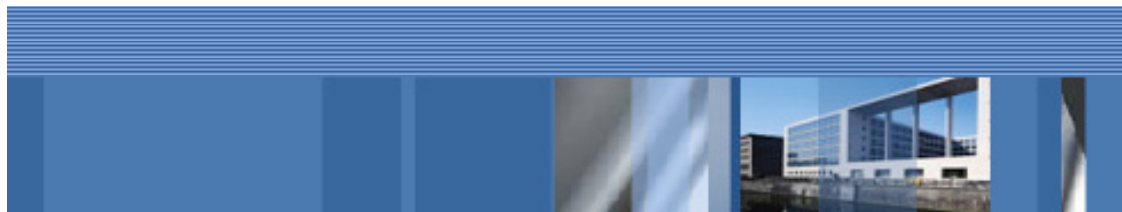


The Energiewende Exhibition

- ▶ The exhibition on Germany's Energiewende **travels the world** and visited over 20 countries so far.
- ▶ Exhibition was on display at the **University of Tel Aviv**, Porter School (May 24 – June 12, 2017)



Source: Foreign Office 2017



We believe in networking the Energiewende – Berlin Energy Transition Dialogue and the Green Sofa

- ▶ Annual **Berlin Energy Transition Dialogue** with 2000+ attendees
- ▶ Green Sofa visits international conferences - Follow our sofa on Twitter!



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THANK YOU

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