AUSTRIAN ENERGY AGENCY

NATIONAL UPDATE AUSTRIA 2015

IEA REWP68, Lausanne (CH)

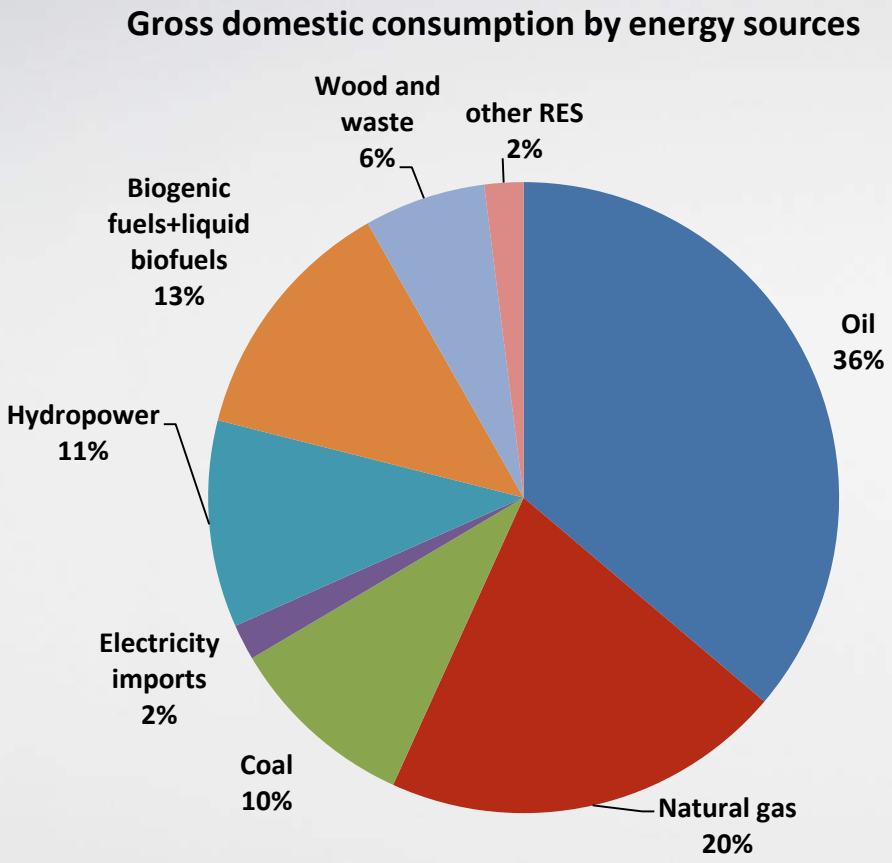
22 October 2015 // Andreas Indinger

AUSTRIAN ENERGY AGENCY

OUTLINE

- Energy in Austria
- Prices
- Meeting our targets & obligations
- Electricity generation, market and funding schemes
- Renewable energy: technologies & deployment
- Energy efficiency: monitoring and implementation in Austria
- R&D expenditures for energy technologies
- Challenges ahead

AUSTRIA – ENERGY CONSUMPTION 2013

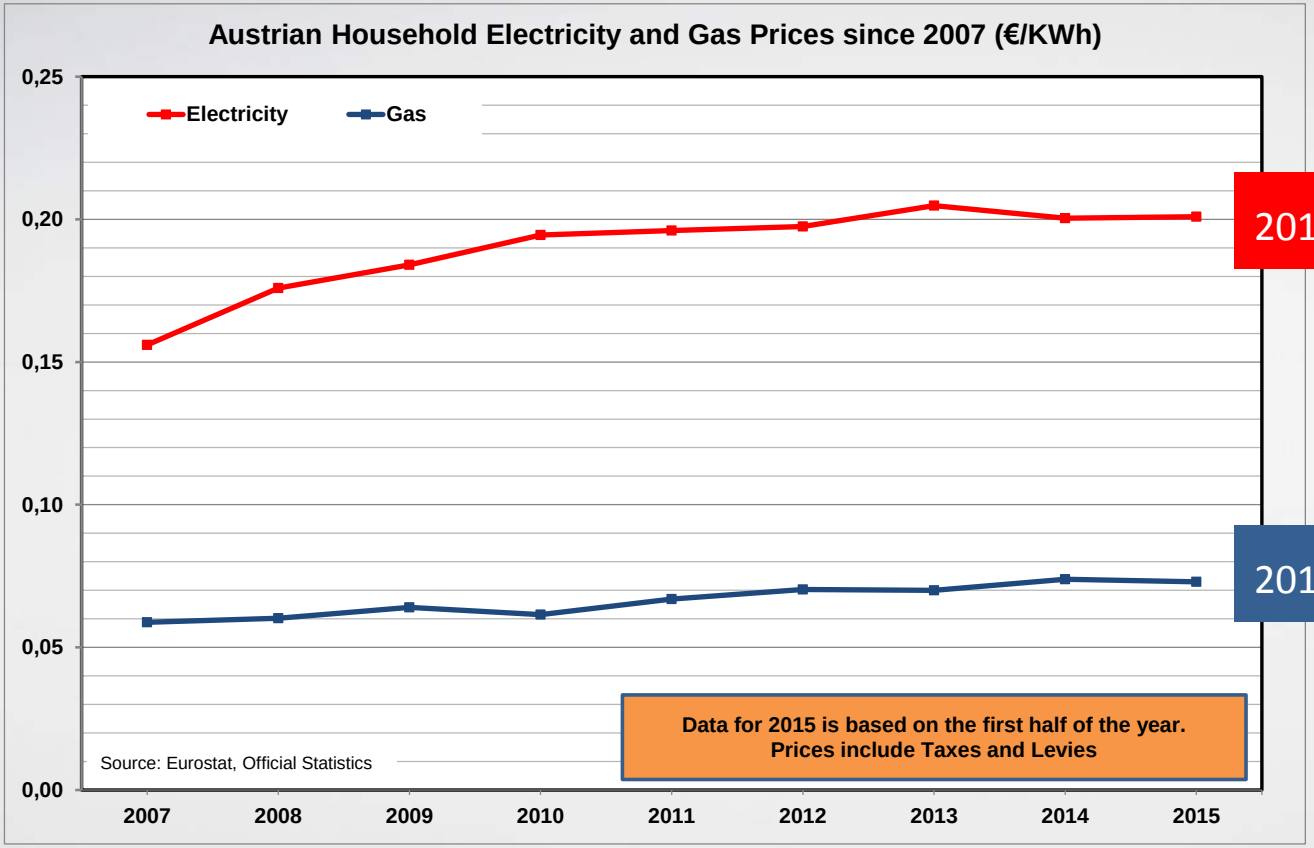


1,425 PJ

395.8 TWh

Source: Statistik Austria (2014)

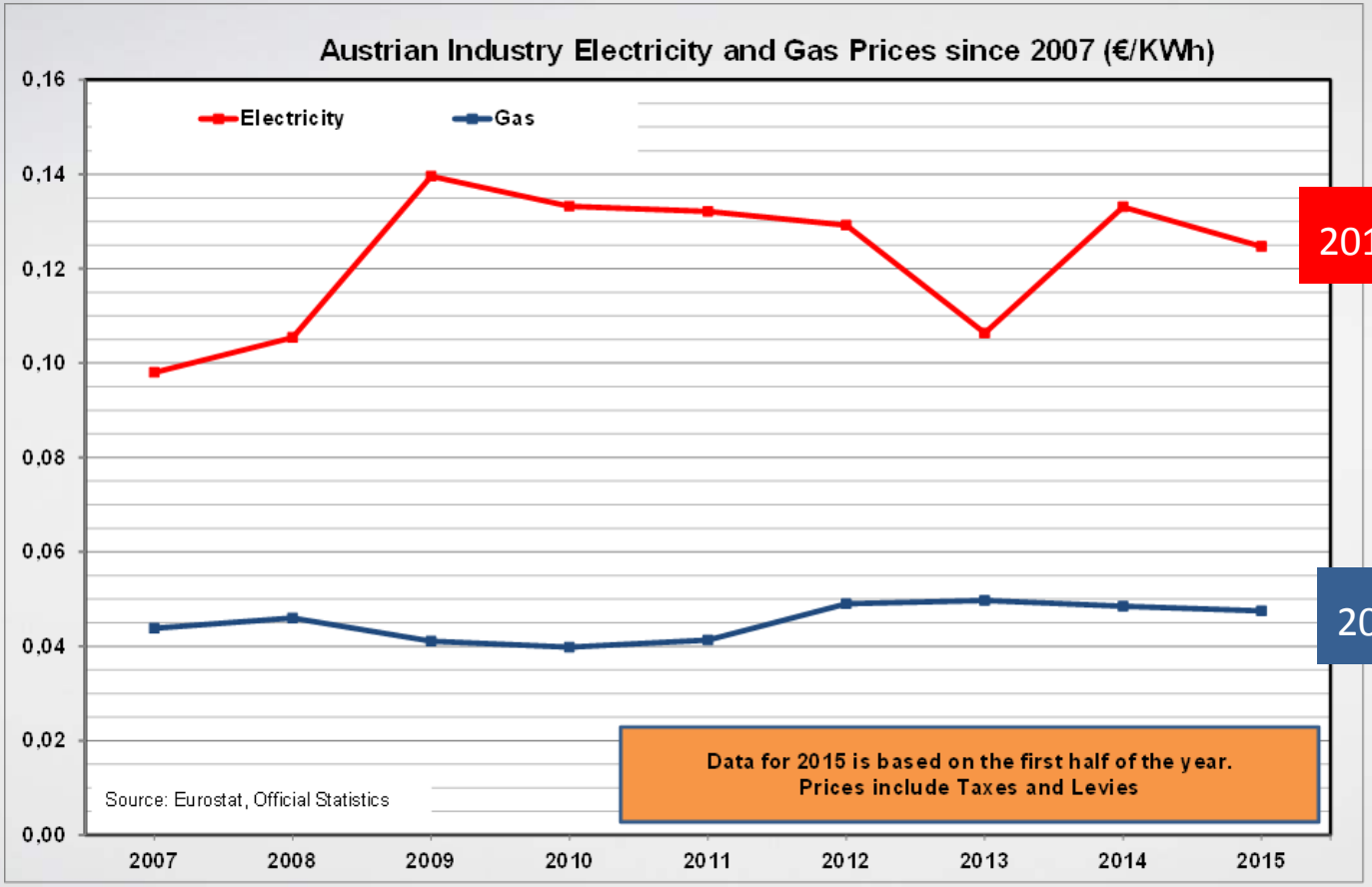
POWER & GAS PRICES (HOUSEHOLDS)



2015: 0.201€/KWh

2015: 0.073 €/KWh

POWER & GAS PRICES (INDUSTRY)



2015: 0.125 €/KWh

2015: 0.048 €/KWh

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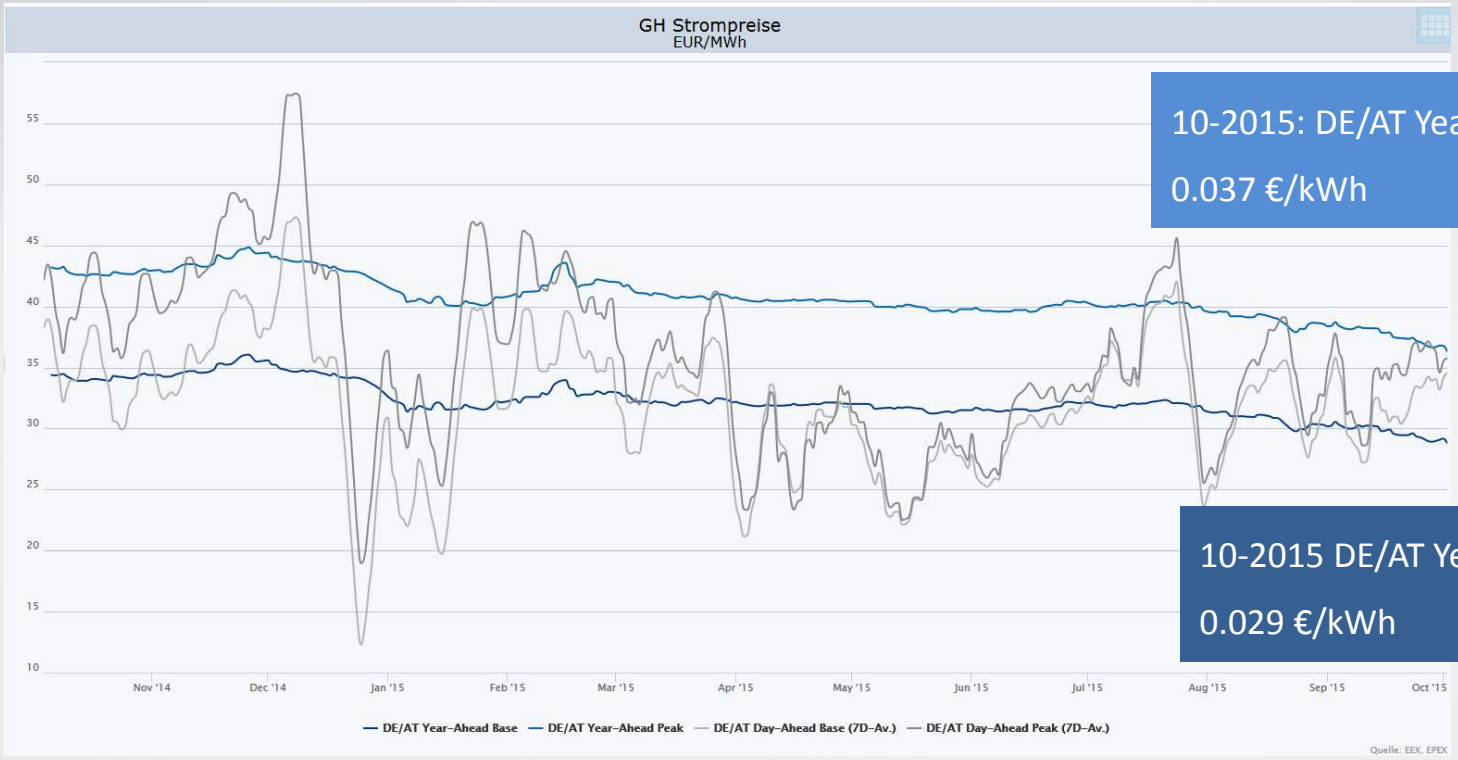
WHOLESALE PRICES ELECTRICITY



10-2015: DE/AT Year-Ahead Peak:

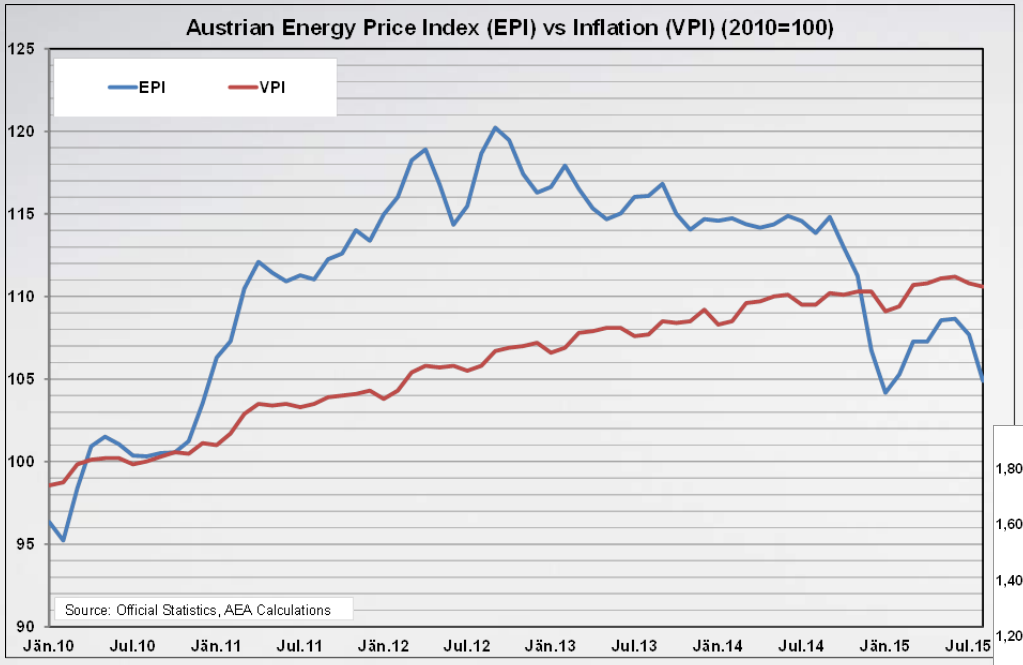
0.037 €/kWh

10-2015 DE/AT Year-Ahead Base:

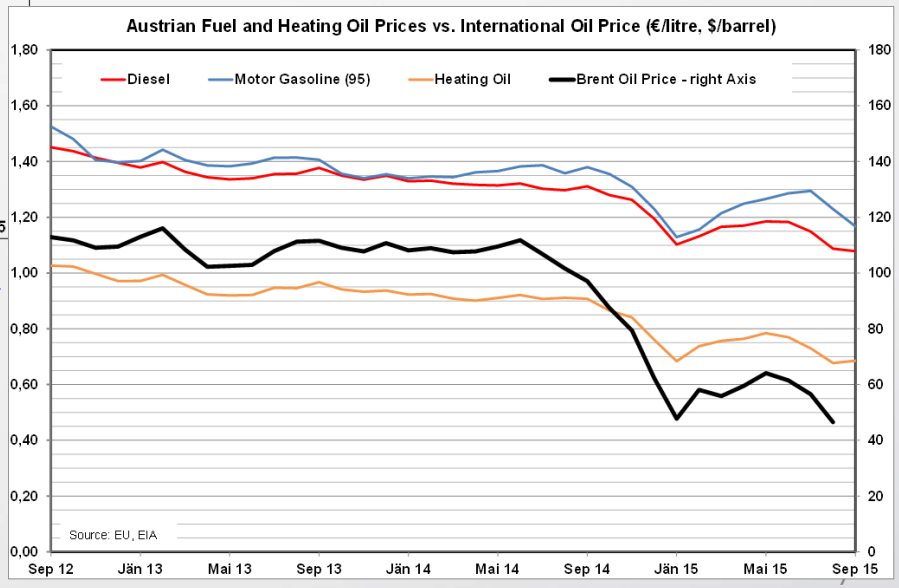
0.029 €/kWh

Source: http://www.e-control.at/industrie/strom/strompreis/grosshandelspreise (7.10.2015)

AUSTRIAN ENERGY PRICE INDEX EPI



EPI: http://www.energyagency.at/fakten-service/energie-in-zahlen/energiepreisindex.html



THE EU'S CLIMATE AND ENERGY TARGETS ("20-20-20 TARGETS")

Key targets by 2020:

- Reduction in EU greenhouse gas emissions of 20% below 1990 levels
- 20% of EU gross final energy consumption from renewable energies
- 20% reduction in primary energy use compared with projected levels, by improving energy efficiency

The EU climate and energy package became law:

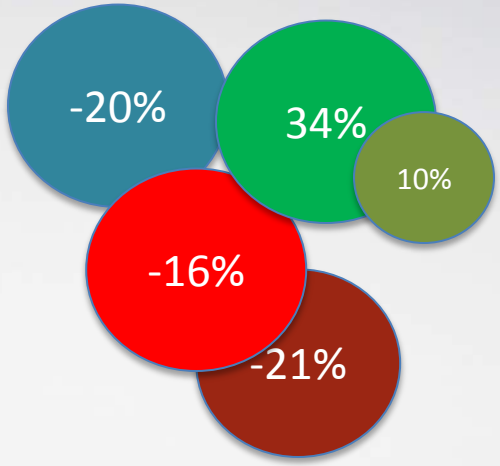
- EU Renewable Energy Directive (2009)
- EU Energy Efficiency Directive (2012)
- etc.

EU Renewable energy Directive 2009/28/EC

- EU Target for RES: 20% of gross final energy consumption until 2020
- National targets for EU Member States (burden-sharing)
- Target of 10% of RES in transport sector for all Member States
- National Renewable Action Plans (NREAPs) valid until 2020
- Cooperation mechanisms between member states and with third countries

TARGETS FOR AUSTRIA (EFFORT-SHARING)

- Contributing to EU targets
- **34%** of Austria´s gross final energy consumption from **renewable energies**
- **16% reduction** of GHG emissions in Austria's **non-ETS sectors**



But how are the targets interconnected, how will policies influence each other?

THE AUSTRIAN ENERGY STRATEGY (2010)

- 370 proposals of measures
- 9 guidelines for energy policy (diversification, long term, market & systematic approach, integration of R&D, efficient public support, use of limited resources, monitoring,…)
- **Key: Stabilizing the final energy consumption at 1,100 PJ in 2020**

AT-REAP PROGRESS

2005: **24.2% RES**

2010: **30.7% RES**

2013: **32.5%* RES** [Nr. 4 in EU28***]

RES-E: 67.0%* [Nr. 1 in EU28**]

RES-H&C: 33.5%**

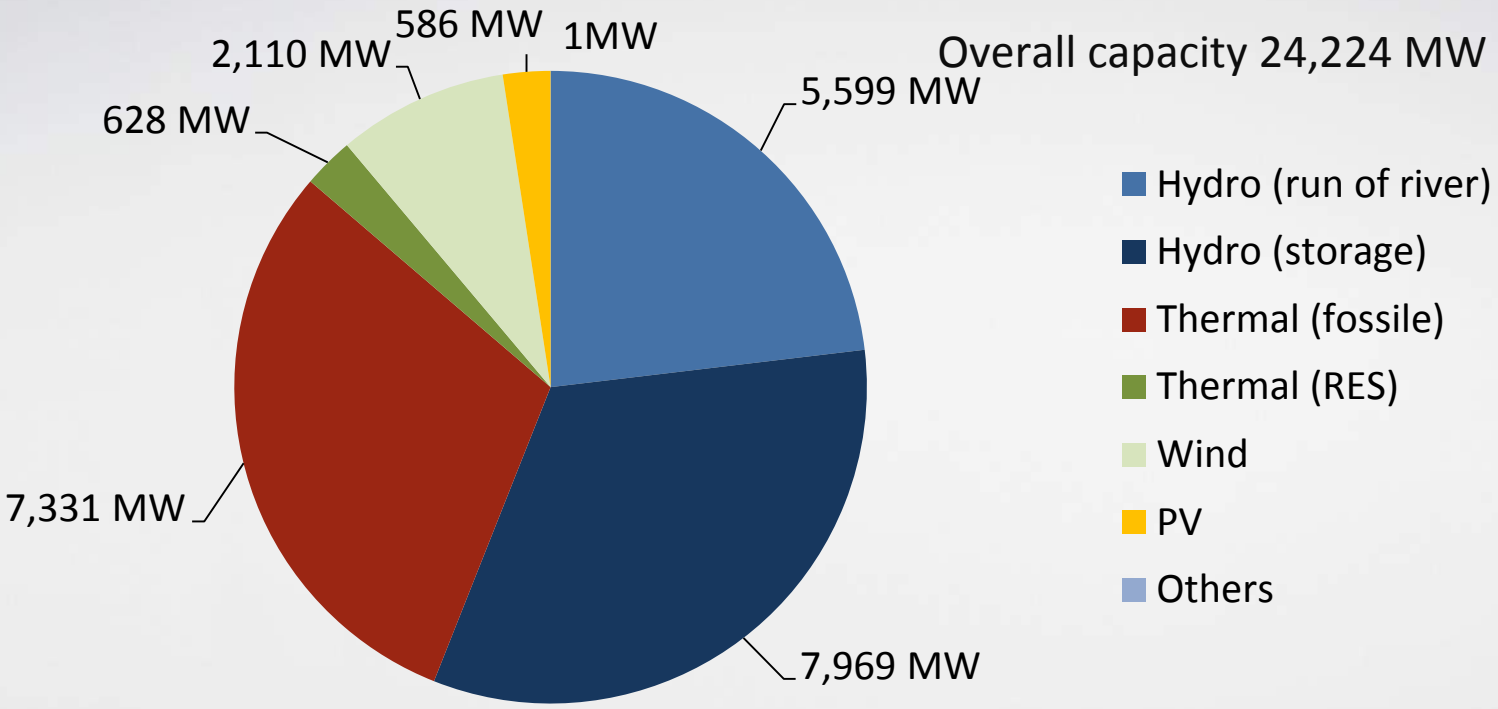
RES-T: 7.3%* incl. electricity

2020-target: 34% RES

"Denominator": gross final energy consumption (2013: 1,183 PJ)

Source: *Statistik Austria; **Eurostat; ***EC Renewable energy progress report (June 2015)

POWER PLANTS IN AUSTRIA INSTALLED CAPACITY - 2014



Source: E-control (2015)

ECO-ELECTRICITY ACT 2012

Targets for additional deployment (basis 2010)

	2015	**2020**
• Hydro power:	700 MW (3.5 TWh)	1,000 MW (4.0 TWh)
• Wind:	700 MW (1.5 TWh)	2,000 MW (4.0 TWh)
• PV:	500 MW (0.5 TWh)	1,200 MW (1.2 TWh)
• Biomass & Biogas:	100 MW (0.6 TWh)	200 MW (1.3 TWh)

Realized (additions) 2013

- Hydro power: 1.00 TWh 
- Wind: 0.98 TWh 
- PV: 0.49 TWh 
- Biomass & Biogas: 0.17 TWh 

Source: Statistik Austria, 2014; own calculations

FIT/INVESTMENT SUBSIDIES EEA2012 FOR NEW ACTIVITIES IN 2015

Technology	Eligible plant capacity	Annual amount available for support (million euros)	Investment subsidy (IS)	FIT (eurocent/kWh)	FIT duration (years)
PV only for at/on building*	5 - 200 kW	8	30%, max. 200€/kWpeak	plus 11,5 in addition to IS	13
Wind		11.5		9,27	13
Biogas, Biomass etc.		7+3		yes	15
Hydropower	<2MW	1.5		yes	13
Hydropower	2-20 MW	[16 M€ for <10 MW annual, plus multiannual pot of 50 M€ for 10 - 20 MW]extra	10%-30%,….		
Other (Geothermal,…)				yes	13
"remaining pot" for FIT for Wind, Hydro and PV		16		special conditions for PV (grid-parity tariff 5-20 kW)	
		Total excl. IS Hydro: 47 M€ in 2015, each year 1 million euros less		most FIT decrease by 1% annually	

* PV < 5kW: Investment subsidy by the Climate and Energy Fund
Extra legislation & budget for CHP

QUOTA/CONTINGENT FIT

(in euros)	from year before	1/2015 amount starting with	available support volume 7.10.2015
Wind	81,022	11,581,022	0
PV	1,105,152	9,105,152	0
Hydro	149,544	1,649,544	0
Biogas, solid and liquid biomass	1,625,094	8,625,094	0
Biomass solid <=500 kW	4,886,971	7,886,971	7,037,717
“remaining pot”	475,705	16,475,705	0

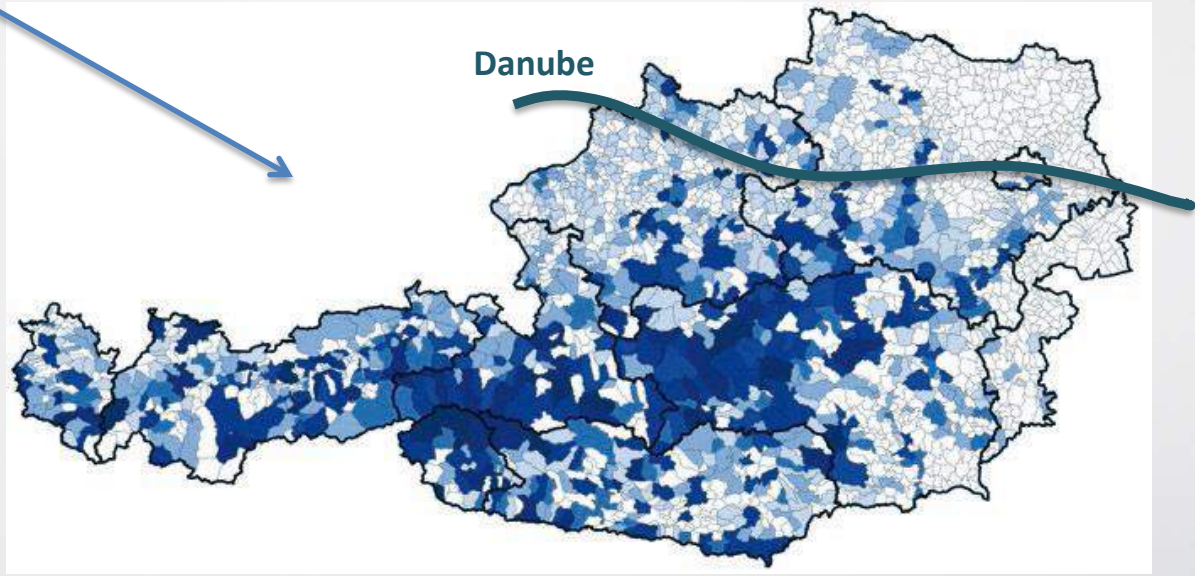
Data: OeMAG Abwicklungsstelle für Ökostrom AG http://www.oem-ag.at/de/foerderung/kontingent/

RUN OF RIVER HYDROPOWER

- About 100 large scale installations > 20 MW, biggest plants at Danube river: up to 330 MW
- Almost 3,000 small HPP (< 10 MW)

HPP Wallsee-Mitterkirchen, 210 MW; Picture: Verbund

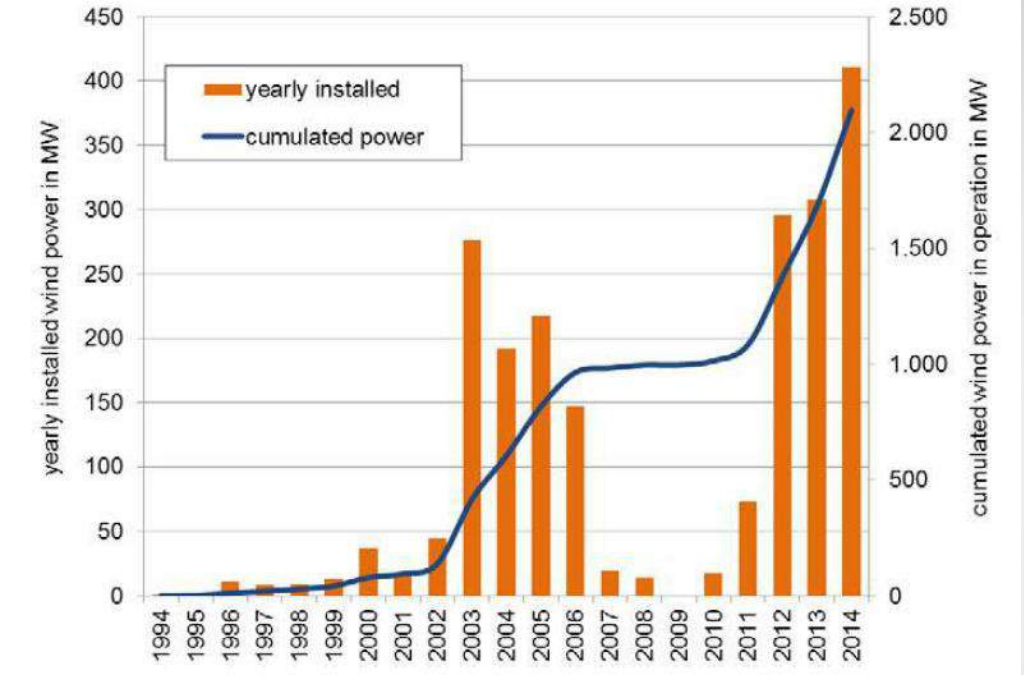
- Run of river hydro is the backbone of the electricity supply system
- Key technology providers (SMEs up to multinational companies)



Source: e-control (2014), small HPP, MW installed, Green electricity report 2014, own additions

WIND ENERGY TECHNOLOGY

- With the first Eco Electricity Law 1GW was reached in 2006
- End of 2014: 2.1 GW
- In 2014: 144 turbines with 411 MW installed, mostly 3MW class
- Expected in 2015: about 250 MW in addition (Source: IG Windkraft)
- Turnover of Austrian wind industry 661 million euros, more than half provided by manufacturing industry (about 160 companies with an export quota of 96% av.)
- More that 2,000 jobs in industry; 6,000 in total wind sector



Source: IG Windkraft , graph from Innovative Energietechnologien in Österreich - Marktentwicklung 2014

Source: Innovative Energietechnologien in Österreich - Marktentwicklung 2014
http://www.nachhaltigwirtschaften.at/iea/results.html/id8077

MARKET DEVELOPMENTS 2014

- **Biomass boilers & stoves** sales: over 12,000 boilers and 20,000 stoves; another year of substantial decline at home market; export rate 75% (biomass boilers); 3.800 jobs and a turnover of about 828 million euros
- Consumption of **solid biofuels** decreased: -16% to 150 PJ
- **Solar thermal collectors**: 5.2 million m^2 in operation (3.6 GW_{th}), but decrease of sales figures of 15%. Export rate was 82%; 2,300 jobs and a turnover of 255 million euros
- **PV**: 160 MW_{peak} installed this year (total 785 MW_{peak}); quite below rate of 2013, which was an all time high with more than 250 MW_{peak}; system price decreased to 1,752 Euro/kW_{peak} (av. 5 kW_{peak}); highly diversified PV industry in Austria, but no more cell production
- **Heat pumps**: increase of total sales by 1% to 14.293 (63% air/water type), mainly heat pumps for space heating now; 1/3 of production for export

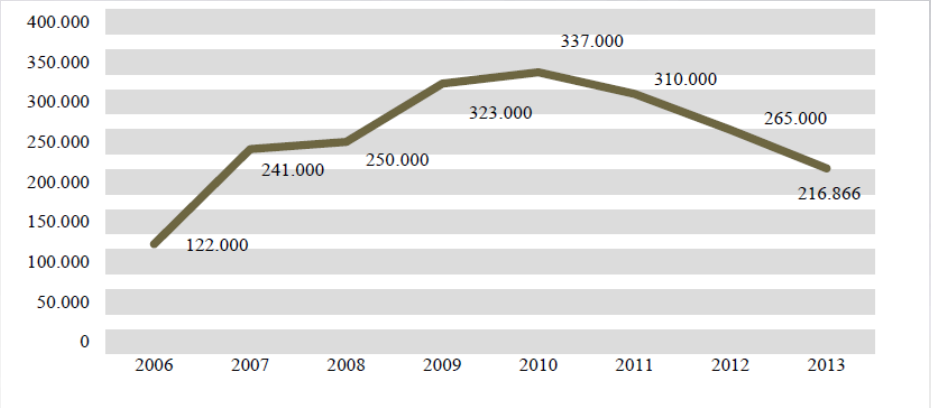
2014 started with a very mild heating season: "annual heating degree total 12/20" was:

- 19% below 2013,
- 21% below long-term average and
- lowest for decades!

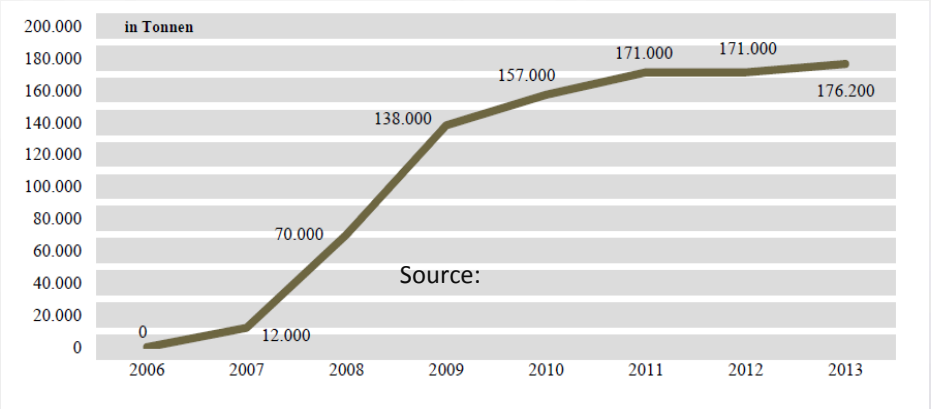
Source: Innovative Energietechnologien in Österreich - Marktentwicklung 2014
http://www.nachhaltigwirtschaften.at/iea/results.html/id8077

BIOFUELS IN AUSTRIA

- Biodiesel production in Austria: 216,866 tons in 2013 (44% of inland consumption), based on 72% rape seed
- One Plant produces bio-ethanol: 176.200 tons in 2013, out of maize and wheat
- Blending: 5.0 vol-% bioethanol, 7.0 vol-% biodiesel; support of fleets
- Small amounts of biogas for transport, via gas-grid or directly at plant
- Quota system, fiscal regulation mechanism
- Important sector for companies (plant design, technology and realisation)



Biodiesel production in Austria (tons, source BMLFUW, 2014)



Bioethanol production in Austria (tons, source BMLFUW, 2014)

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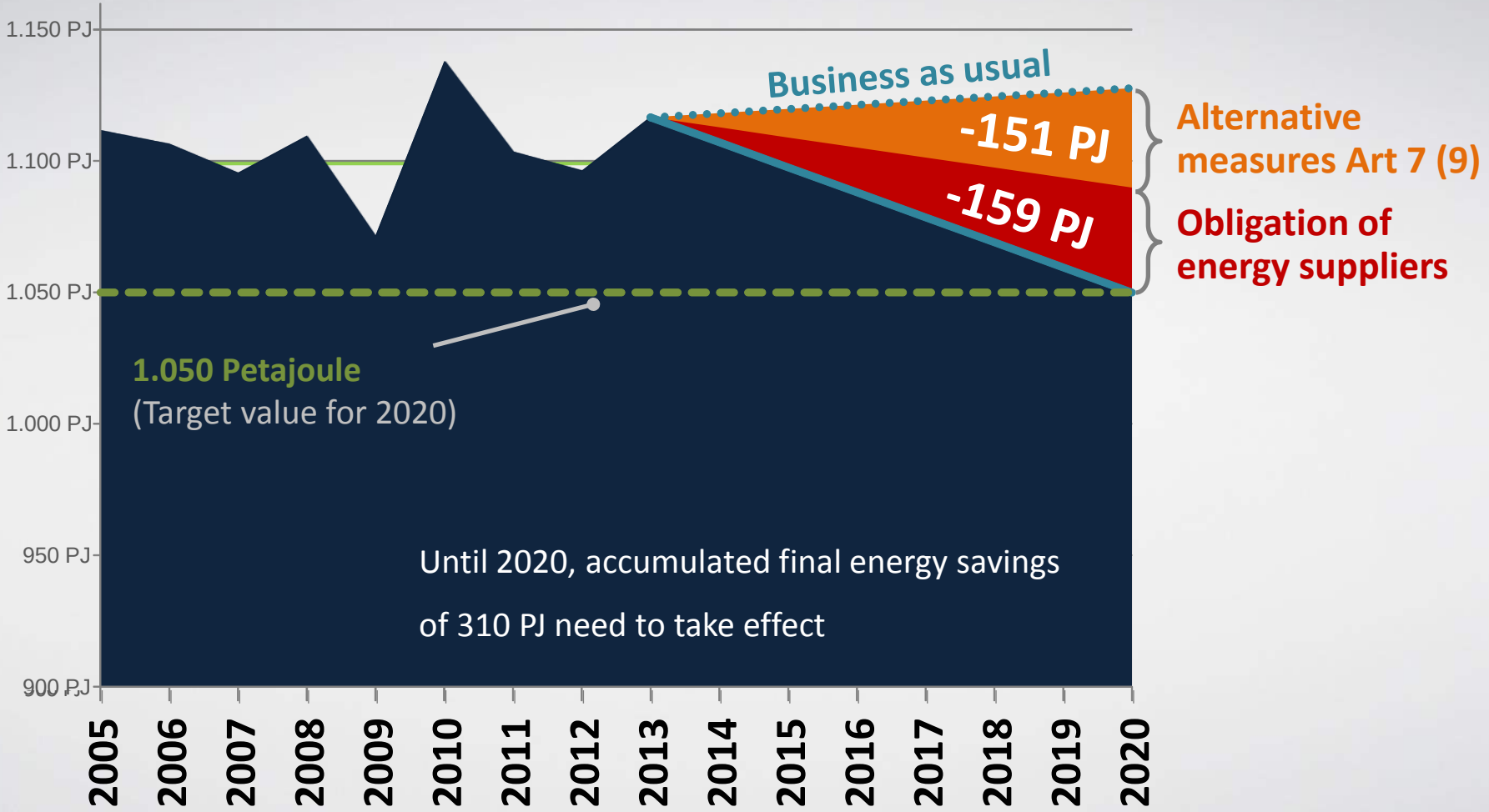
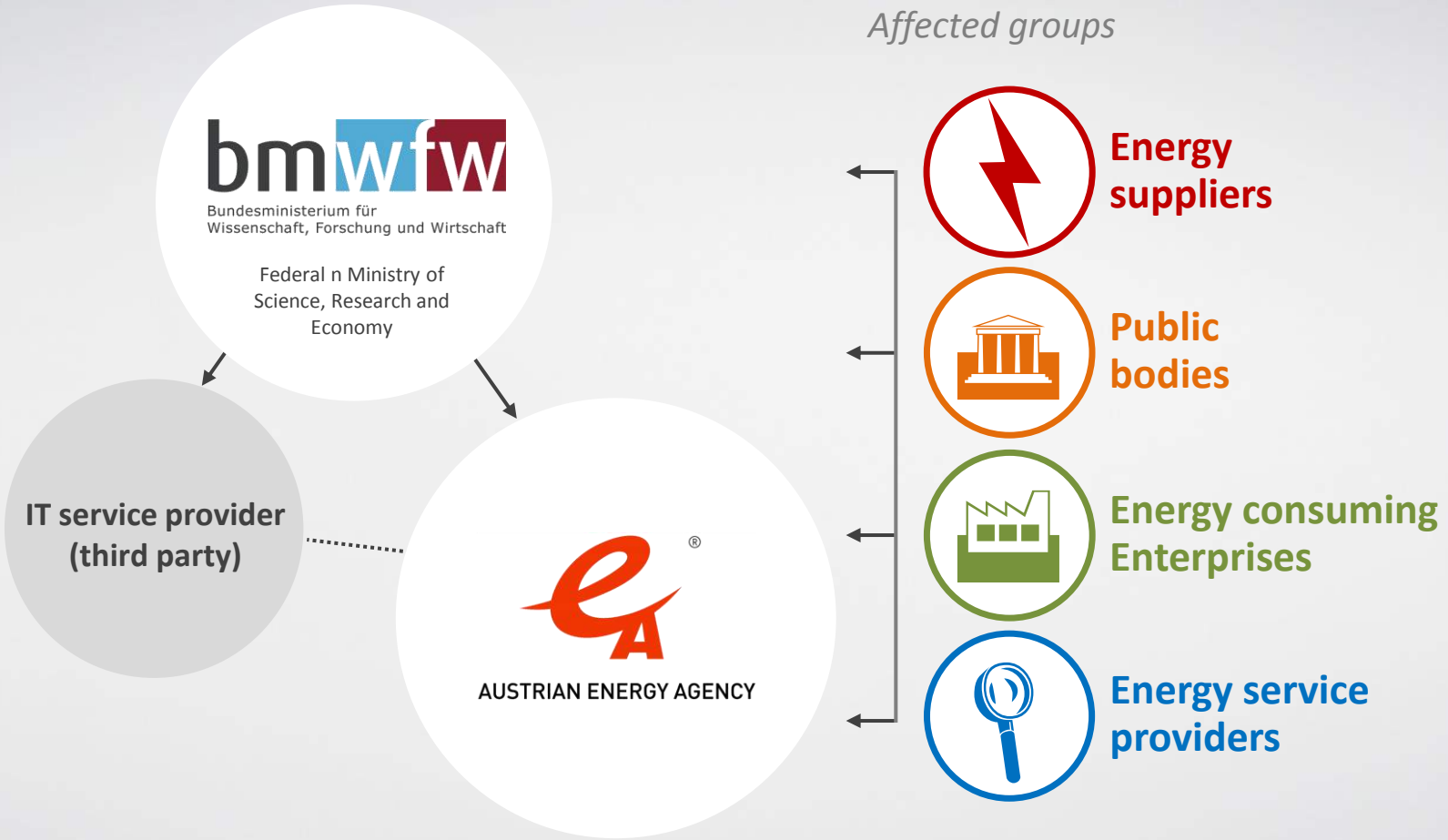
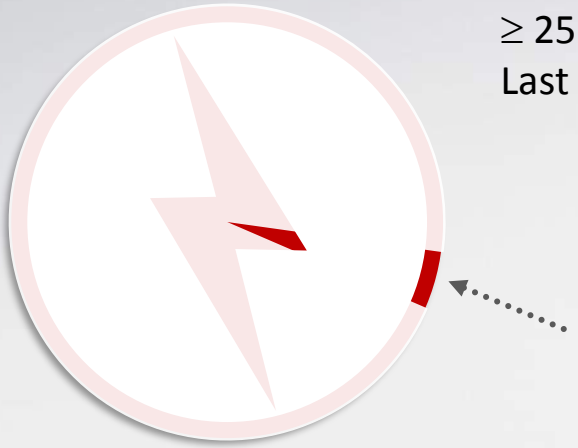
AUSTRIAN ENERGY EFFICIENCY ACT



THE MONITORING AGENCY IS FOCAL POINT FOR ALL OBLIGATED PARTIES



ENERGY SUPPLIERS



≥ 25 GWh
Last year‘s amount of final energy sold to customers in Austria

0,6 % End use energy savings to be reported

- Energy suppliers are required to set energy efficiency measures at own company, own customers or any other consumer
- Report energy efficiency measures on an annual basis
- A minimum of 40 % of all final energy savings are required to take effect in private households (energy use in regard to living space) or public transport

OBLIGATION OF LARGE ENTERPRISES AUDIT OR MANAGEMENT SYSTEM + AUDIT

Large Enterprises

Certified energy or environmental management system,
including an internal or 3rd party energy audit

OR

3rd party energy audit
at least every four years

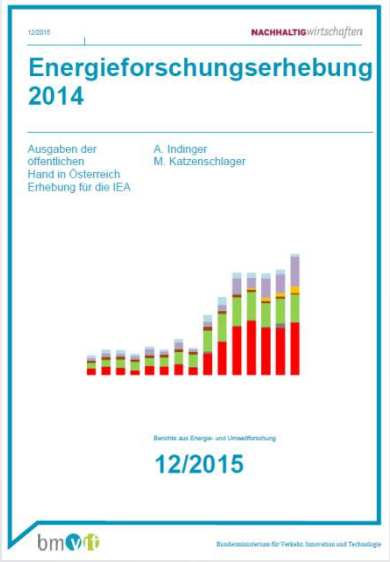
Until **30.11.2015**
the latest

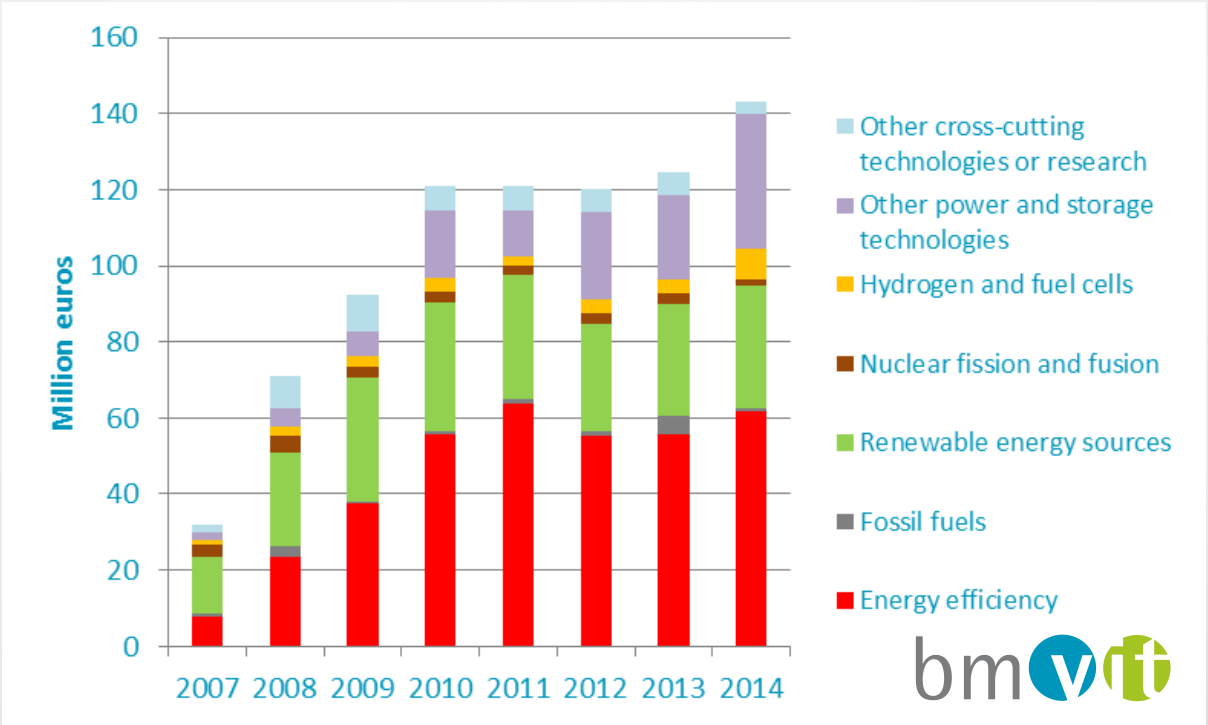
SME

Energy advice

AUSTRIA'S PUBLIC EXPENDITURES FOR ENERGY-RELATED R&D

- Expenditures amounted to 143.1 million euros in 2014
- Increasing the expenditures of 2013 by 15% and reaching an all-time high
- Annual survey carried out by the Austrian Energy Agency on behalf of the Federal Ministry of Transport, Innovation and Technology (BMVIT)
- http://www.nachhaltigwirtschaften.at/iea/publikationen/energieforschungserhebungen.html



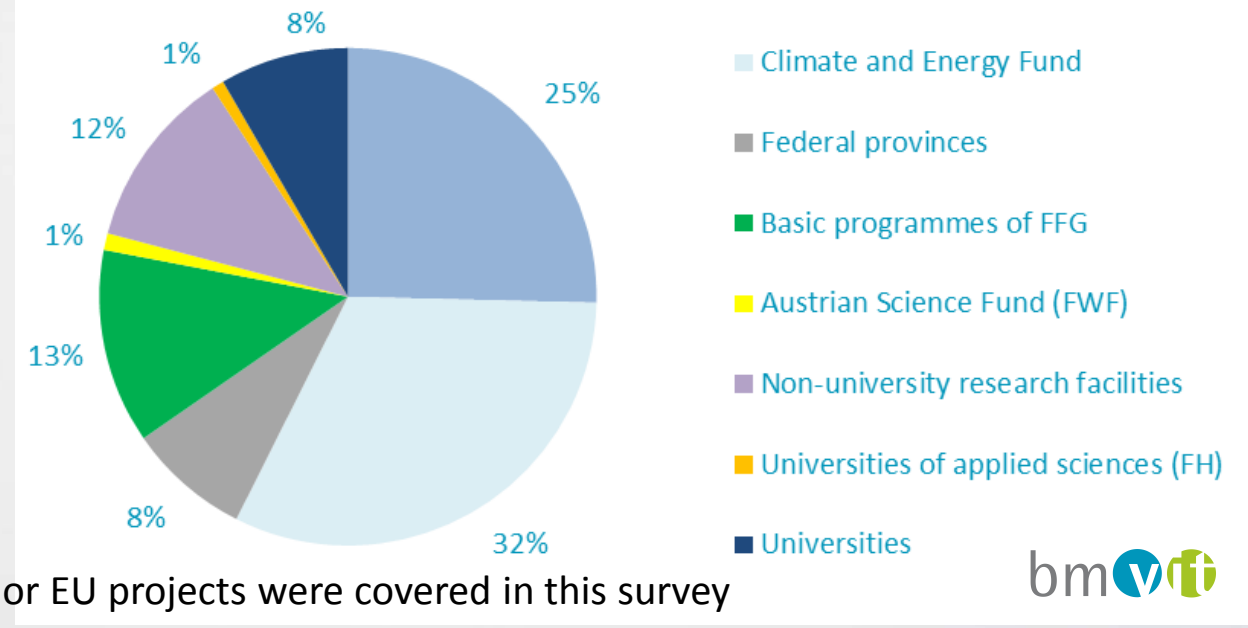


„TOP10“ 2014 IN R&D RECEIVED 78% OF THE MONEY

Ranking 2014	Change compared to 2013	Subcategory	2014 million euros (public funding)
1	+1	Electricity transmission and distribution - smart grids	21.5
2	-1	Efficient residential and commercial buildings	17.8
3	+2	Smart cities and communities	13.4
4	-1	PV	11.5
5	+3	Energy storage	11.5
6	0	Biofuels	9.4
7	0	Hybrid and electric vehicles	8.5
8	-4	Energy efficiency in industry	8.1
9	new in TOP10	Solar heating and cooling	5.1
10	new in TOP10	Fuel cells	5.1
2014 not any more in TOP10:		*Hydrogen, Hydropower*	

WHO WAS FINANCING R&D IN 2014?

- About 79% of expenditures were provided by governmental authorities (federal, regional, funding organizations)
- The remaining part came from (publicly funded) research institutions and universities provided in equity capital



- No third party financing or EU projects were covered in this survey

Source: Andreas Indinger, Marion Katzenschlager, Energieforschungserhebung 2014 – Ausgaben der öffentlichen Hand in Österreich. In: BMVIT (Hrsg.) Schriftenreihe 12/2015

SOME CHALLENGES AHEAD:

- Production of energy technologies: suppliers & sectoral technology leadership under worldwide competition
- Some technologies for heating under severe stress: price reductions, new technologies, new materials, new solutions & services necessary?
- R&D&I: system transformation requires system approach (technologies, business models and services)
- Implementation of energy efficiency legislation
- New targets for 2030 and a new Austrian Energy Strategy 2030
- Electricity:
  - Discussion about possible capacity limitations for trade at border AT-DE (total interconnection 5.5GW) due to lack of transport capacities in other regions/borders.
  - End of FIT for the first couple of biogas- and biomass plants and windpower effective in 2016 – what's their business model now?
- Etc.

CONTACT

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