

# Innovative Energy Technologies in Austria Development of Markets in 2017

presentation of results

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## Project Team

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bioenergy2020+



**IG WINDKRAFT**  
Austrian Wind Energy Association



Ordered by the Federal Ministry for Transport, Innovation and Technology

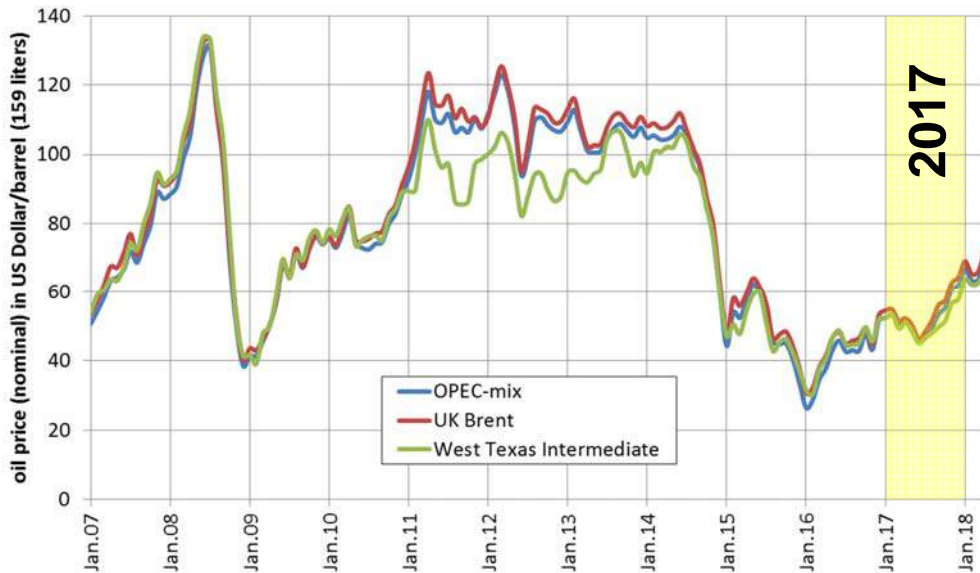
- goal of the study
- method and data
- side conditions 2017
- **solid biomass – fuels**
- **solid biomass – boilers and stoves**
- **photovoltaics**
- **solar thermal collectors**
- **heat pumps**
- **wind power**
- conclusions

- documentation of market development
- market analysis
- effects of market development
  - produced renewable energy
  - reduction of greenhouse gas emission
  - turnover and employment
  - innovations and trends
- target groups: energy policy makers, companies and R&D institutions

- **empirical investigations**  
producers, traders, installers, institutions,...  
standardised questionnaires, qualitative interviews,  
internet investigations
- **calculations**  
units in operation, produced energy, CO<sub>2</sub>-reduction,  
national economy effects
- **documentation and dissemination**  
report, free downloads, presentation, paper

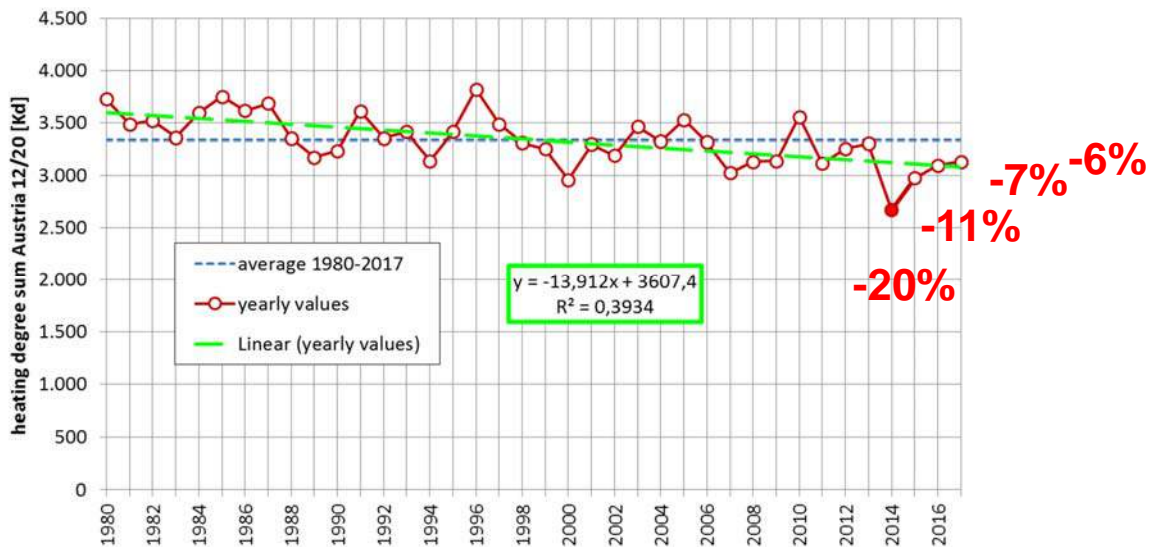
- **solid biomass – fuels**  
literature, national energy statistics, ProPellets Austria (32 producers),  
biomass association, interviews with selected traders
- **solid biomass – boilers and stoves**  
literature, NÖ LWK (45 companies), interviews (5 stove producers)  
interviews of subsidy allocating institutions, KPC
- **photovoltaics**  
questionnaires (250 producers, installers and R&D institutions),  
subsidy allocating institutions, KPC, OeMAG
- **solar thermal collectors**  
questionnaires (13 producers and traders), subsidy allocating institutions, KPC
- **heat pumps**  
questionnaires (35 producers and traders), subsidy allocating institutions, KPC
- **wind power**  
questionnaires (167 companies from supply and service sector plus 68  
operating companies, OeMAG etc.)

## Development of oil price (nominal)



Source: Mineralölwirtschaftsverband, www.mwv.de

## Weather: 4 warm heating periods 2014-2017!



Source: Statistik Austria

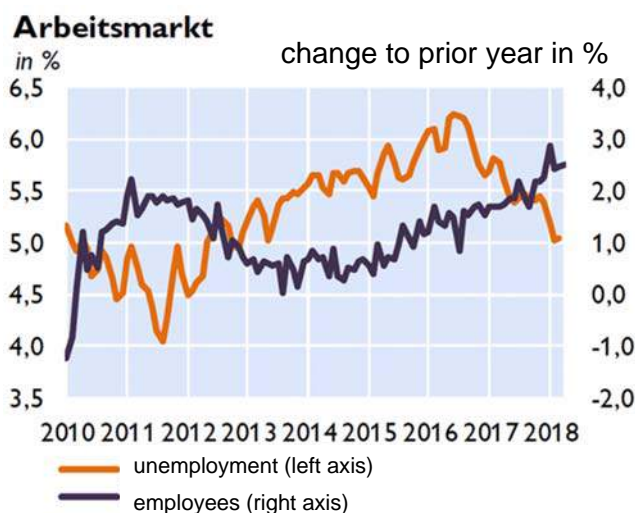
## Economic activity / real GDP



Economic growth 2017: gross investments, net exports and private consumption

Source: Österreichische Nationalbank

## Employment and unemployment in Austria



**2016 → 2017:**  
**EU: 8.5 % → 7.6 %**  
**AT: 6.0 % → 5.5 %**  
 (def. Eurostat)

Source: Österreichische Nationalbank

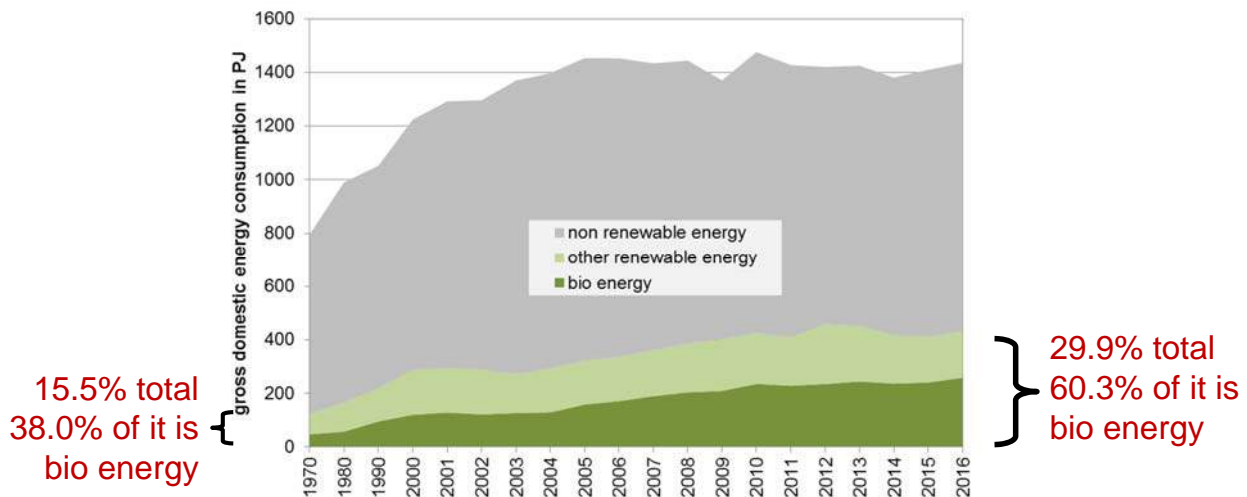
## incentive programmes

- public subsidies
  - *subsidies of the federal states (e.g. residential building subsidies,...)*
  - *subsidies of KPC (nonresidential sector)*
  - *feed in tariffs*
- private subsidies
  - *tariff subsidies (e.g. electricity for heat pumps)*
  - *investment subsidies (e.g. subsidies for new oil fired boilers granted by the Austrian oil industry)*

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## Solid Biomass – Fuels

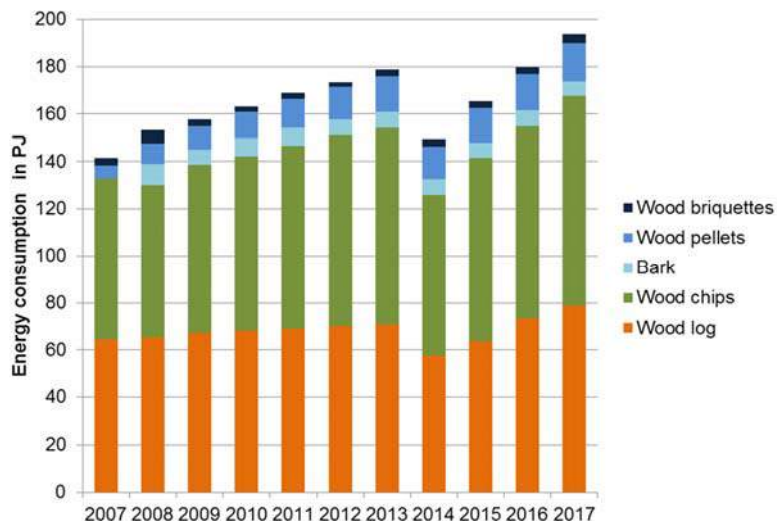
### renewable energy in gross domestic consumption



Source: Statistik Austria, remark: latest data of 2016

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## solid biomass: ingredients

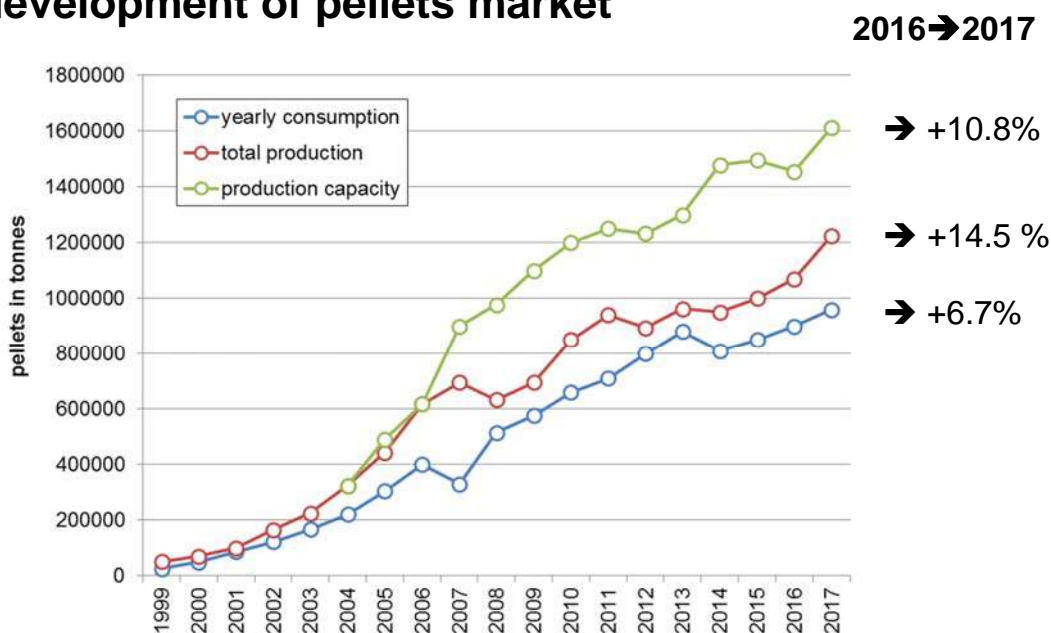


**2016 → 2017:**

briquettes:	+25,6 %
pellets:	+6,7 %
bark:	-9,1 %
chips:	+8,7 %
log:	+7,6 %
<b>total:</b>	<b>+7,7 %</b>

Source: BIOENERGY 2020+

## development of pellets market



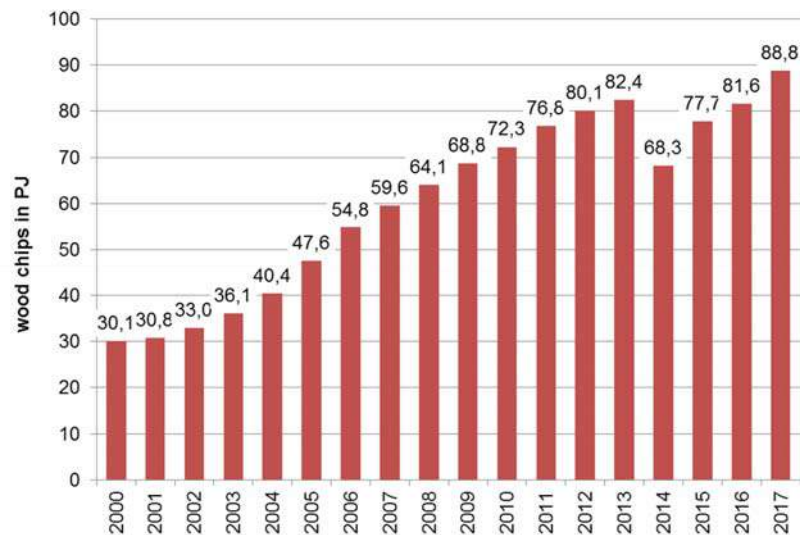
**2016 → 2017**

→	+10.8%
→	+14.5 %
→	+6.7%

Source: data: ProPellets Austria, BIOENERGY 2020+



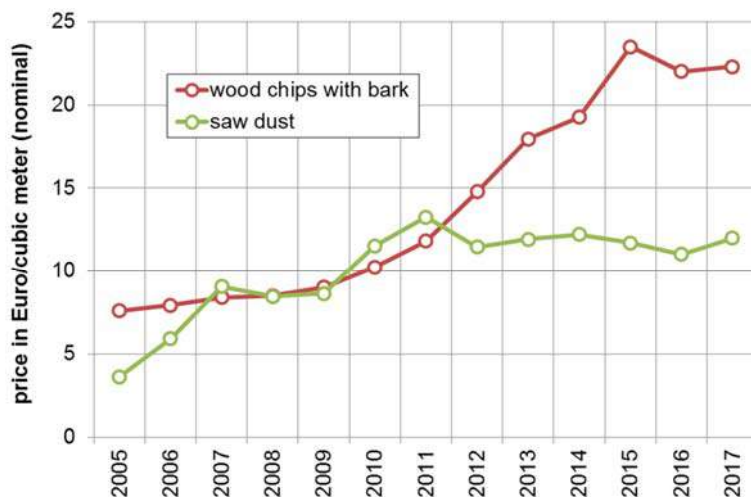
## market development wood chips



2016 → 2017:  
+7.2%

Source: BIOENERGY 2020+

## price development of wood chips and saw dust



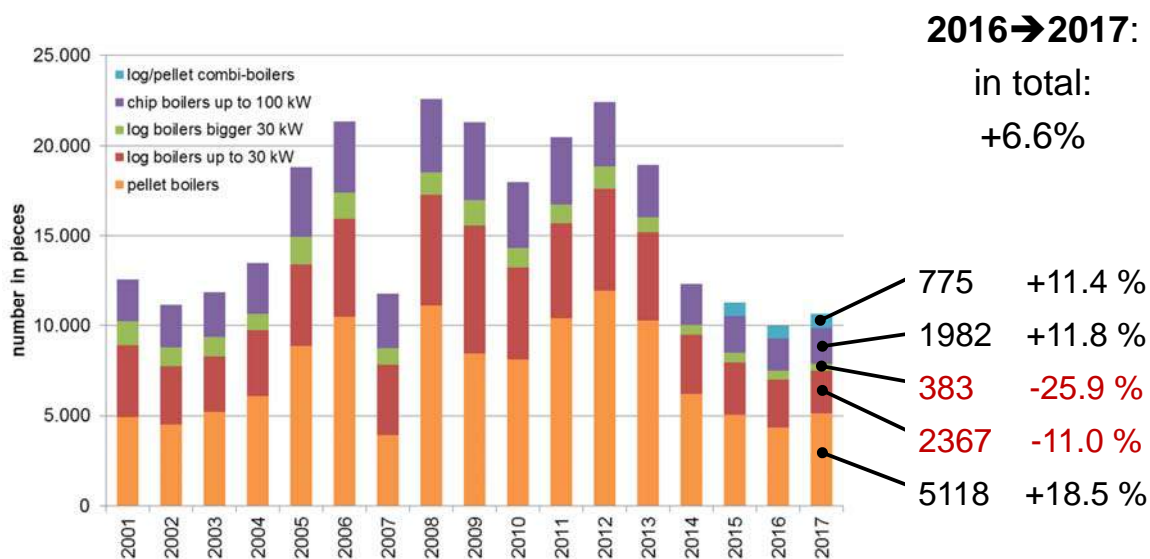
Sources: Wiener Börse, Statistik Austria, Bioenergy 2020+



## national economy indicators 2017

- energy produced: 194.7 PJ
- CO<sub>2</sub>-reductions: 10.2 million t
- turnover: 1.606 million €
- jobs: approx. 19,000
- trade balance: 1,214,596 t import
- trend: ↗

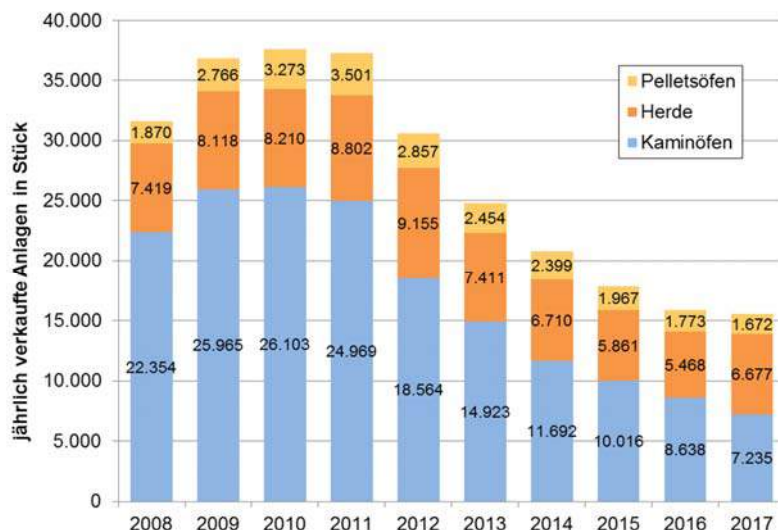
## market development of biomass boilers



Source: data: Landwirtschaftskammer NÖ

# Solid Biomass – Boilers and Stoves

## market development of biomass stoves



**2016 → 2017:**

Pelletsöfen:	-5.7 %
Herde:	+22.1 %
Kaminöfen:	-16.2 %
<b>Total:</b>	<b>-1.9 %</b>

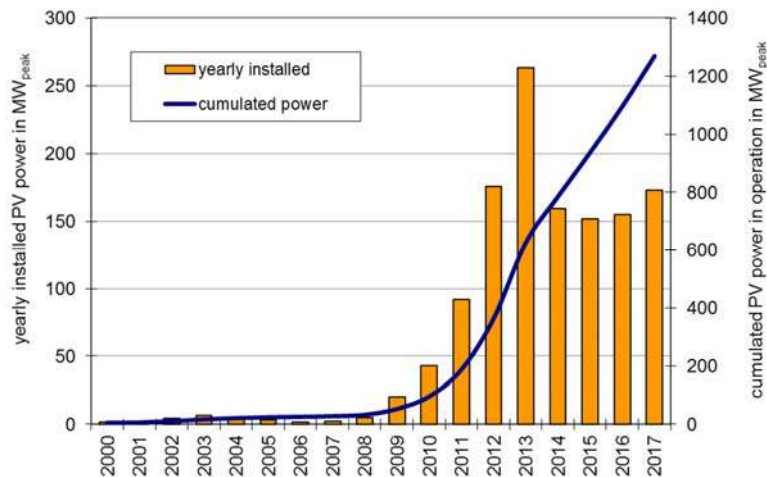
Source: BIOENERGY 2020+

# Solid Biomass – Boilers and Stoves

## national economy indicators 2017

- turnover: 863 million €
- jobs: 3,600 full time equivalent
- CO<sub>2</sub>-savings: 10.2 million t
- export rate: 80 %
- trend: →

## development of home market



**2017 installed**

netzgek.: 172.5 MW<sub>p</sub>  
autark: 0.5 MW<sub>p</sub>  
total: 173 MW<sub>p</sub>  
2016 → 17 +11.0 %  
cumulated: 1,269 MW<sub>p</sub>

Source: Faninger (2007), Technikum Wien GmbH

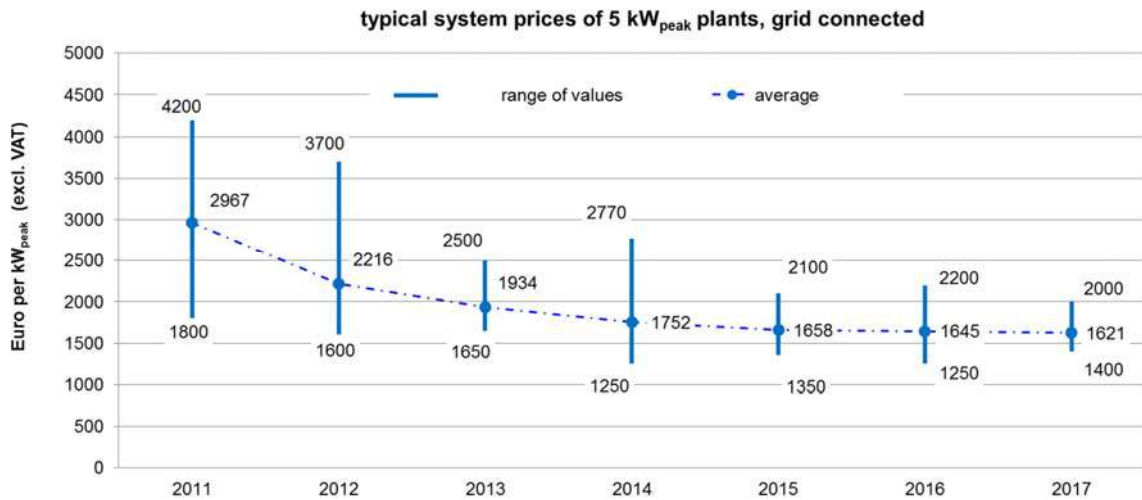
## PV-module production 2017 in Austria:

production in Austria:	99.9 MW <sub>peak</sub>	-1.4 %
export:	54.3 MW <sub>peak</sub>	+47.3 %
home market:	173.0 MW <sub>peak</sub>	+11.0 %

## Inverter production 2017 in Austria:

production in Austria:	1,959 MW <sub>peak</sub> (+38%)
export rate:	93%

## Development of PV system prices



Source: FH Technikum Wien

**2016→2017: -1.5 %**

**2011→2017: -45.4 %**

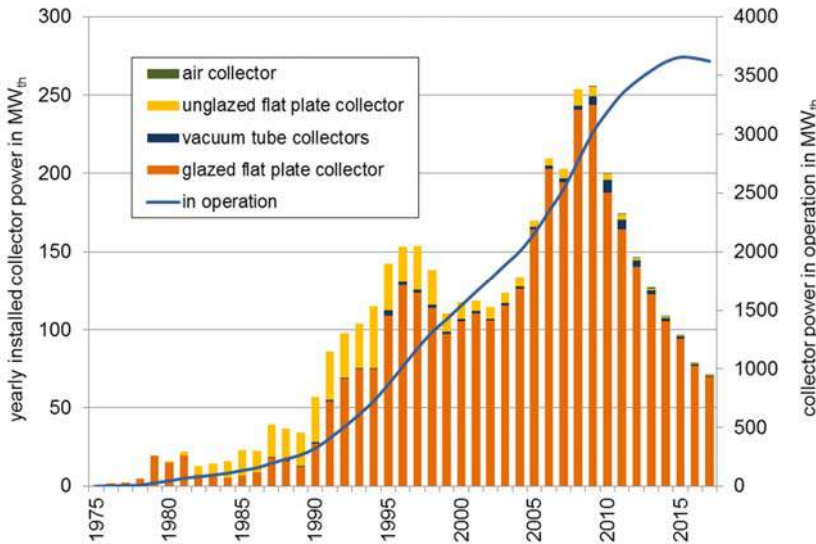
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## national economy indicators 2017

- electricity production: 1,269 GWh
- CO<sub>2</sub>-savings: 377,392 t
- turnover: 527 Mio.€
- jobs: 2,800 full time equivalent
- export rate PV-modules: 54 %
- export rate inverter: 93 %
- trend: ↗

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## development of home market



Source: Faninger (2007), AEE INTEC

### sales figures

2017:

71.1 MW<sub>th</sub>

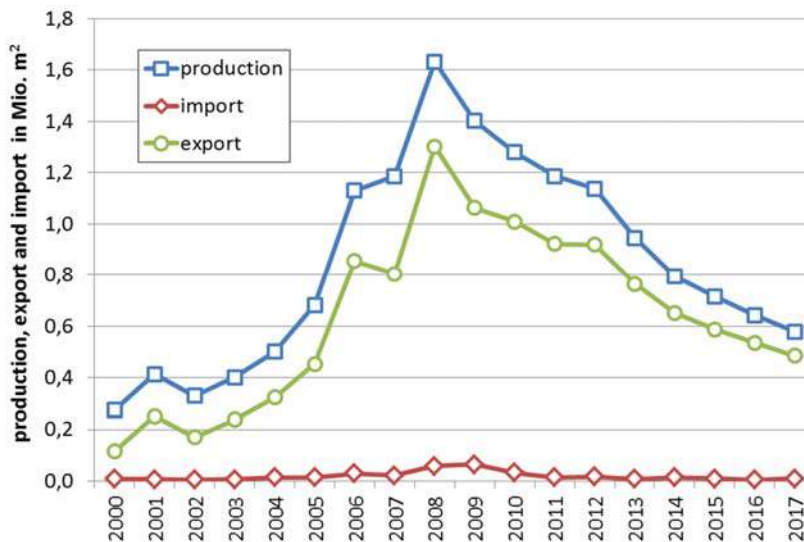
2016 → 2017:

-9.1 %

stock:

-0.7 % (!)

## solar thermal collector market 2017



Source: Faninger (2007), AEE INTEC

### production:

0.58 mio. m<sup>2</sup>

-10.0 %

### export:

0.49 Mio. m<sup>2</sup>

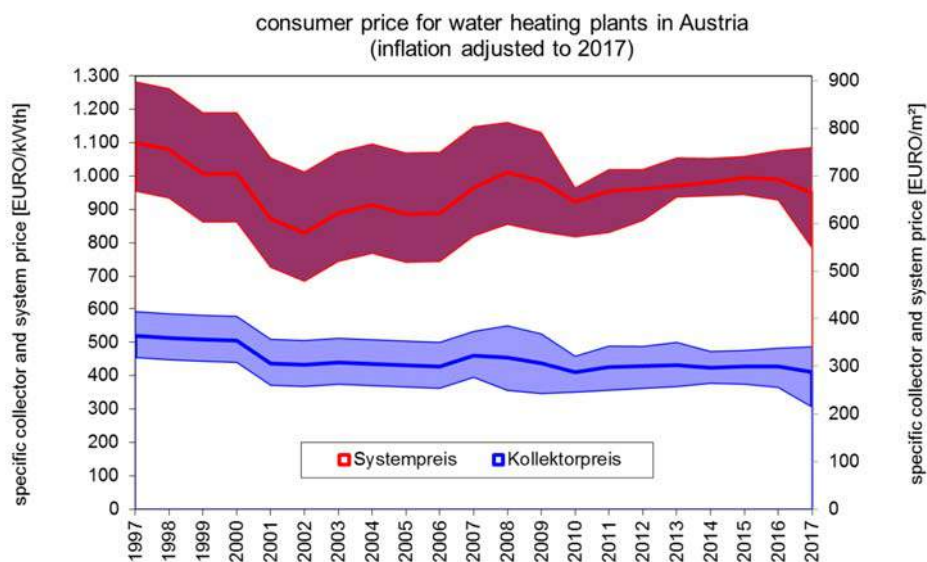
-9.3 %

### import:

0.01 Mio. m<sup>2</sup>

+73.2 %

## development of collector and system prices



Quelle: AEE INTEC

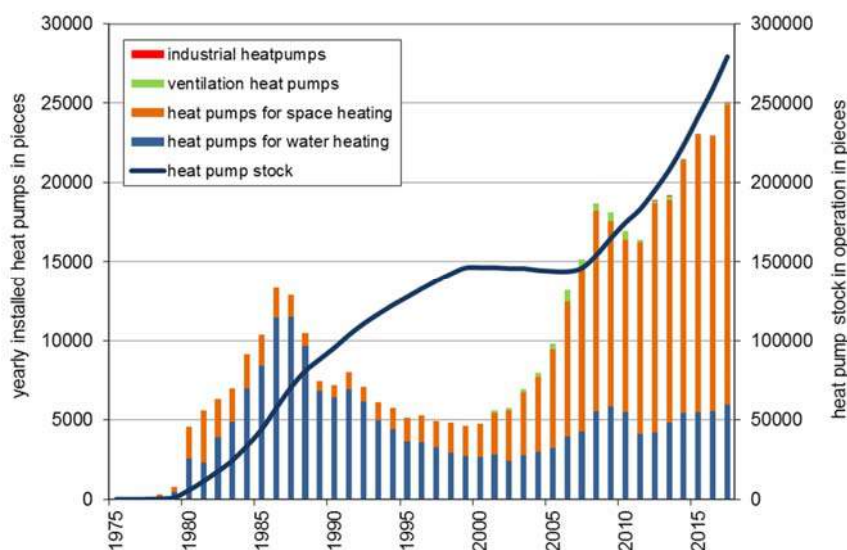
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## national economy indicators 2017

- heat production: 2,121 GWh<sub>th</sub>
- CO<sub>2</sub>-savings: 408.704 t
- turnover: 390 Mio.€
- jobs: 1,500 full time equivalent
- export rate: 84%
- trend: ↘

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## development of home market



**2016→2017:**  
+9.1 %

source: Faninger (2007), EEG

## market development 2017

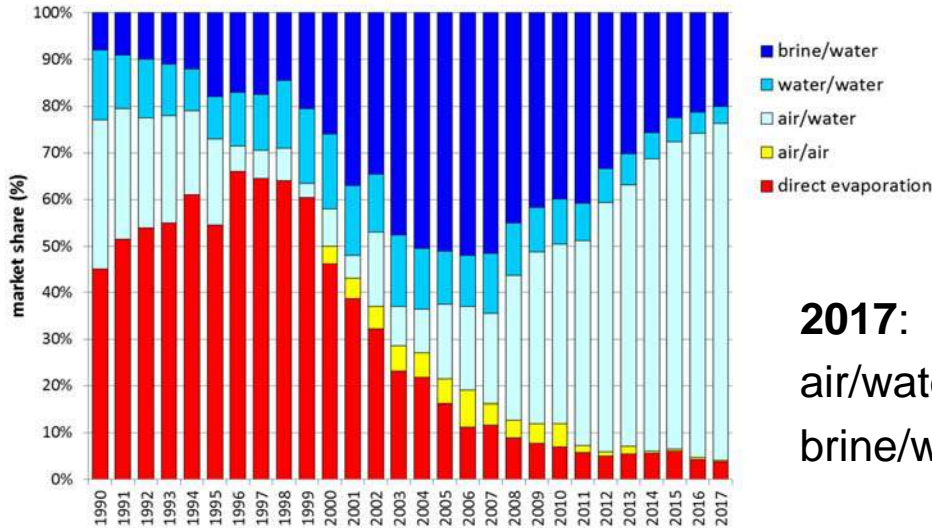
total sales:	36.446 Stk.	+10,1 %
export:	11.427 Stk.	+12,5 %
home market (A):	25.019 Stk.	+9,1 %
in operation (A):	279.269 Stk.	+7,7 %

## market development 2017 by type

heating / combined (AT):	18.919 Stk.	+9,3 %
heating / combined (exp.):	9.631 Stk.	+17,5 %
water heating (AT):	5.985 Stk.	+7,7 %
<b>water heating (Exp):</b>	<b>1.775 Stk.</b>	<b>-8,5 %</b>



## heat sources in Austria



**2017:**

air/water: 72.1 %

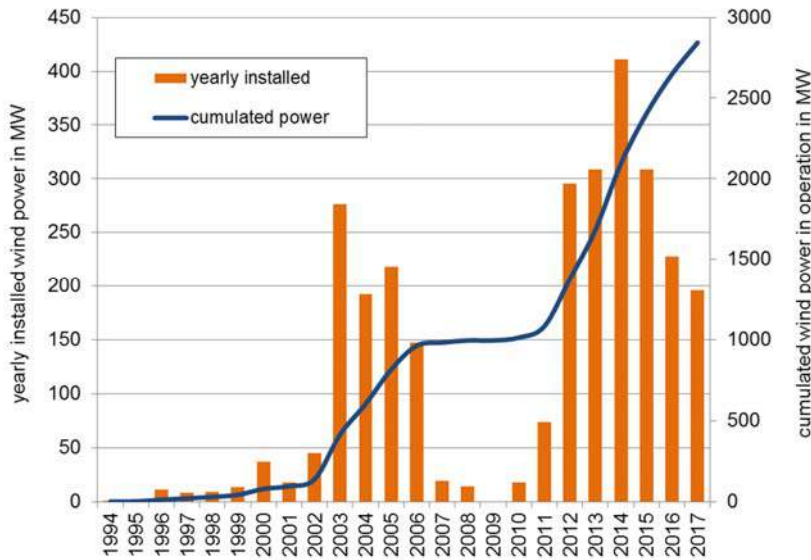
brine/water: 20.1 %

source: EEG

## national economy indicators 2017

- ambient heat: 2,614 GWh<sub>th</sub>
- CO<sub>2</sub>-savings (net value): 608,995 t
- turnover: 583 Mio.€
- jobs: 1,388 full time equivalent
- export rate: 31%
- trend: ↗

## development of home market



**newly installed**

**2017:**

196 MW

-14.2 %

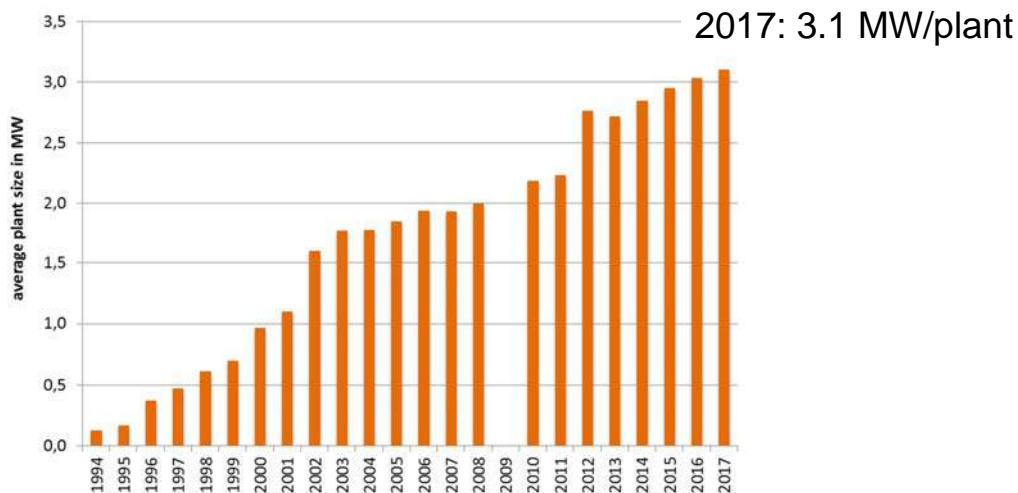
**stock:**

2.8 GW

+7.4 %

source: IG Windkraft

## plant size in home market



Source: IG Windkraft

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## national economy indicators 2017

- electricity produced: 7,000 GWh<sub>el</sub>
- CO<sub>2</sub>-savings (net value): 1,9 Mio. t
- turnover: 1,005 mio.€
- jobs: 4,400 full time equivalent
- export rate: 90 % (components industry)
- trend: ↘

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## Summary (1)

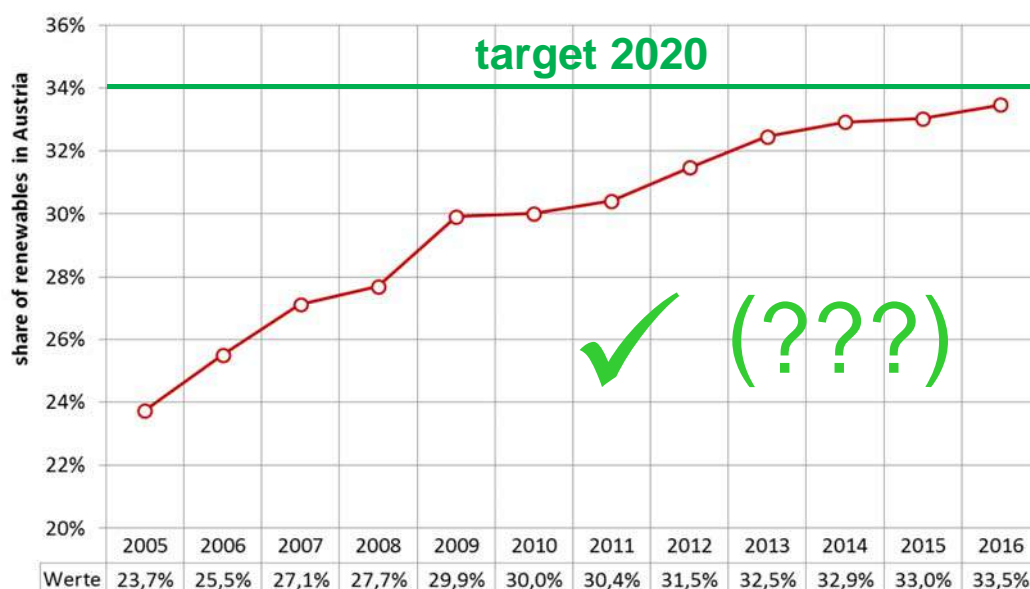
- Macroeconomic framework 2017 was optimistic
- Weather was normal
- Persistently lower, but again slightly rising oil prices
- Competition among renewables (solar thermal energy - photovoltaic - biomass - heat pump)
- Plant stock is getting old, confirmation of innovation is becoming a key issue (solar thermal, biomass)

## Summary (2)

trend of new capacity	14/15	15/16	16/17
solid biomass - fuels	↗	↗	↗
biomass boilers and stoves	↘	↘	→
biofuels	↗	↘	?
biogas	↘	↘	?
geothermal heat	0	0	0
photovoltaic	↘	→	↗
solar thermal	↘	↘	↘
heatpumps	↗	→	↗
hydro power	→	→	↘
wind power	↘	↘	↘

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## Conclusions (1)



source: Statistik Austria (2017)

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## Conclusions (2)

- The current market development of renewables is not sufficient to meet the targets 2020/2030/2050!
- Urgent energy policy action is needed in the dimensions **e**lectricity/**h**eat and **s**hort/**m**edium/**l**ong term:
  - ❖ **es**: Effective green electricity legislation amendment (wind power, PV, biomass thermal coupling,...)
  - ❖ **em**: optimized tools for maximum impact of available funds
  - ❖ **el**: EU-wide reorganization of the entire electricity market to a market of renewable energy

## Conclusions (3)

- ❖ **hs**: Development of a heat strategy with binding expansion targets for renewable energy
- ❖ **hs**: Further support for biomass heating systems (individual, communal or grid-connected)
- ❖ **hs**: Federal ban on the new installation of oil boilers in new buildings and in the renovation market
- ❖ **hm/l**: Increase in the renewable share of district heating (biomass, solar thermal, geothermal)
- ❖ **hm/l**: Measures to activate the renovation market
- ❖ **hm/l**: Long-term strategy for substituting natural gas with renewables

## **We thank you for productive co-operation:**

- Austrian companies
- Austrian technology associations
- Subsidy allocating institutions
- Provincial energy departments
- R&D institutions involved

## **Thank you for your attention!**

the final report on the web:

<http://www.nachhaltigwirtschaften.at/iea/publikationen/markterhebungen.html>