Innovative Energy Technologies in Austria
Development of Markets in 2017

presentation of results

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Content of Presentation

- goal of the study
- method and data
- side conditions 2017
- solid biomass – fuels
- solid biomass – boilers and stoves
- photovoltaics
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- wind power
- conclusions

Goal of the Study

- 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
Method

- empirical investigations
  producers, traders, installers, institutions, ...
  standardised questionnaires, qualitative interviews, internet investigations

- calculations
  units in operation, produced energy, CO₂-reduction, national economy effects

- documentation and dissemination
  report, free downloads, presentation, paper

Data

- 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

changes to the quarter/year before (%)

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

15.5% total
38.0% of it is bio energy

29.9% total
60.3% of it is bio energy

Source: Statistik Austria, remark: latest data of 2016
solid biomass: ingredients

2016 → 2017:
- briquettes: +25.6%
- pellets: +6.7%
- bark: -9.1%
- chips: +8.7%
- log: +7.6%
- total: +7.7%

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
- CO₂-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

2016→2017:
- in total: +6.6%
- 775 +11.4 %
- 1982 +11.8 %
- 383 -25.9 %
- 2367 -11.0 %
- 5118 +18.5 %

Source: data: Landwirtschaftskammer NÖ
market development of biomass stoves

Source: BIOENERGY 2020+

2016 → 2017:
Pelletsöfen: -5.7 %
Herde: +22.1 %
Kaminöfen: -16.2 %
Total: -1.9 %

national economy indicators 2017

- turnover: 863 million €
- jobs: 3,600 full time equivalent
- CO₂-savings: 10.2 million t
- export rate: 80 %
- trend: →
Development of home market

2017 installed
- netzgek.: 172.5 MW\(_p\)
- autark: 0.5 MW\(_p\)
- total: 173 MW\(_p\)

2016 ➔ 17 +11.0 %
cumulated: 1,269 MW\(_p\)

Source: Faninger (2007), Technikum Wien GmbH

Photovoltaics

PV-module production 2017 in Austria:

- production in Austria: 99.9 MW\(_{\text{peak}}\) -1.4 %
- export: 54.3 MW\(_{\text{peak}}\) +47.3 %
- home market: 173.0 MW\(_{\text{peak}}\) +11.0 %

Inverter production 2017 in Austria:

- production in Austria: 1,959 MW\(_{\text{peak}}\) (+38%)
- export rate: 93%
Photovoltaics

Development of PV system prices

Source: FH Technikum Wien

- 2016→2017: -1.5 %
- 2011→2017: -45.4 %

Photovoltaics

national economy indicators 2017

- electricity production: 1,269 GWh
- CO₂-savings: 377,392 t
- turnover: 527 Mio.€
- jobs: 2,800 full time equivalent
- export rate PV-modules: 54 %
- export rate inverter: 93 %
- trend: ↑
Solar Thermal Collectors

development of home market

Source: Faninger (2007), AEE INTEC

sales figures
2017: 71.1 MWth

2016→2017: -9.1 %

stock: -0.7 % (!)

Solar Thermal Collectors

solar thermal collector market 2017

Source: Faninger (2007), AEE INTEC

production:
0.58 mio. m²
-10.0 %

export:
0.49 Mio. m²
-9.3 %

import:
0.01 Mio. m²
+73.2 %
Solar Thermal Collectors

development of collector and system prices

Consumer price for water heating plants in Austria
(inflation adjusted to 2017)

Quelle: AEE INTEC

Solar Thermal Collectors

national economy indicators 2017

- heat production: 2,121 GWh\textsubscript{th}
- CO\textsubscript{2}-savings: 408.704 t
- turnover: 390 Mio.€
- jobs: 1,500 full time equivalent
- export rate: 84%
- trend: ↘
Heat Pumps

development of home market

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%
- water heating (Exp): 1,775 Stk. -8.5%

source: Faninger (2007), EEG

2016→2017: +9.1%
heat sources in Austria

2017:
- air/water: 72.1%
- brine/water: 20.1%

source: EEG

national economy indicators 2017

- ambient heat: 2,614 GWh\textsubscript{th}
- CO\textsubscript{2}-savings (net value): 608,995 t
- turnover: 583 Mio.€
- jobs: 1,388 full time equivalent
- export rate: 31%
- trend: ↑
Wind Power

development of home market

newly installed
2017: 196 MW
-14.2 %
stock:
2.8 GW
+7.4 %

Source: IG Windkraft

Wind Power

plant size in home market

2017: 3.1 MW/plant

Source: IG Windkraft
Heat Pumps

national economy indicators 2017

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

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)

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<tr>
<th>trend of new capacity</th>
<th>14/15</th>
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<td>solid biomass - fuels</td>
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<td>biomass boilers and stoves</td>
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<td>wind power</td>
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Source: Statistik Austria (2017)

## Conclusions (1)

Target 2020: 34% share of renewables in Austria

Source: Statistik Austria (2017)
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 electricity/heat and short/medium/long 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

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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