

Innovative Energy Technologies in Austria, Market Development 2020

Presentation of results

Vienna, 17 June 2021

Project team



Authors:

P. Biermayr, C. Dißauer, M. Eberl, M. Enigl, H. Fechner, B. Fürnsinn, M. Jaksch-Fliegenschnee, K. Leonhartsberger, S. Moidl, E. Prem, C. Schmidl, C. Strasser, W. Weiss, M. Wittmann, P. Wonisch, E. Wopienka;

Commissioned by BMK

Contents of the presentation

- Project targets
- Framework conditions of the market development 2020
- Results of the investigated technologies
- Summary
- Conclusions

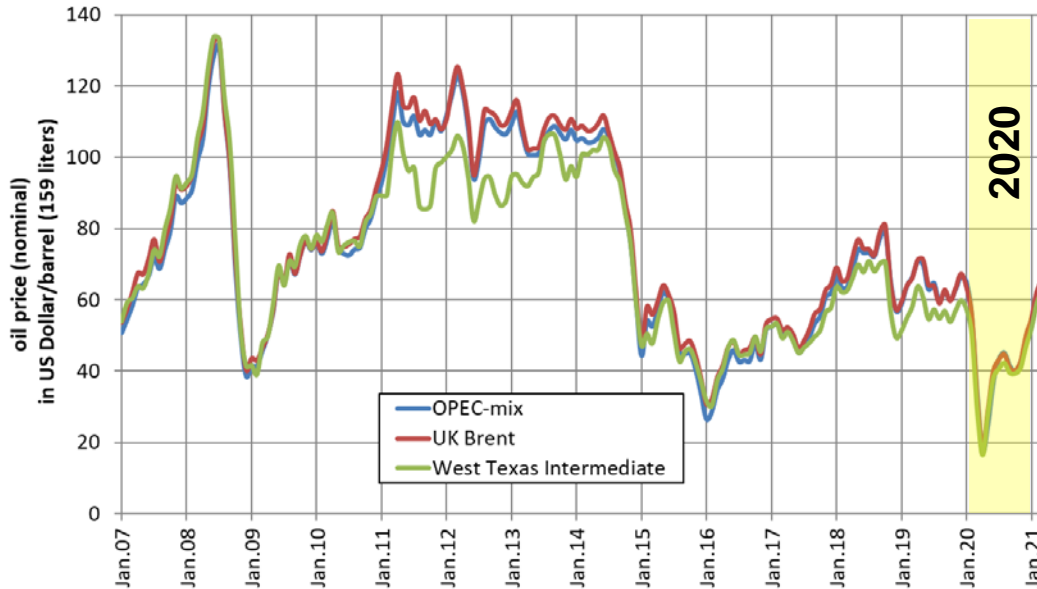
Project targets

- Empirical survey and documentation of the market development
- Information processing and analysis
 - Energy output
 - GHG-emission savings
 - Economic effects
 - Innovations and trends
 - Market diffusion compared to roadmaps
- Deriving of conclusions
- Target groups: Energy-, research- and environmental policy, industry, r&d institutes

Framework conditions 2020: Climate- and energy goals

Region	2030	2040 / 2050
Global	Climate protection agreement of Paris 2015: max. +2.0°C (+1.5°C)	
EU	-40 % GHG emission vs. 1990 32.0 % Renewables 32.5 % Efficiency increase	-80 % ... -95 % GHG emission (corresponds to +2°C ... +1.5°C) → “Green Deal”
AT	-36 % GHG emission >45 % Renewables 100 % Renewable electricity -25 % PE-Intensity (vs. 2015)	Far-reaching decarbonisation

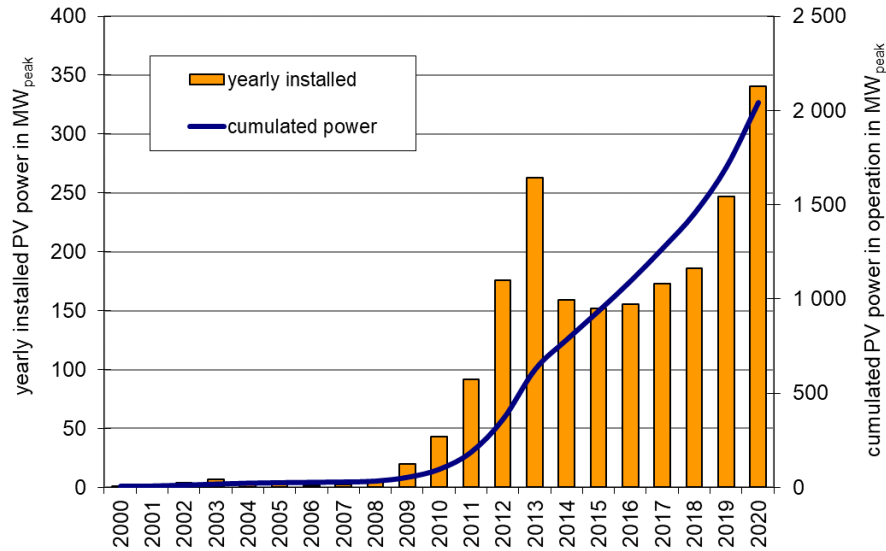
Framework conditions 2020: Price of fossil energy



Data source: Mineralölwirtschaftsverband, www.mwv.de

- Indicator oil price
- Since 2015 low and stable for the longer term!
- Total price collapse 2020
- Ø 2020 approx. 41 US\$/barrel

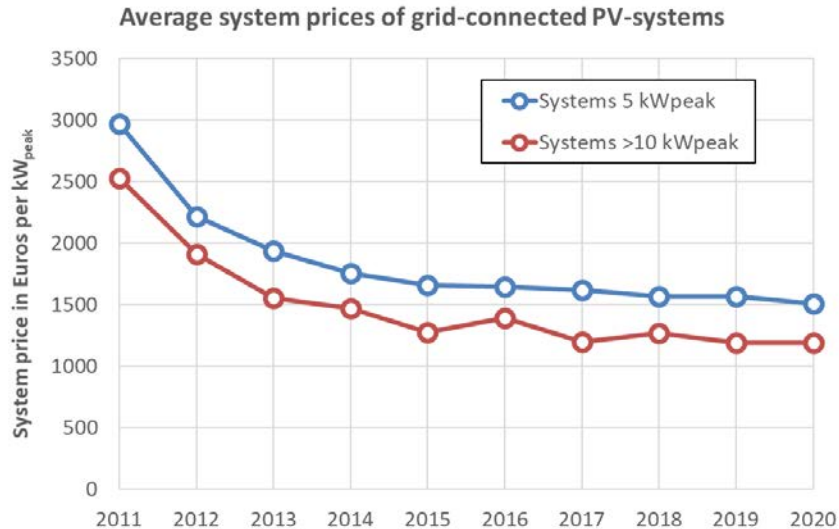
Photovoltaics: Market development 2020



Source: Technikum Wien

- New installations: 340.8 MW_{peak}
- 2019→2020: +38.0 %
- Stock: 2.043 GW_{peak}
- 2019→2020: +20.0 %

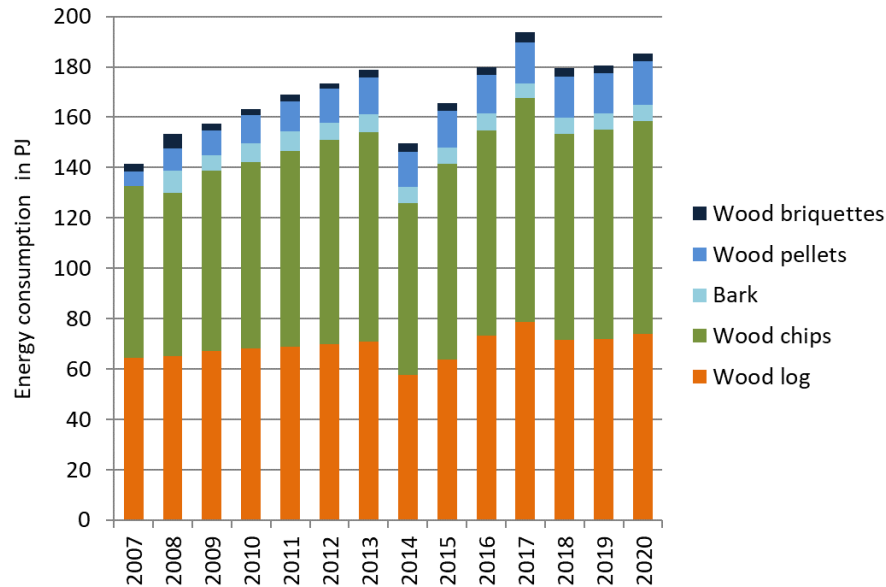
Photovoltaics: System prices



Source: Technikum Wien

- System prices of 5 kW_{peak} systems keep falling
- System prices of >10 kW_{peak} systems are stagnating
- An increase in system prices cannot be ruled out in the future

Solid biomass – fuels: Market development 2020

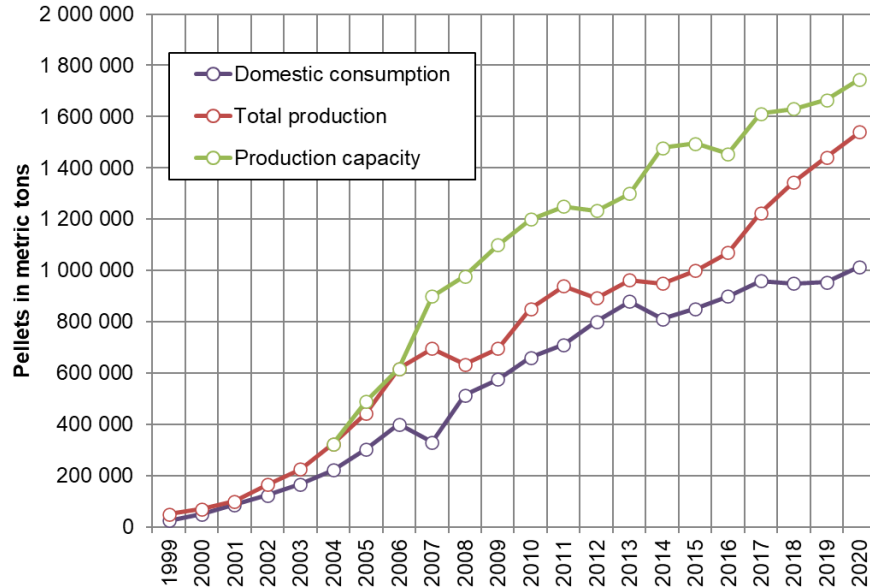


Source: BEST

2019 → 2020:

Briquettes:	+8.6 %
Pellets:	+6.3 %
Bark:	-1.6 %
Wood chips:	+1.6 %
Logs:	+3.1 %
Total:	+2.6 %

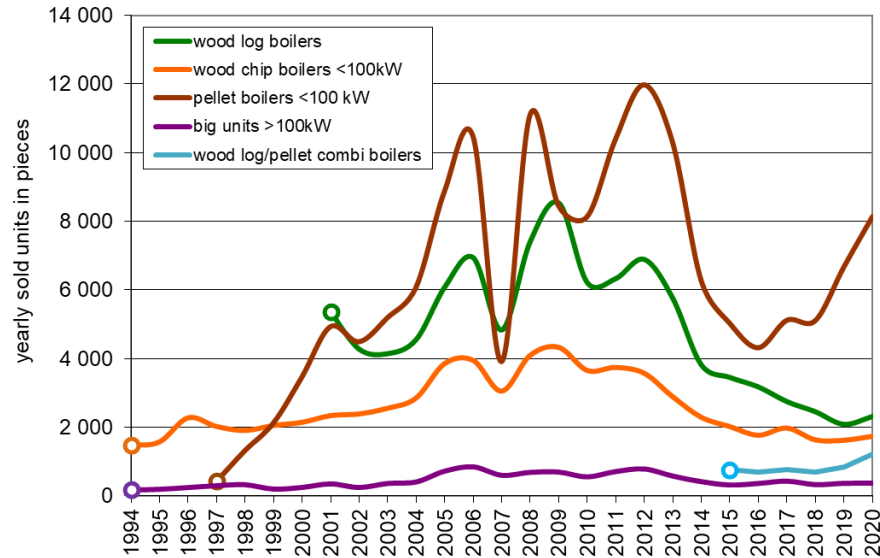
Solid biomass – fuels: Production of pellets



Source: ProPellets Austria

- Constant expansion of production capacities
- Securing domestic production
- Expansion of the sawmill industry → Expansion of pellet production

Solid biomass – boilers: Market development 2020



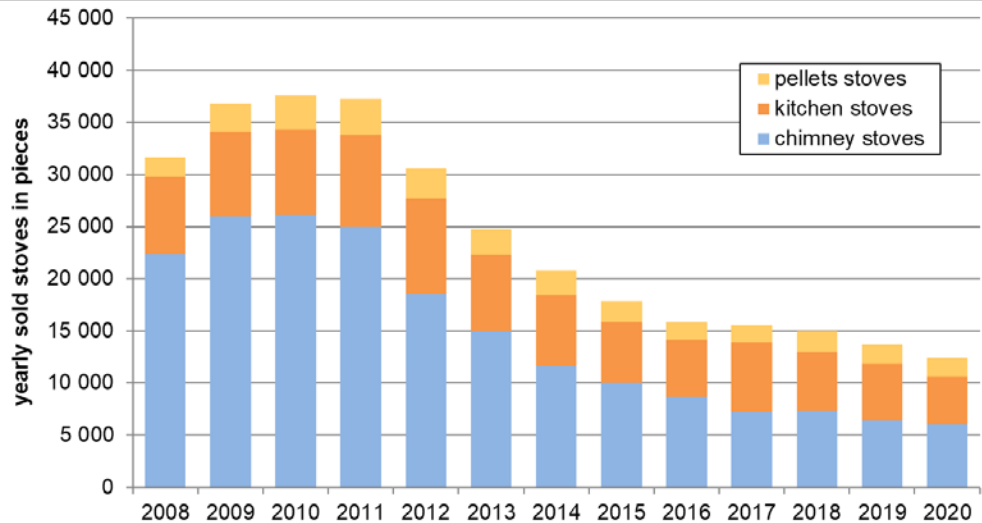
Source: BEST

2019 → 2020:

in total 13,778 pieces

Pellet boilers:	+21.9 %
Combined pellet boilers:	+45.2 %
Log boilers:	+10.9 %
Wood chips to 100 kW:	+6.9 %
Wood chips >100 kW:	+0.8 %
Total:	+18.8 %

Solid biomass – stoves: Market development 2020

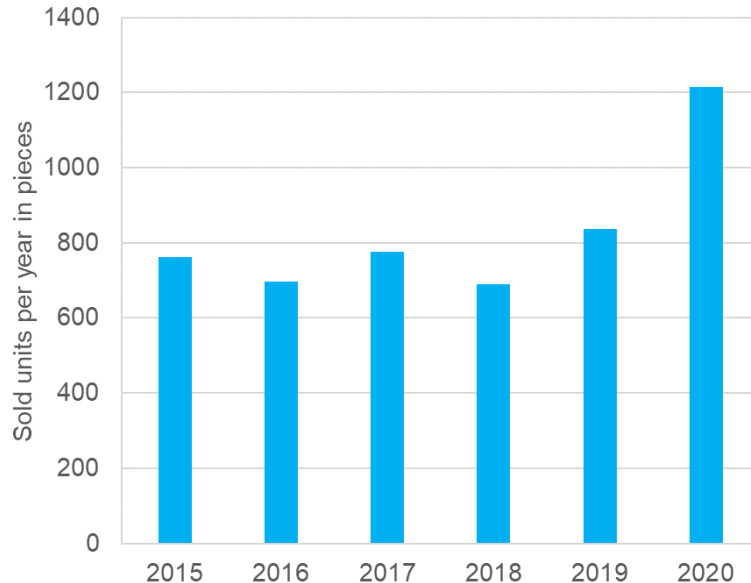


Source: BEST

2019 → 2020:

Pellet stoves:	-2.1 %
Kitchen stoves:	-16.3 %
Chimney stoves:	-5.8 %
Total:	-9.5 %

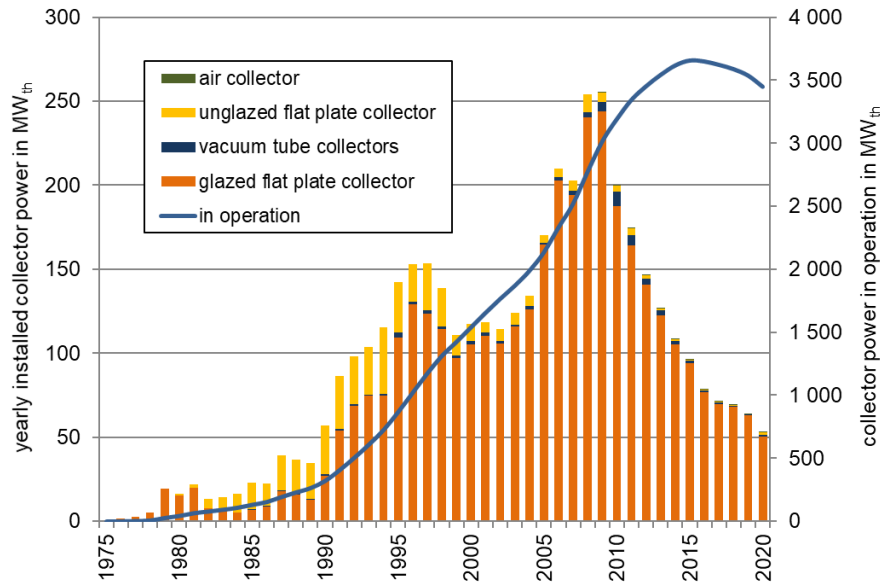
Solid biomass – boilers: Combined pellet boilers



Source: LK NÖ

- 2019 → 2020: +45.2 %
- Strong growth compared to log boilers (+10.9 %)
- Automation trend plus need for self-sufficiency

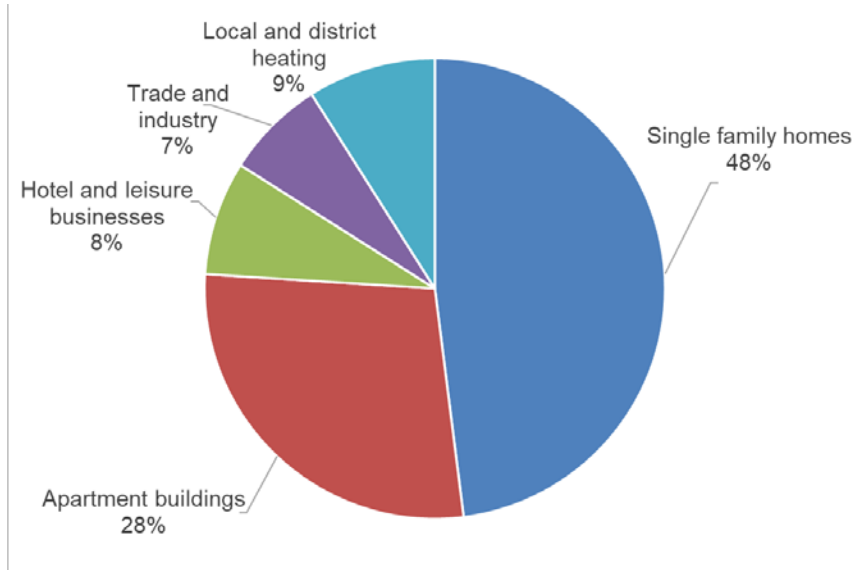
Solarthermics: Market development 2020



Source: AEE INTEC

- New installations: 53.2 MW_{th}
- 2019→2020: -17.0 %
- Stock: 3.447 GW_{th}
- 2019→2020: -2.5 %

Solarthermics: Areas of application

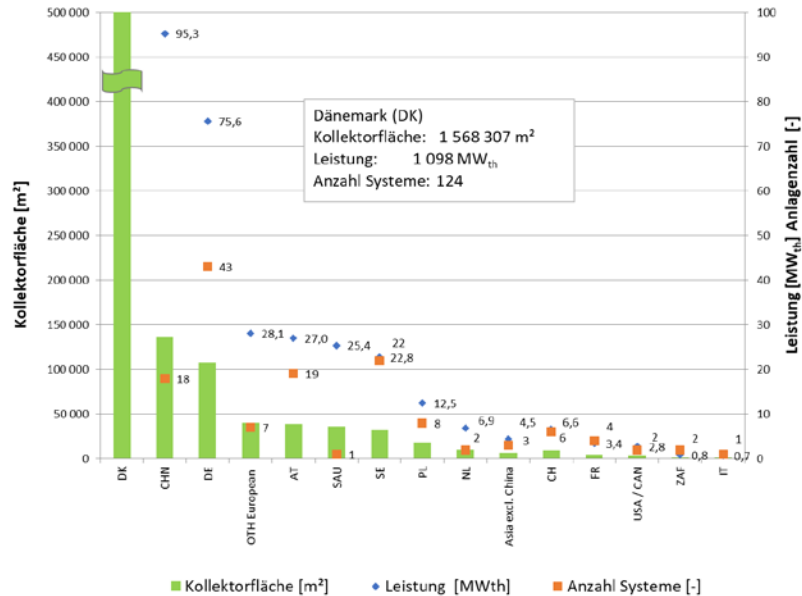


Source: AEE INTEC

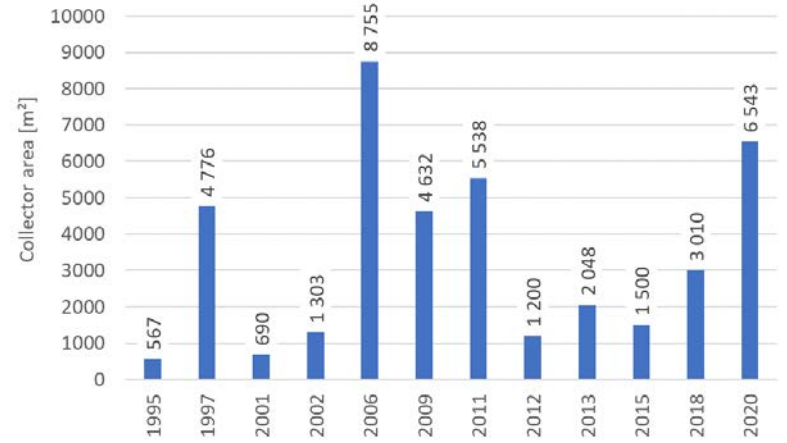
Newly installed solar thermal systems in 2020 by area of application

Solarthermics: Solar district heating

Solar district heating systems

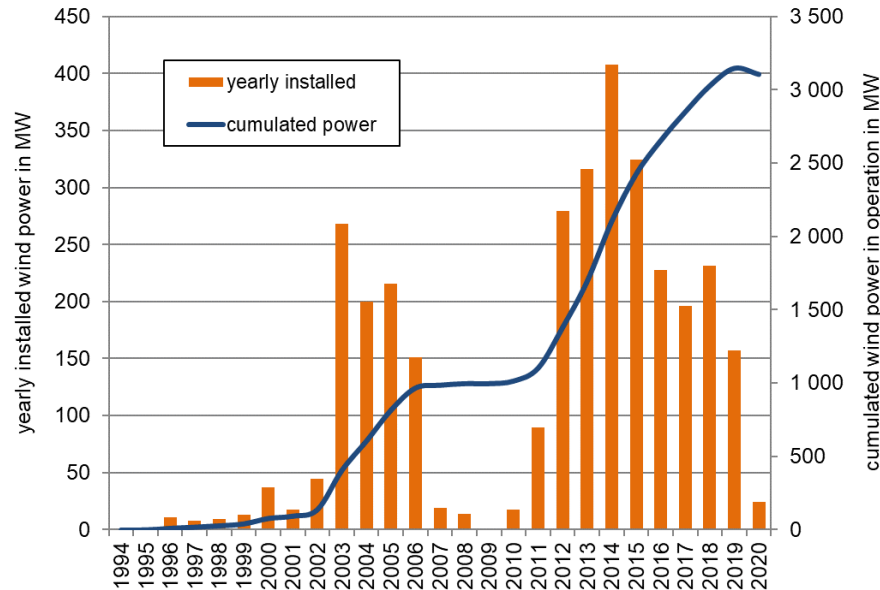


Annually determined collector areas for solar local and district heating systems in Austria



Source: AEE INTEC

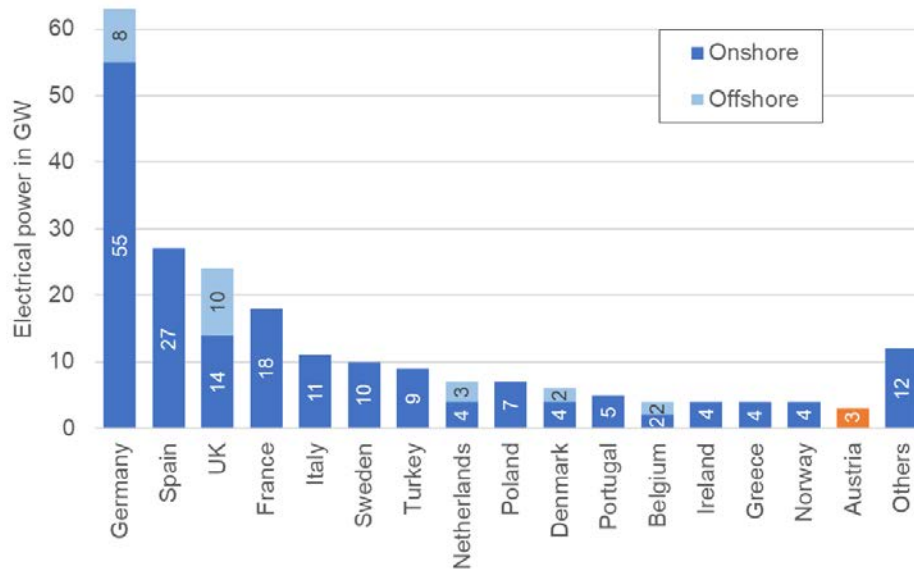
Wind power: Market development 2020



Source: IG Windkraft

- New installations: 25 MW
- 2019→2020: **-84.3 %**
- Stock: 3.105 GW
- 2019→2020: **-1.3 %**
- Wind power 2020: ca. 7 TWh

Wind power: International stock

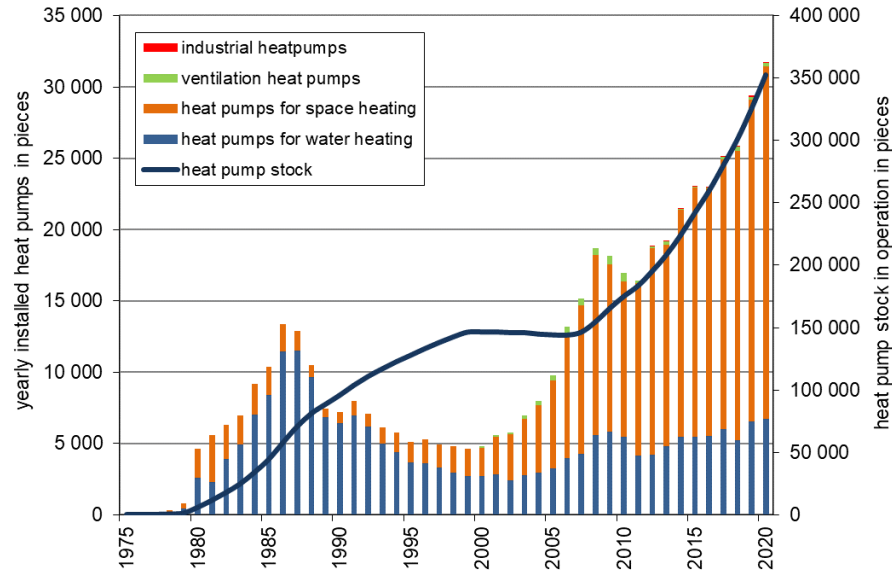


Source: WindEurope (2020)

Wind power: Outlook for Austria

- Around 4 GW of installed wind power by 2025 (made possible by the remaining funding from the green electricity amendment 2019)
- Around +120 wind power plants and +550 MW necessary for climate targets by 2030
- Expansion currently in Lower Austria, Burgenland, Styria
- Use of potential throughout Austria necessary by 2030 (EAG, zoning, permits, grid expansion, ...)
- Technical advancement from 3MW to 5 MW output

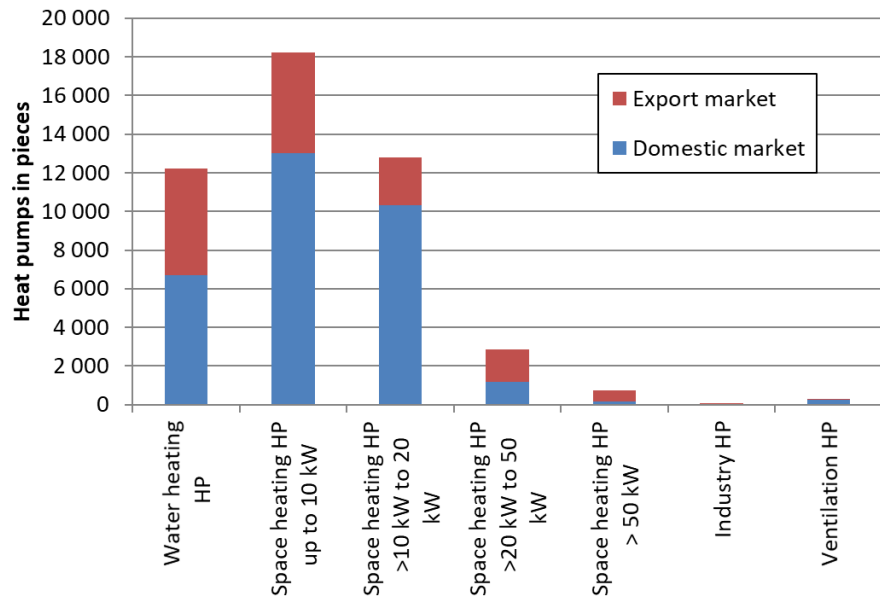
Heat pumps: Market development 2020



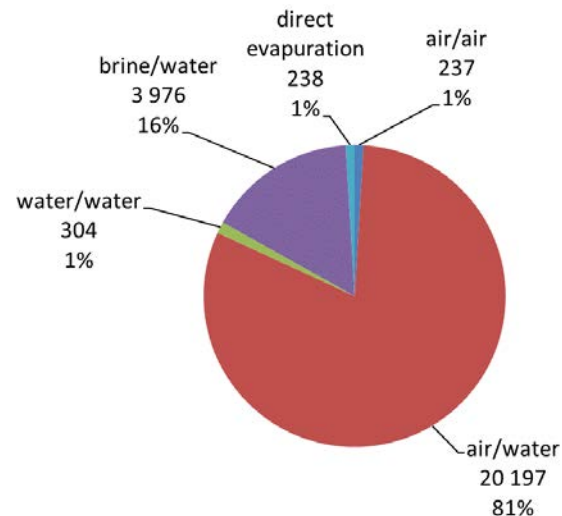
Source: ENFOS

- New installations: 31,721 pieces
- 2019→2020: +8.0 %
- Stock: 352,160 pieces
- 2019→2020: +8.3 %

Heat pumps: Some details



Source: ENFOS



Heat pumps for space heating domestic market 2020:
 total 24,952 pieces

Summary: Key figures 2020

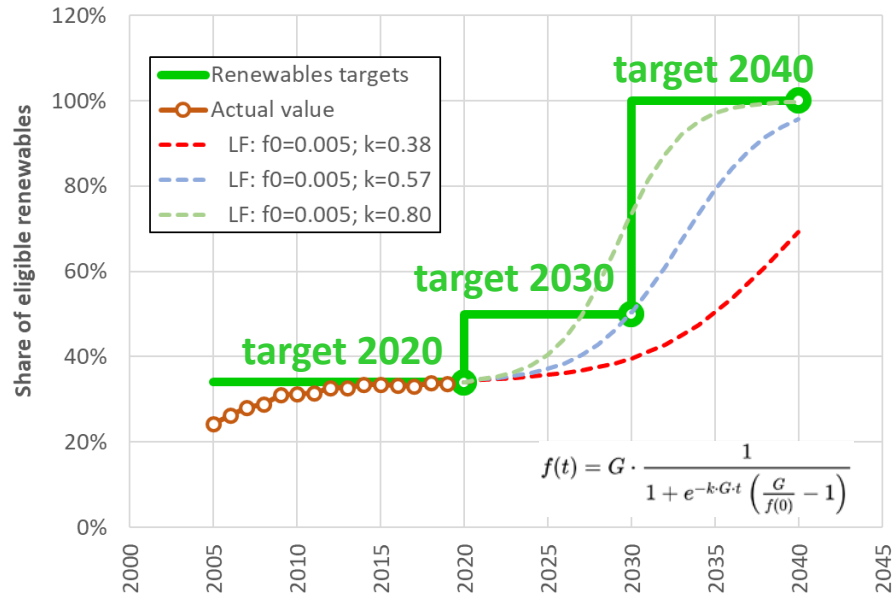
(Sums of biomass, photovoltaics, solarthermics, heat pumps and wind power)

- **Renewable energy:** 234 PJ (\cong 67.7 TWh)
- **CO_{2equ}-savings:** 14.4 Mio. Tonnen
- **Turnover** (primary, gross): 5.5 billion €
- **Employees:** 31,800 full-time equivalents

Summary: Trends

Trend annual expansion	14/15	15/16	16/17	17/18	18/19	19/20
Biomass solid	↘	↘	→	↘	↗	↗
Biomass liquid	↗	↘	↘	→	→	→
Biomass gaseous	↘	↘	↘	(0)	(0)	(0)
Deep geothermal	0	0	0	0	0	0
Photovoltaics	↘	→	↗	↗	↗	↗
Solarthermics	↘	↘	↘	↘	↘	↘
Heat pumps	↗	→	↗	↗	↗	↗
Hydro power	→	↗	↘	↗	↘	↘
Wind power	↘	↘	↘	↗	↘	↘

Conclusions (1)



Sources: Statistik Austria, ENFOS

- For achieving the goals the historical market development is by far insufficient!
- Necessary are:
 - Energy services ↓
 - Energy efficiency ↑
 - Renewables ↑

Conclusions (2)

- **The idleness of the energy system is significant.** Over the past 10 years the percentage of renewables has risen in AT from 31.0% (2009) to 33.6 % (2019) by 2.6 % - points. The average of the last 50 years was 2.9 % points/decade.
- To reach the goals 2030/2040 **approved technologies for the use of renewables have to be implemented immediately** and problematic fields need to be treated through accelerated R&D.
- To achieve the targets all nine in Austria available technologies for the use of renewables will be necessary.

Conclusions (3)

- „Innovators“ have already been served. **The attributes of new users are a challenge.**
- **“low hanging fruits“ have already been harvested** in many areas in the sense of potential cost curves.
- In times of **cheap fossil energy and missing cost transparency renewables will not come automatically.** The implementation of effective and efficient political instruments in a totally new scope is absolutely essential for attaining the targets.

Conclusions (4)

- The “Out of the Oil“ campaign is already bearing fruit. **“Out of Fossil Energy“ is essential for reaching the goals.**
- **Attention: Lock-in effect!** In 2020 46,000 new gas-fired boilers and 3,000 new oil boilers have been sold in AT (approx. 47 % of the domestic heating market).
- **Agreements of targets and instruments** between the federal government and the federal states.
- **Electricity:** – Targets 2030 can only be reached with a functioning EAG.
– Grid development plan must be compatible with target path.

Conclusions (5)

- With an offensive realisation of the national goals Austria can attain its **leading role concerning climate protection and renewables again.**
- An **advance in innovations and production** lead to market leadership and patents. A trustworthy domestic market creates new export opportunities.

Acknowledgement

We are thankful for the productive cooperation of:

- The Austrian companies
- The associations
- The places of support of the federal states and federal government
- The energy departments of the federal states
- The employees of the R&D-institutions

Thank you for your attention!

The final report is on the Internet:
<https://nachhaltigwirtschaften.at/de/iea/publikationen/>