



Austria at a Glance

eXtremOS



Austria at a Glance

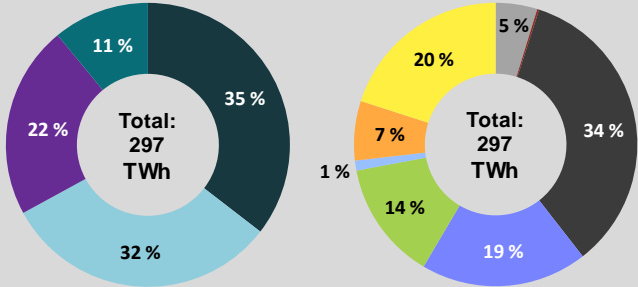


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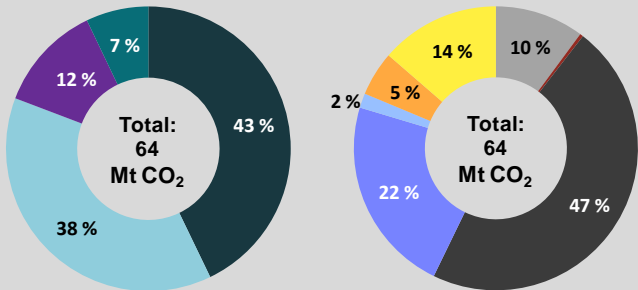
Final Energy Consumption

CO₂-Emissions

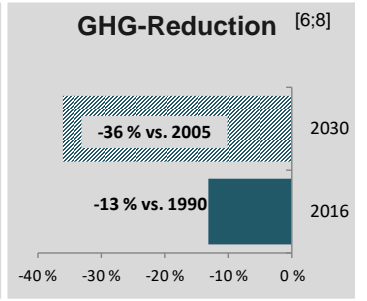
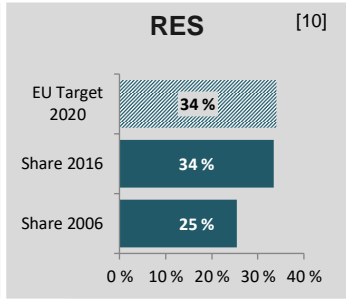
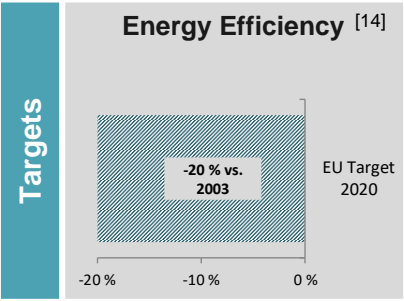
Key-Indicators



■ Industry ■ Hard Coal ■ Total Renewables
■ Transport ■ Brown Coal ■ Wastes (non ren.)
■ Residential ■ Oil (total) ■ Derived Heat
■ Services ■ Gas ■ Electricity



Based on 2014 data



Current Topics [3;4]

- Electricity price index keeps increasing (raw price without taxes, levies, grid costs); currently highest price index since 2014
- Effects of the implemented market splitting of the German-Austrian single bidding zone

Key Facts [1;6;8]

- 60 % of Austria's electricity production is based on hydro power
- Wood is the overall most important RE carrier
- Market splitting of the German-Austrian single bidding zone on the 1st of October 2018
- Emissions from the building sector used to decrease from 1990-2014 due to thermal refurbishment, increased use of RE for heating and district heating. Increase after 2014 mainly due to weather conditions in winter
- Building refurbishment program 2009-ongoing
 - Thermal refurbishment of buildings older than 20 years
 - 30 % of investment costs coverable by the subsidy
 - Main goal: reduce use of fossil fuel by biomass

Population ^{[5];}	8.7 million	Size ^{[5];}	83 879 km ²
Net El. Cons. ₂₀₁₆ ^{[10];}	61.9 TWh _{el}	Peak-Load ^{[2];}	11.7 GW _{el}
Trade-Balance ^{[2];}	-6.6 TWh _{el}	RES-Share El. ₂₀₁₆ ^{[10];}	72.6 %
GDP per Capita ^{[5];}	\$47 290	GDP per Capita-Ranking ^{[5];}	15/185



Austria's Electricity Sector

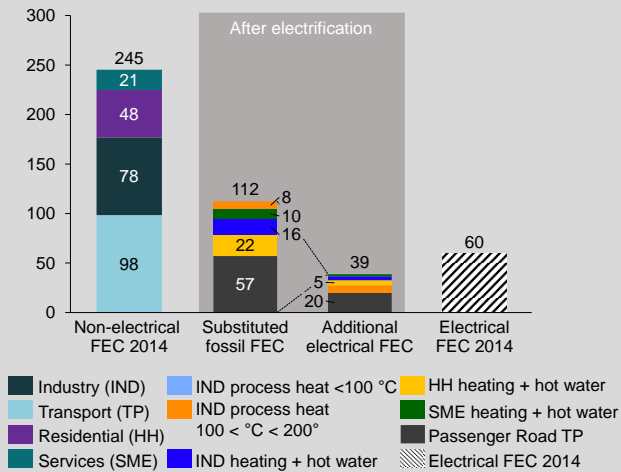


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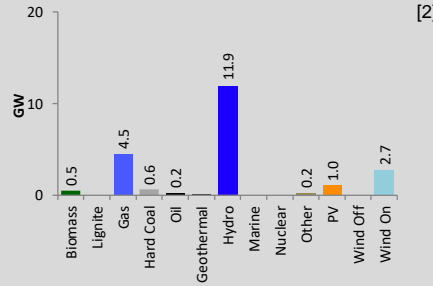
Electrification Potential

"Low hanging fruits" case 2014

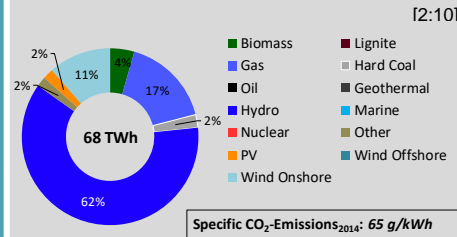
Final Energy Consumption (FEC) in TWh [own calculation]



Installed Capacity

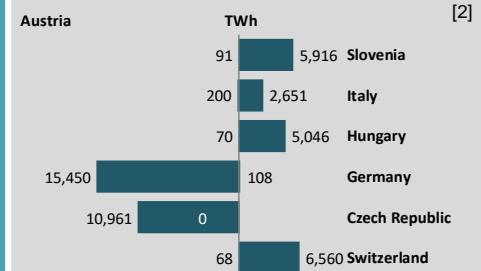


Net El. Generation

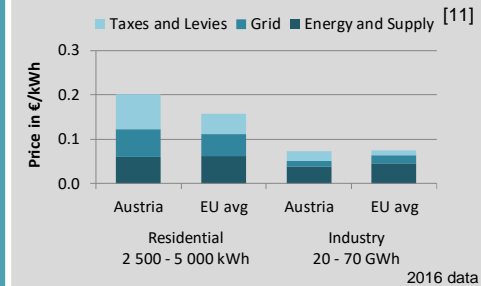


*Total net el. generation based on [10], share of energy carriers based on [2]

Import-Export



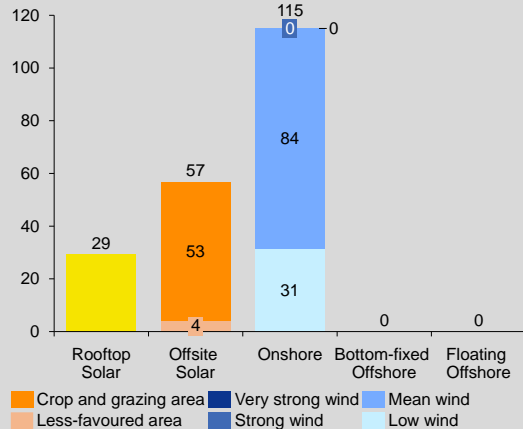
Customer Prices



vRES Potential

Renewable Energies

TWh [own calculation; compare methodology slides]



Wholesale Market

- Main Exchange:** Energy Exchange Austria (EXAA) [13;14]
- Capacity Market:** No
- Additional CO₂-Pricing:** 54.3 EUR/tCO₂; 58 % of all emissions, whereby overlap of tax and ETS of 15 % of emissions

Day-Ahead-Market (EXAA):

2017	EXAA
Volume	8.4 TWh
Avg. Price	34.5 €/MWh

Support Schemes

Costs

- PV 2019: 7.67 €/ct/kWh
- Wind 2019: 8.12 €/ct/kWh
- Hydro 2019: 2.51–8.51 €/ct/kWh

Policies

- The Act on Energy Efficiency obliges energetic refurbishments up to a share of 3 % of all public buildings owned by the federal government until 2020
- Investment incentives for RES integration in order to reinforce the small-scale regional heat supply and the expansion of district heating



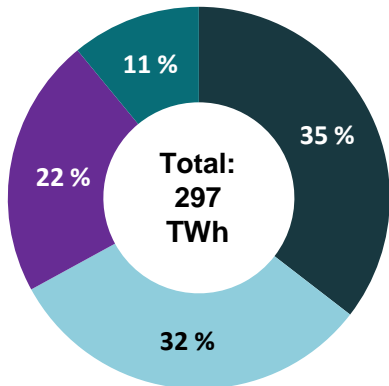
Austria's Energy Consumption & Emissions by Sectors and Energy Carriers - 2014



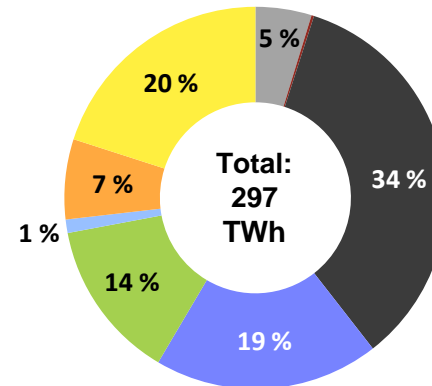
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Final Energy Consumption

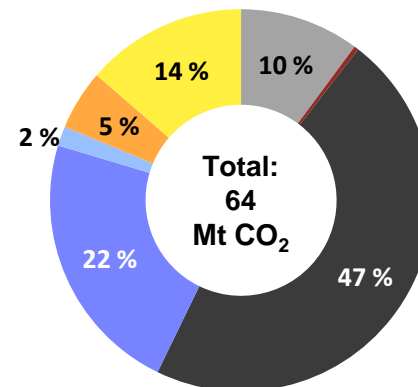
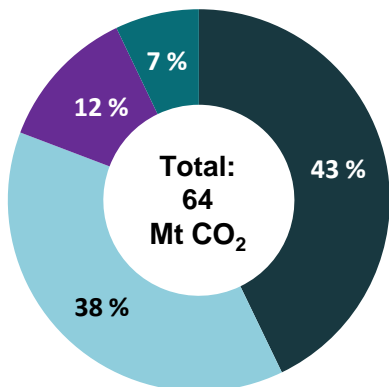
All Sectors



All Energy Carriers



CO₂ - Emissions



- Industry
- Transport
- Residential
- Services
- Hard Coal
- Oil (total)
- Total Renewables
- Derived Heat
- Lignite
- Gas
- Waste (non. ren.)
- Electricity



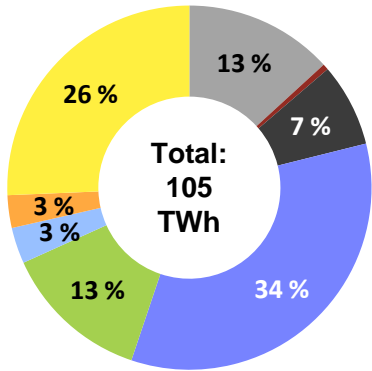
Austria's Energy Consumption & Emissions by Sectors and Energy Carriers - 2014



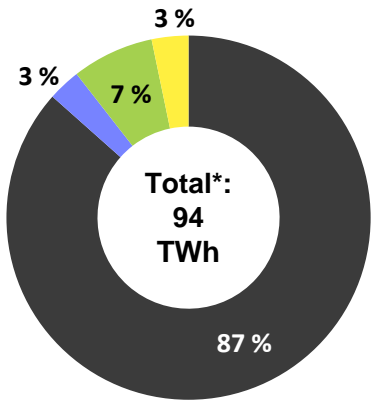
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Final Energy Consumption

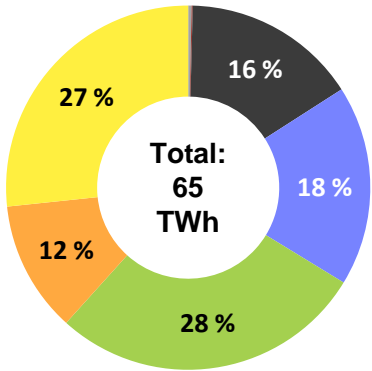
Industry



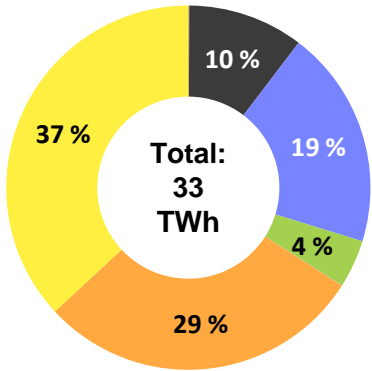
Transport



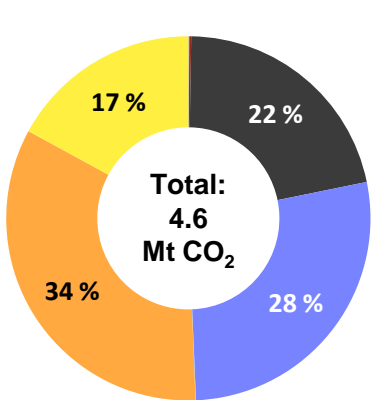
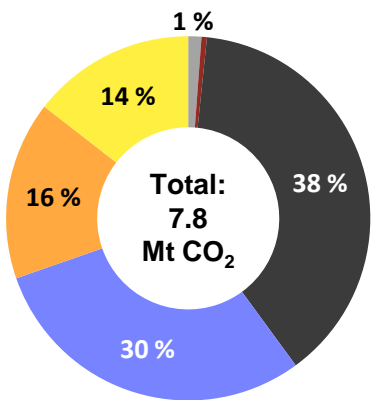
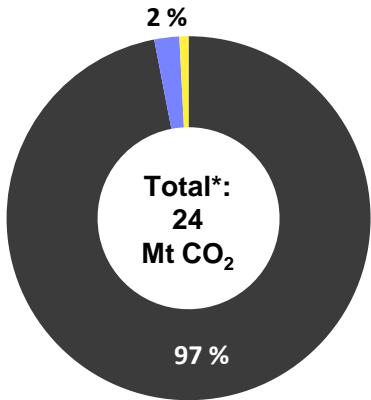
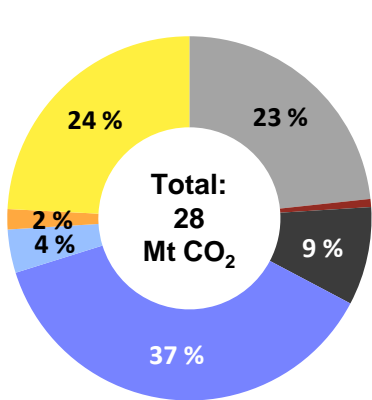
Residential



Services



CO₂ - Emissions



Hard Coal
 Lignite
 Oil (total)
 Gas
 Total Renewables
 Waste (non. ren.)
 Derived Heat
 Electricity

*excluding international aviation



Austria's Energy Consumption & Emissions by Application & Sectors - 2014



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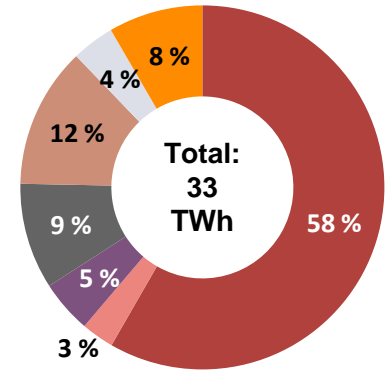
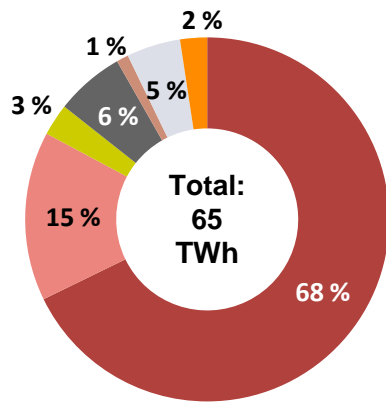
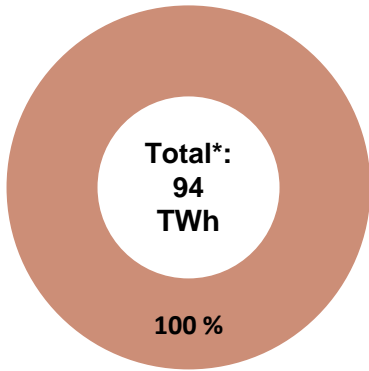
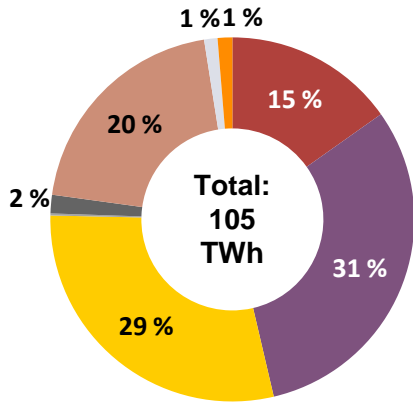
Final Energy Consumption

Industry

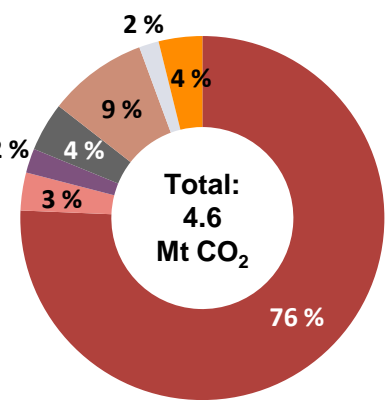
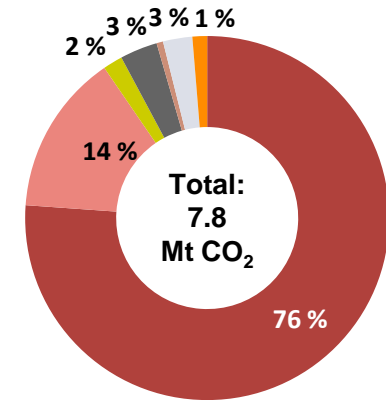
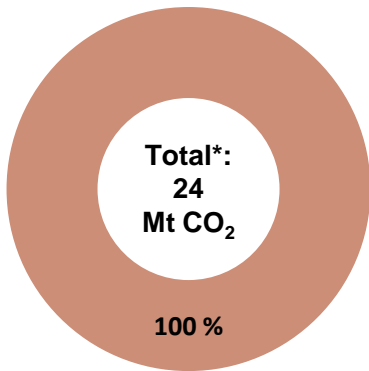
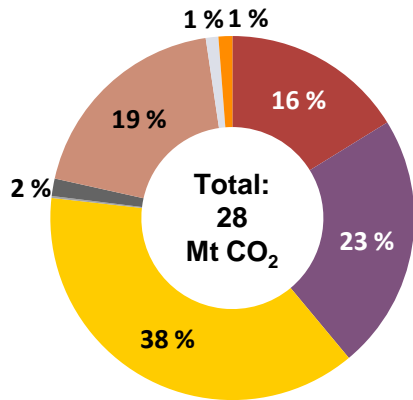
Transport

Residential

Services



CO₂ - Emissions



- Space Heating
- Process Heat < 500 °C
- Cooking
- Other Process Cold
- ICT
- Warm Water
- Process Heat > 500 °C
- Climate Cold
- Mechanical Energy
- Lighting

*excluding international aviation



Austria: Sources



Institutions

Federal Ministry for Sustainability and Tourism		https://www.bmnt.gv.at/
TSO	Austrian Power Grid	https://www.apg.at/en
Regulator	E-Control	https://www.e-control.at/en/econtrol

Sources

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- [20] Institute for Global Environmental Strategies, 2006. IPCC Guidelines for National Greenhouse Gas Inventories - Energy - Stationary Combustion
- [21] Fleiter, Tobias et al.: Mapping and analyses of the current and future (2020 - 2030) heating/cooling fuel deployment (fossil/renewables) - Work package 2: Data Annex 2 Industrial processes for publication

Main Studies

- **Austria 2014 Review** (International Energy Agency)
<http://www.iea.org/publications/freepublications/publication/Austria2014.pdf>
- **Report on Climate Protection** (Environmental Agency),
<http://www.umweltbundesamt.at/fileadmin/site/publikationen/REP0660.pdf>