

Securing Austria's Electricity Supply in times of Climate Change

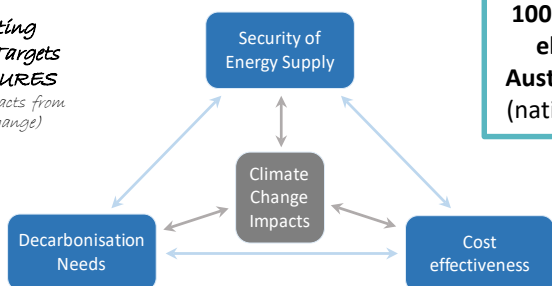
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MOTIVATION & OBJECTIVES

Conflicting Policy Targets in SECURES (with impacts from climate change)



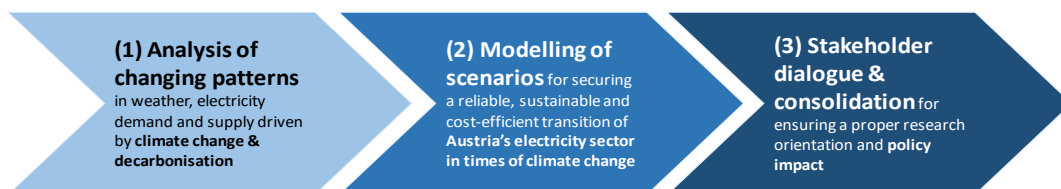
100% renewable electricity in Austria until 2030 (national balance)

The overarching goal of SECURES

- targeted support to Austrian policy makers → taking a closer look at the challenges and opportunities arising for Austria's electricity system
- safeguard for securing a reliable, sustainable and cost-efficient electricity supply in times of climate change.

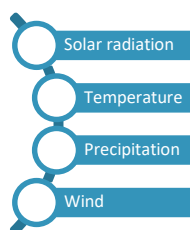
We analyse the impact of climate change and decarbonisation and interaction thereof.

METHOD



INSIGHTS from CLIMATE MODELLING ...

- Impact of climate change on meteorological patterns in Austria and Europe
- Modelling of individual weather patterns enables event-based evaluation of rare extreme situations like cold doldrums, heat waves, etc. (high electricity demand and low production)



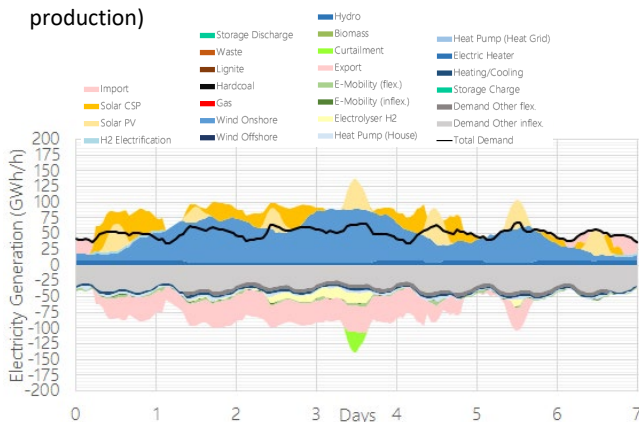
Annual, seasonal, and daily patterns

Electricity demand (e.g. cooling and heating)

Electricity production (wind, solar, hydro power)

... feeding into ENERGY MODELLING and the ASSESSMENT of SUPPLY SECURITY

- Model-based analysis of the impact of changing patterns on future electricity demand & supply
- Scenario design to cover different aspects of decarbonisation, climate change, and supply security of the electricity system
- Austria and the EU27 + CH, NO, UK: Impact of other countries and power transmission



Exemplary visualisation of possible results from the energy system modelling (source: MUSTEC project, www.mustec.eu)

	Scope	Likelihood 1 x 10 ⁻ⁿ Years	CBD	Generation	Transmission	Demand	SC-Ref	SC-S1	SC-S2
Climate Change									
RCP 8.5	L			✓	?	✓			✓
RCP 4.5	L			✓	?	✓	✓	✓	
RCP 2.6	L			✓	?	✓			
Cross-Border Transmission (CBT) lines									
Current plans for Transmission lines expansion	L			✓	✓		✓		
Limited cross-border Transmission capacity	L			✓	✓				✓
Delays in the Transmission lines expansion	L			✓	✓				✓
Environmental and Environmental Policies									
Current CO2 emissions targets	L			✓	✓	✓	✓	✓	✓
Acceleration of the CO2 emissions reduction target	L			✓	✓	✓			✓
Rare and extreme natural hazards									
Flooding (eg. event in central europe in 2002)	S	10-100	1.2	✓	✓				
Drought and associated water shortage (eg. 2017)	S	2-5	1.2	✓				✓	✓
Extreme winds	S	< 2	1.2	✓				✓	✓
Lack of wind (eg. 2017)	S	2-5	1.2	✓				✓	✓
Ice-storm or snowfall	S	10-100	1.2	✓	✓				
heat-waves	S	2-5	1.2	✓	✓	✓			✓
infectious threats, incl. pandemic;	S	> 100	1.2	✓	✓	✓			✓
Others	S	> 100	1.2	✓	✓	✓			✓
Accidental beyond the N-1 (failure of grid) security criterion									
Malicious attacks (cybercrime, sabotage...)	S	5-10	1.2	✓	✓				✓
Disruption of fuel supply for electricity generation	S	5-10	1	✓					✓
Not electricity-related industrial accident (e.g. chemical spill...)	S	5-10	1			✓			