

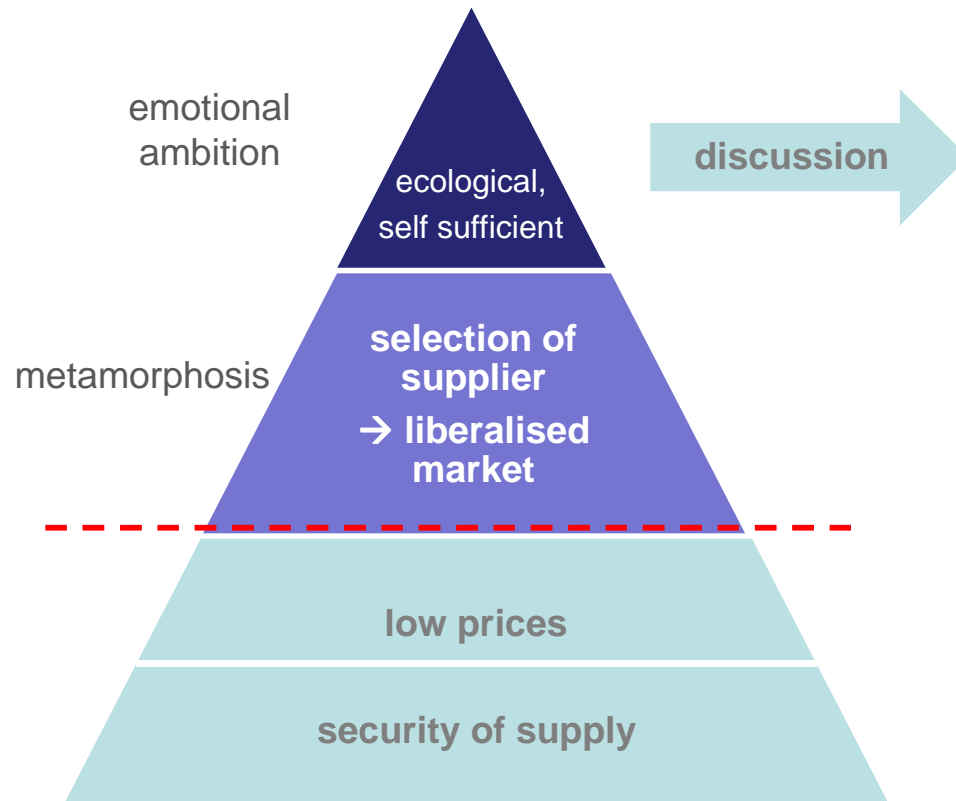
EUROPE 2020



The Green Battery for a Sustainable Europe Now, 2020 and Beyond

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The Psychology of System-Change

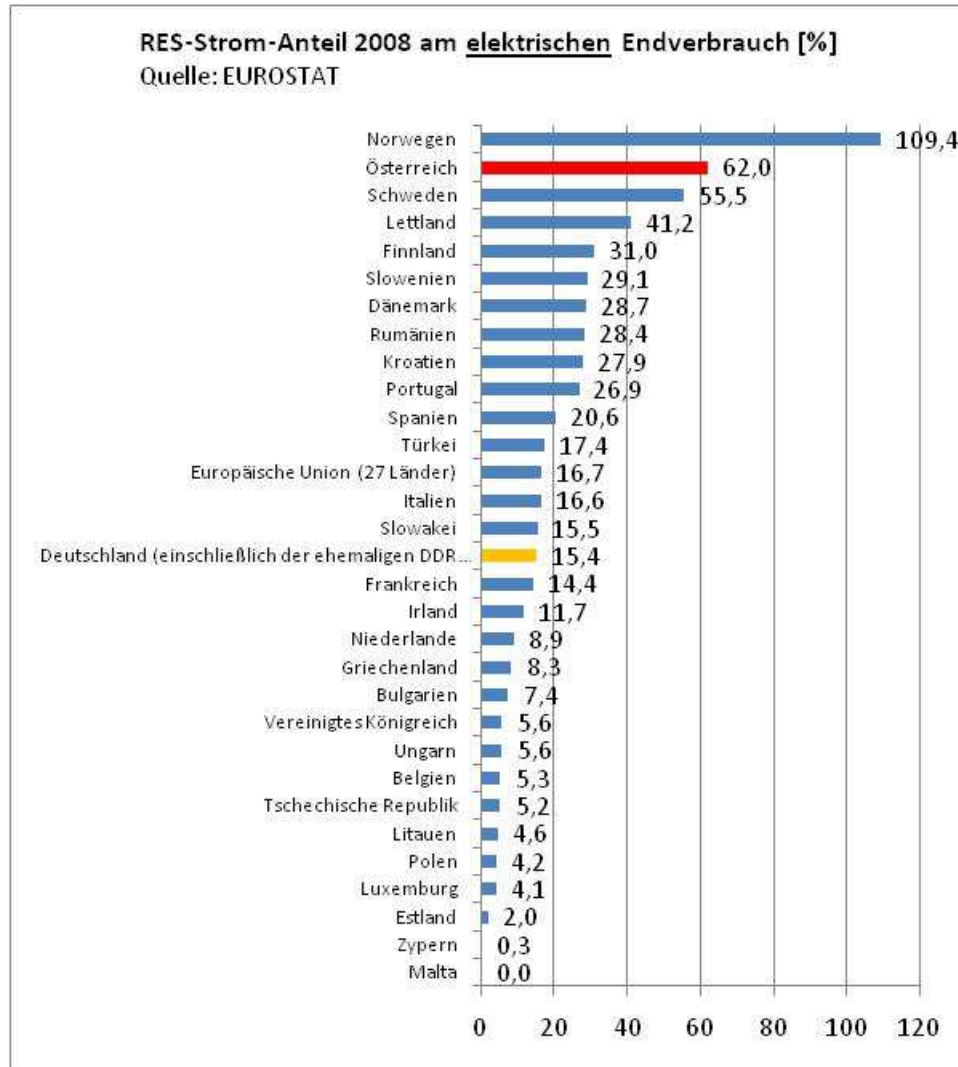


„I want to be independent of big energy companies and I want to decide whether I produce by myself, or when, how and from whom I buy energy. „

„I want to be a creative part of the new energy system and I want to understand it.“



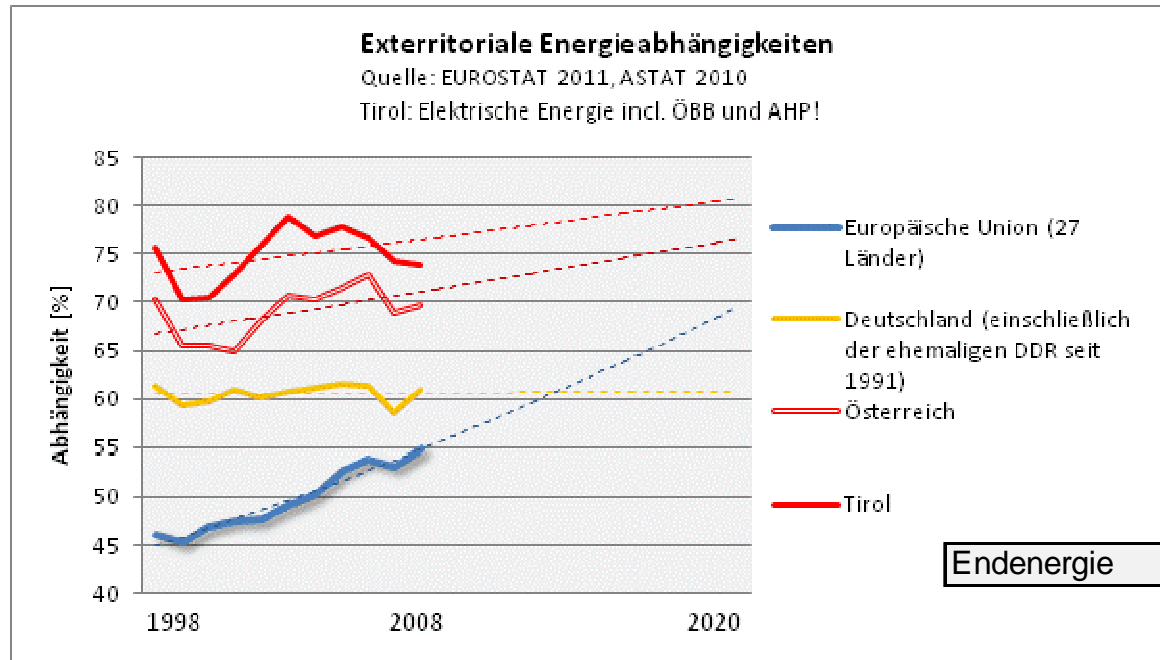
Austria Is On Top Position Within EU27



With respect to its hydropower resources Austria is on top position of an ecological, sustainable and renewable electricity supply within the EU27.

Within Western Europe Austria is on 2nd position after Norway.

70% External Energy Dependency Until 2020!

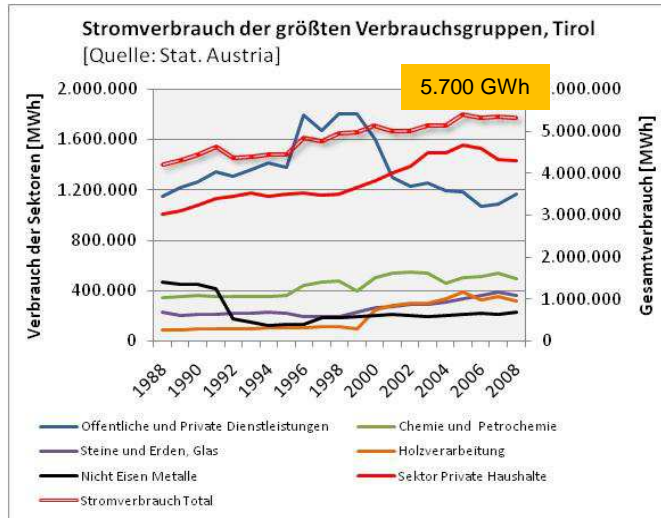


		Relativer Zuwachs/a [%]			
		90-00	00-10	10-20	20-30
Endenergie	AT	1,9	1,8	0,4	-0,1
	Tirol	2,7	2,6	1	
Strom	AT	2,0	1,1	1,3	0,8
	Tirol	1,6	0,5	1,2	

Austria's energy dependency is enormous and is even rising. Consequently, we have to take measures to save energy by efficiency and to expand national production. Electricity's share is expected to be more than today.

Minus 50 % of primary energy demand until 2050 and to expand RES-share up to 80 % or more will need all our tolerance, spirit, creativity and above all: **New thinking!**

Efficiency Measures Are Successful.



**Electricity demand and GDP are independent.
Reduced el. demand of private and public households.**

Since the end of the 1990's the growth public electricity demand is reduced.

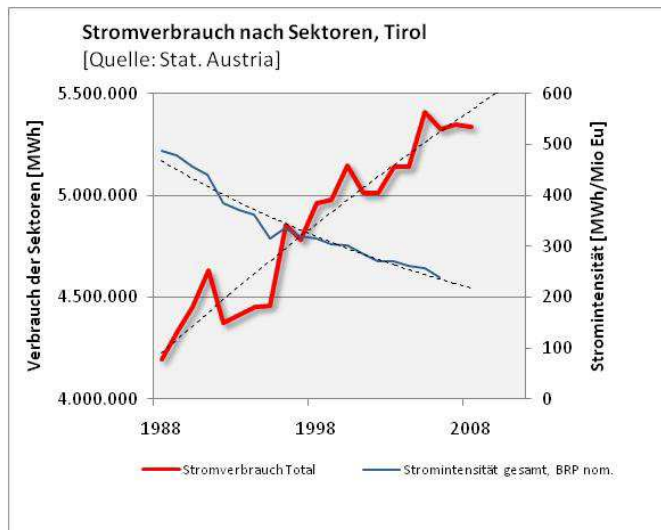
Efficiency measures are successful.

To substitute other primary energy resources electricity demand (heating, cooling, e-mobility, ...) will rise in future.

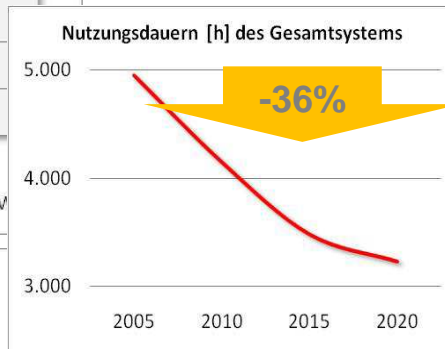
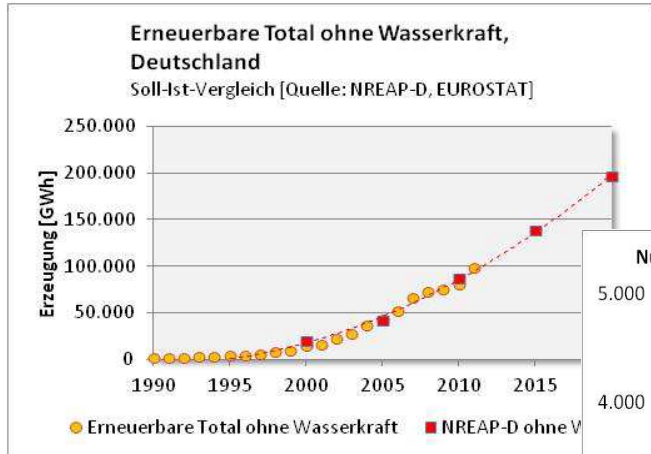
Electricity demand of private and public services started to be reduced 10 years ago while private households followed from 2006 on.

The falling trend of electricity density as the energy-efficiency indicator prove the independency of electricity demand and economic growth.

This trend is also representative for Austria.



Wind power and photovoltaics are succeeding rapidly.
Large scale storages are missing.



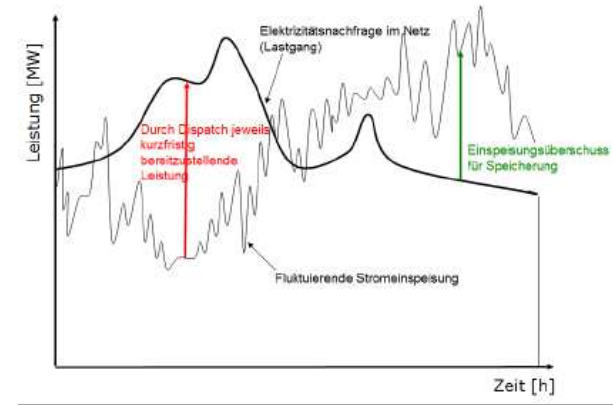
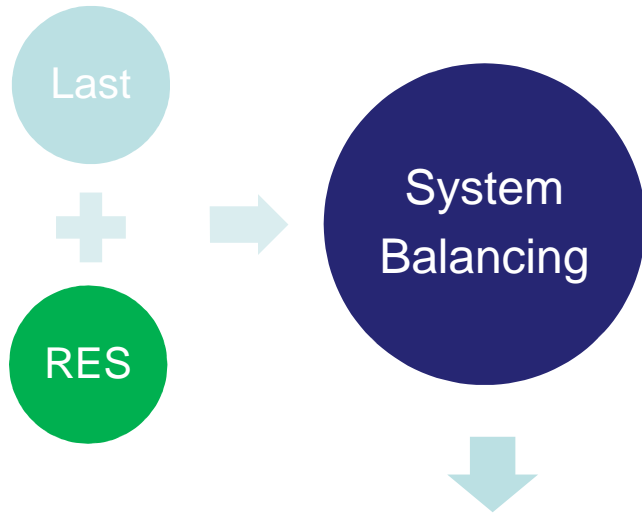
Ressource - Management:
Germany's RES production focuses on wind, photo-voltaics and biomass, while Austria prefers hydro power, wind and biomass due to its natural resources.

Austria and Germany consequently follow their NREAP-path. Up to now goals could be reached.

Out of physical reasons wind and photovoltaics more and more long for flexibility measures to stabilise the system.

Large scale storages are missing.

Das Elektroenergiesystem muss jederzeit ausbalanciert sein.



SRU/Stellungnahme Nr. 15-2010/A1

Systemdienstleistungen für System Balancing

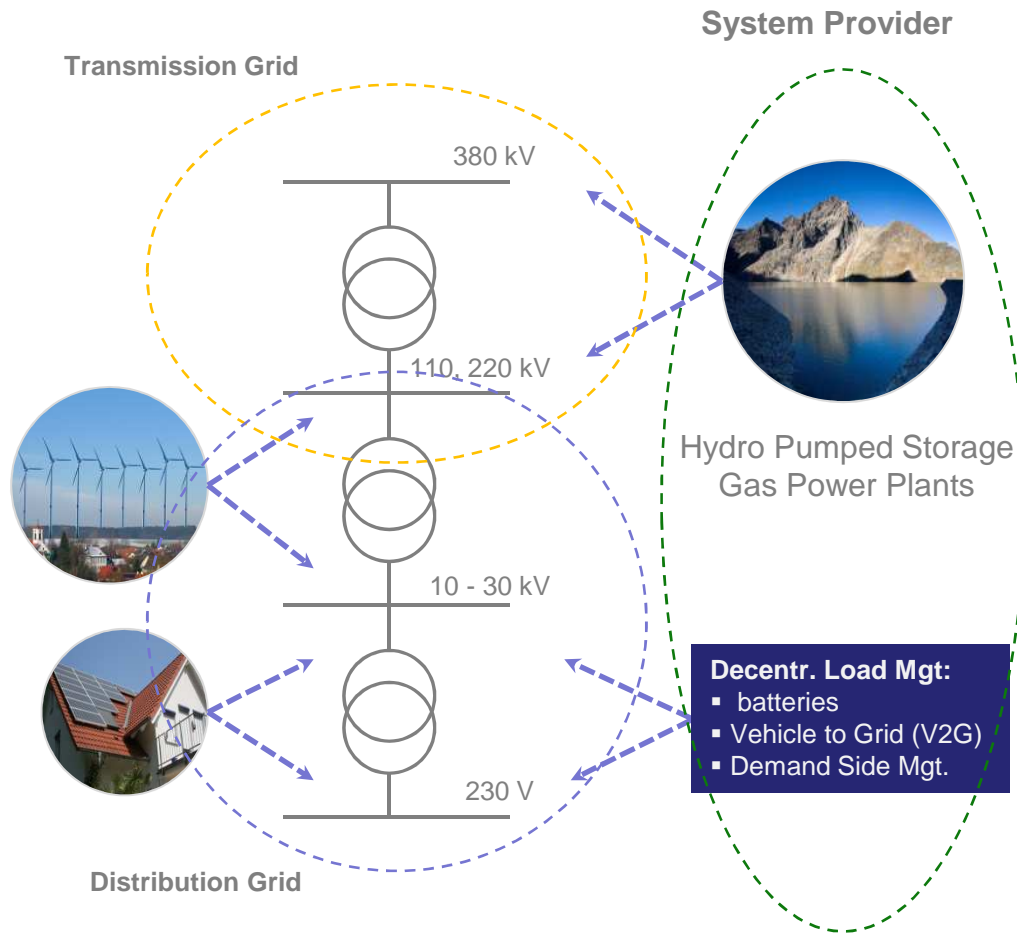
Bedarf	Leistungs-Frequenz-Regelung R1, R2, R2	Langzeit-Leistungsvorhaltung	RES-Backup Stand-By/Flexibler Lastausgleich
Lastfaktor	PR=0 SR, MR gering	ca. 100 h/a	Ca. 1.000 h/a
Einsatz	Techn. Präqualifikation Leistungsvorhaltung Energie-Balancing	Geringe Effizienz Nur Start/Stop	Hohe Effizienz bei ger. CO ₂ Flexibilität/Regelfähigkeit

Der Ausgleich erfolgt zum wesentlichen Teil innerhalb des Regelblocks oder aus den unmittelbar umgebenden Netzgebieten.

Über Intraday-Geschäfte wird auch cross-border das RES-Back-Up bedient.

[Quelle: EURELECTRIC RESAP, TIWAG, 2011]

Ancillary Services are a Market Product!



Ancillary services have to be provided market oriented also in future: independent of technology and grid-level. Storages do not have to be part of the grid infrastructure.

- Ancillary Services stabilise the system:**
- ❖ voltage stabilisation
 - ❖ black start ability to manage black outs
 - ❖ spinning reserves
 - ❖ **system balancing**
 - load/frequency reserves
 - long term reserves
 - backup-reserves



**Austria's 2020-projects
for the green battery:**

[E-Control, 2011]

Hydro Pumped Storage: 2.500 MW

Run of River: 250 MW

Hydropower Ressources:

Techn./econ. Pot., total: 56 TWh

Techn./econ. Pot., rest: 18 TWh

Feasible pot.: 13 TWh

The policy framework for energy, sustainability and ecology is complex.
Harmonisation of goals is a must!



Ordnungspol. Rechtsrahmen	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	> 2020	> 2030	> 2050				
Energy Strategy													An Energy Policy for Europe														
													2nd Strategic Energy Review														
														EU Energy Strategy 2020													
														EU Infrastructure Package													
															EU Roadmap 2050 (Climate, Move, Energy)												
Security of Supply								Electricity SoS Directive																			
						Gas SoS Directive								Gas SoS Regulation													
Renewables (+20 % by 2020)			1rst RES Directive																								
				2nd RES Directive																							
													RES Financing Communication														
Emissions (-20 % by 2020)												ETS Phase 1		ETS Phase 2			ETS Phase 3										
Energy Efficiency (-20 % by 2020)			1rst EE Action Plan						2nd EE Action Plan			3rd EE Action Plan															
Market Liberalisation	1rst Liberalisation Package			2nd Liberalisation Package			3rd Liberalisation Package																				
Gewässerschutz				Wasserrahmen-RL 2000/60/EG						Wasserrahmen-RL 2008/105/EG																	
Hochwasserschutz											Hochwasser-RL 2007/60/EG																
Nachhaltigkeit						Strat. NE KOM(2001)264		AP NE KOM(2005) 648		Überprüfung U-Pol. KOM(2009) 304																	

NOT EVERY GOALS MEET!

EU goals for the electricity and gas market:

Pan European market for electricity and gas, liberalisation, low energy prices, efficiency and CO₂ reduction, green energy, ...

EU goals for ecology:

Sustainability, locally oriented recycling, back to original status ...

Fix Key-Factors in Policy Papers Consequently!

Ecology		Energy
Water Framework Directive	Flood-Dir., Spatial Planning	
<p>No disadvantages for active power plants! 3 – 5 % loss of production!</p> <p>No restrictions out of the surge/sunk perspective! Reduced flexibility of HPS!</p> <p>Moderate reduction measures for flowing areas as a result of environmental impact assessment! Reduced storage capacity!</p> <p>Quality Standards and maximum of durations for environmental impact assessment procedures! 2020 goals will be missed!</p>	<p>Hydropower plants and its flood measures shall be recognised as regional flood protection.</p> <p>Hydro pumped storages shall be recognised as primary precondition for expanding living areas in the alps.</p>	<p>No grid tariffs for water power plants and HPS!</p> <p>No pricing areas within central europe!</p> <p>Ancillary services are market products!</p> <p>Storages are not a part of infrastructure!</p> <p>Capacity and energy markets for the backup system!</p> <p>No price caps or other regulatory restrictions for power plant products!</p>

Let's live a Renewable Future!

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Thanks for your kind attention!

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