

# Development of residential energy consumption – a comparison of “East” and “West” applied to CZ and AT

Reinhard Haas <sup>1)</sup>  
Jaroslav Knapek <sup>2)</sup>  
Jaroslav Marousek <sup>3)</sup>  
Wolfgang Streicher <sup>4)</sup>  
Lukas Kranzl <sup>1)</sup>

- 1) EEG, Vienna University of Technology, Austria  
2) Czech Technical University in Prague, Czech Republic  
3) SEVEN, Prague, Czech Republic  
4) Graz University of Technology, Austria

## METHOD OF APPROACH:

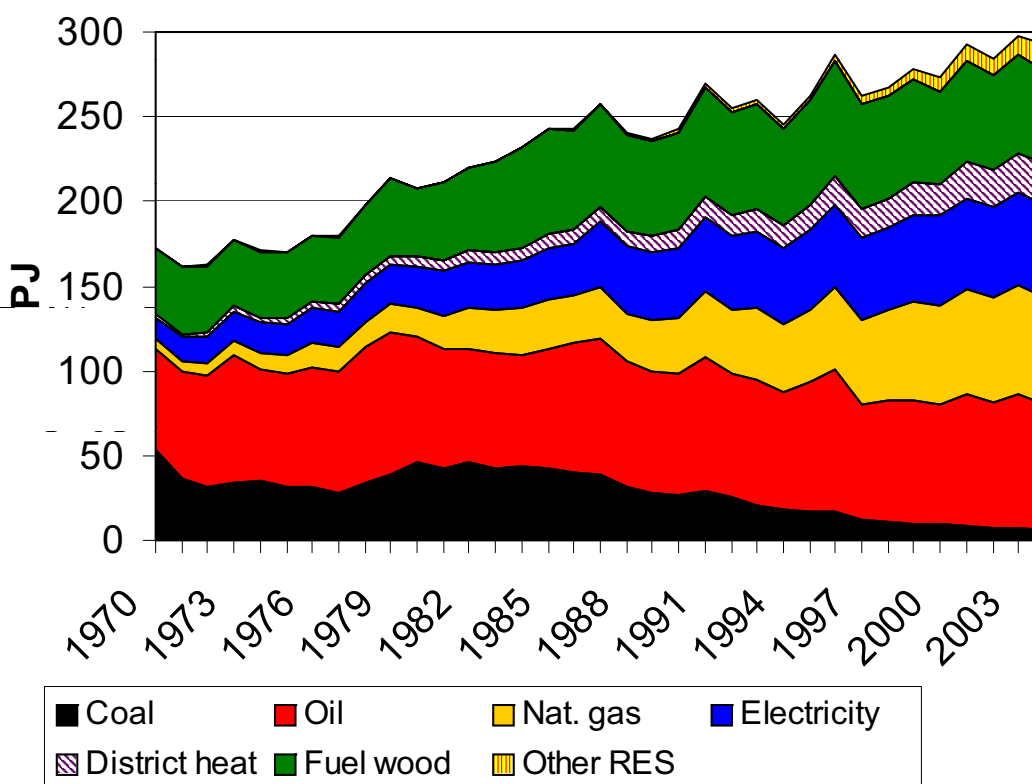
For every feature described in the  
following four steps conducted:

- A. Documentation for CZ
- B. Documentation for AT
- C. Comparison of CZ and AT
- D. Discussion of similarities  
/differences

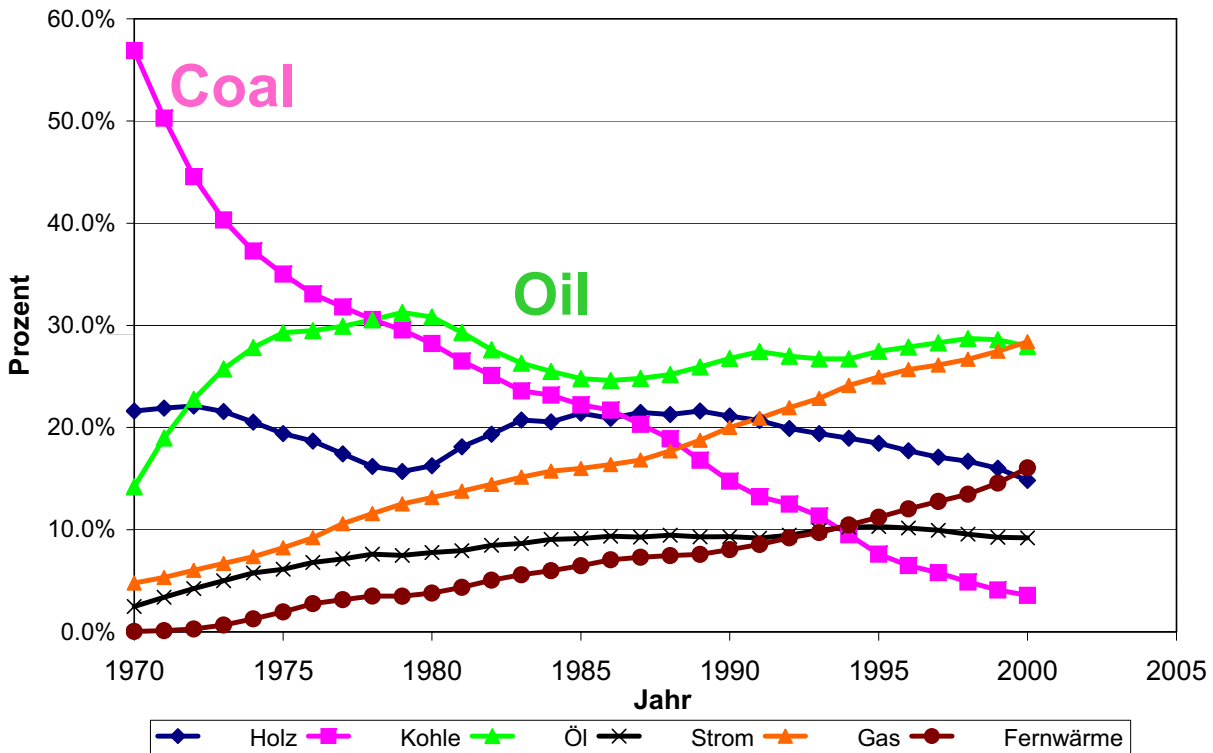
1. Introduction (2p., all, Draft by RH)

2. Historical development of energy consumption and CO2 emissions by fuel and end use (heating, electric-specific, transport) 1970-2004  
(3 to 6 figures, 6p., LK and JK(?))

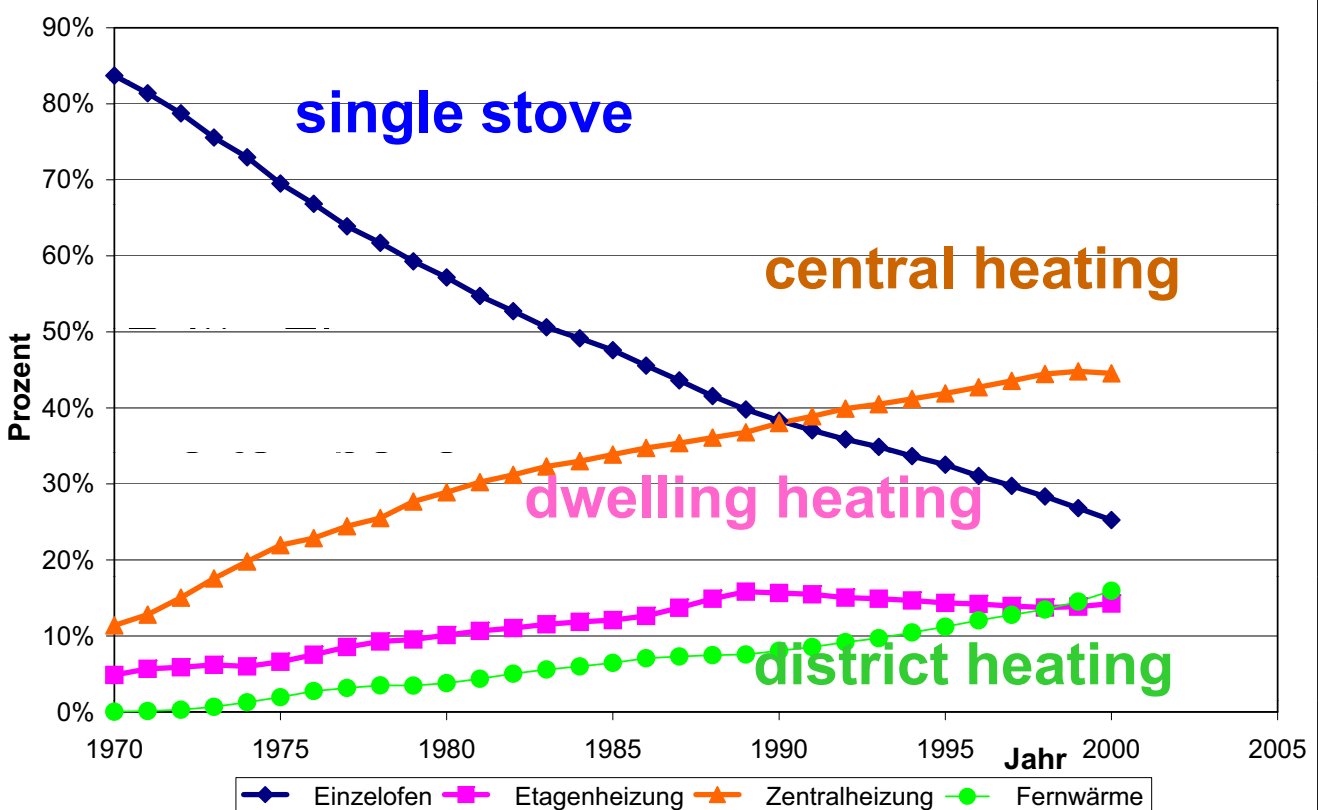
## ENERGY CONSUMPTION OF PRIVATE HOUSEHOLDS IN AUSTRIA



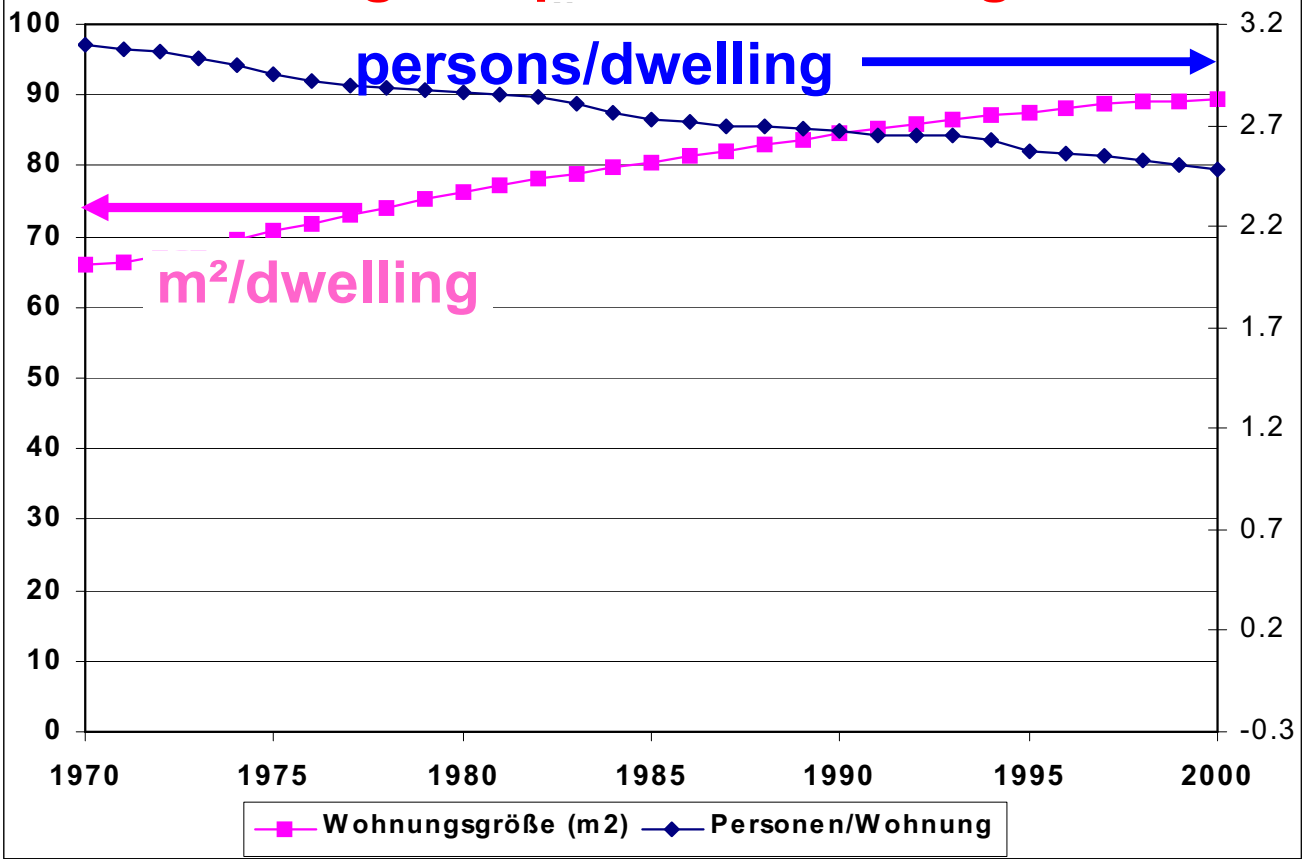
# FUEL SHARES HEATING PRIVATE HOUSEHOLDS



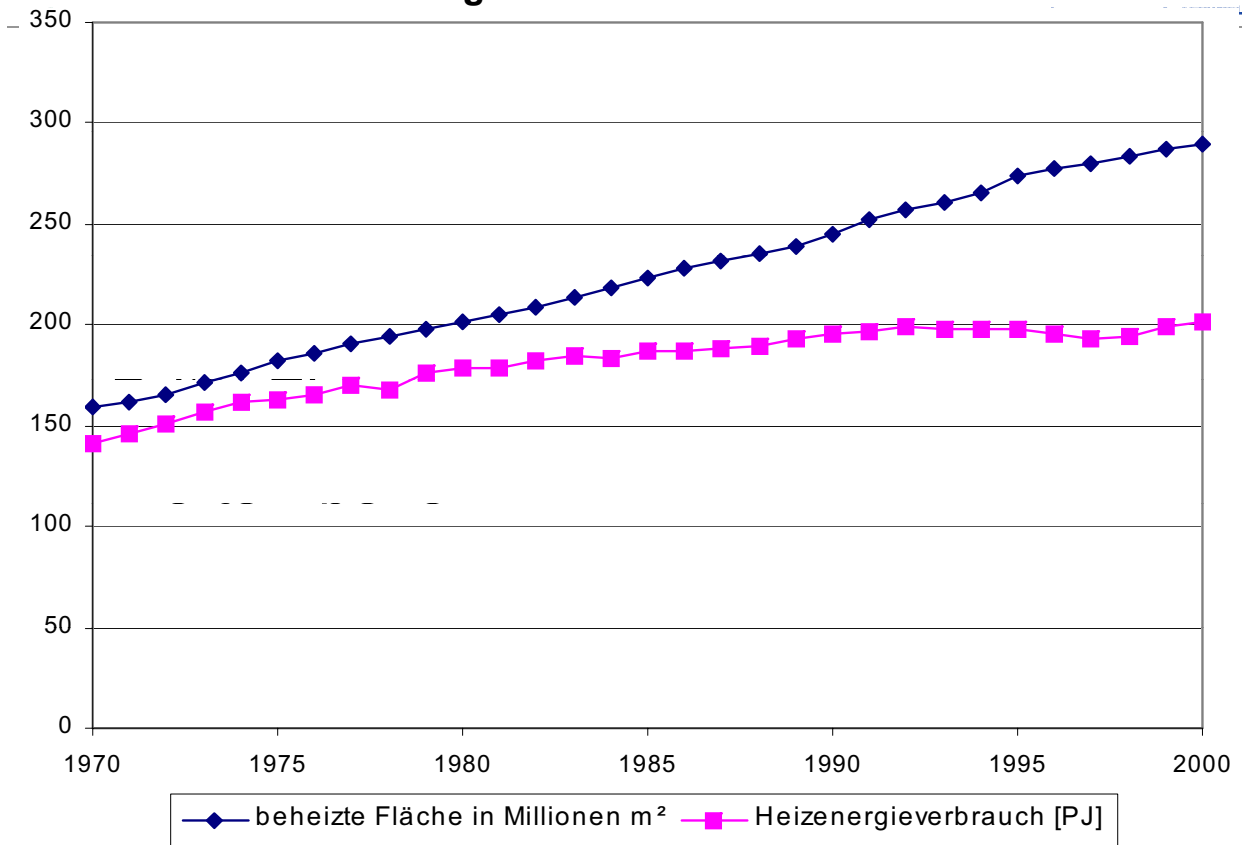
# SHARES OF HEATING SYSTEMS



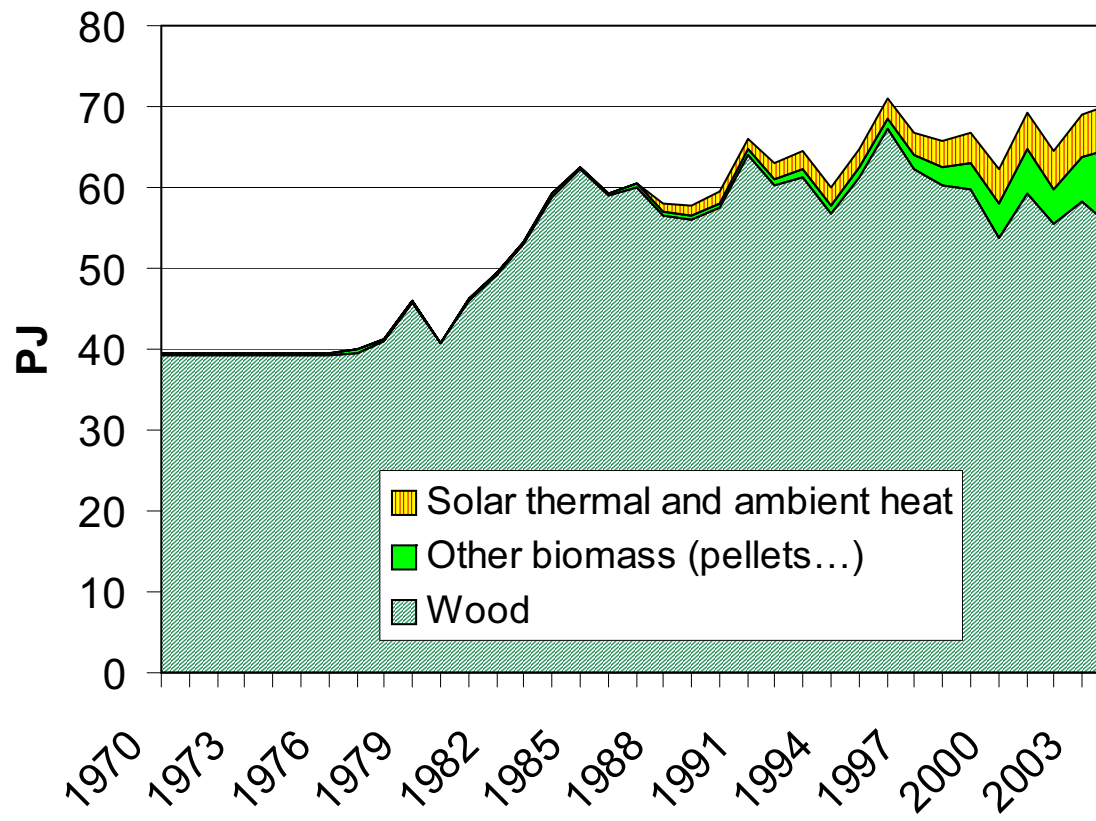
# m<sup>2</sup>/dwelling and persons/dwelling in AT



# Entwicklung von beheizter Fläche und Heizenergieverbrauch in Österreich



## RENEWABLES FOR HEATING



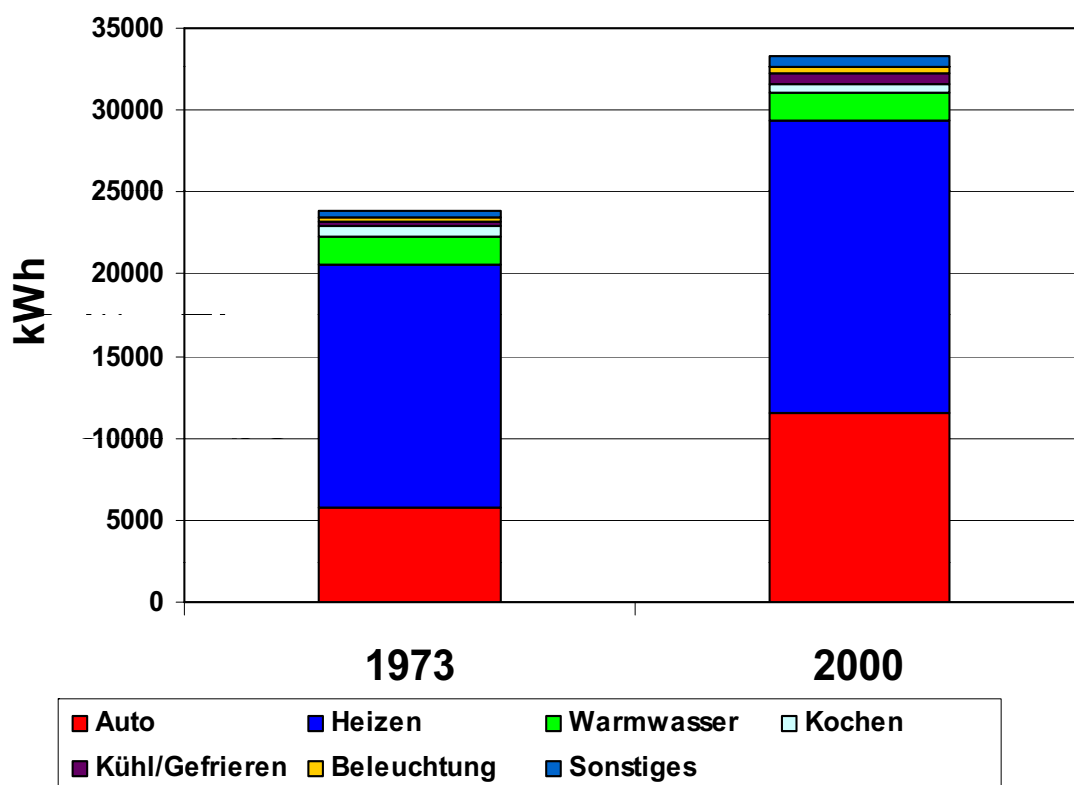
## TABLE OF CONTENT (2)

**3. Heating: Comparison of building /dwelling structure issues (m<sup>2</sup> per dwellings, persons per dwelling, specific final/useful energy per m<sup>2</sup> ) (10 to 12 figures, 12p., WS and JM(?))**

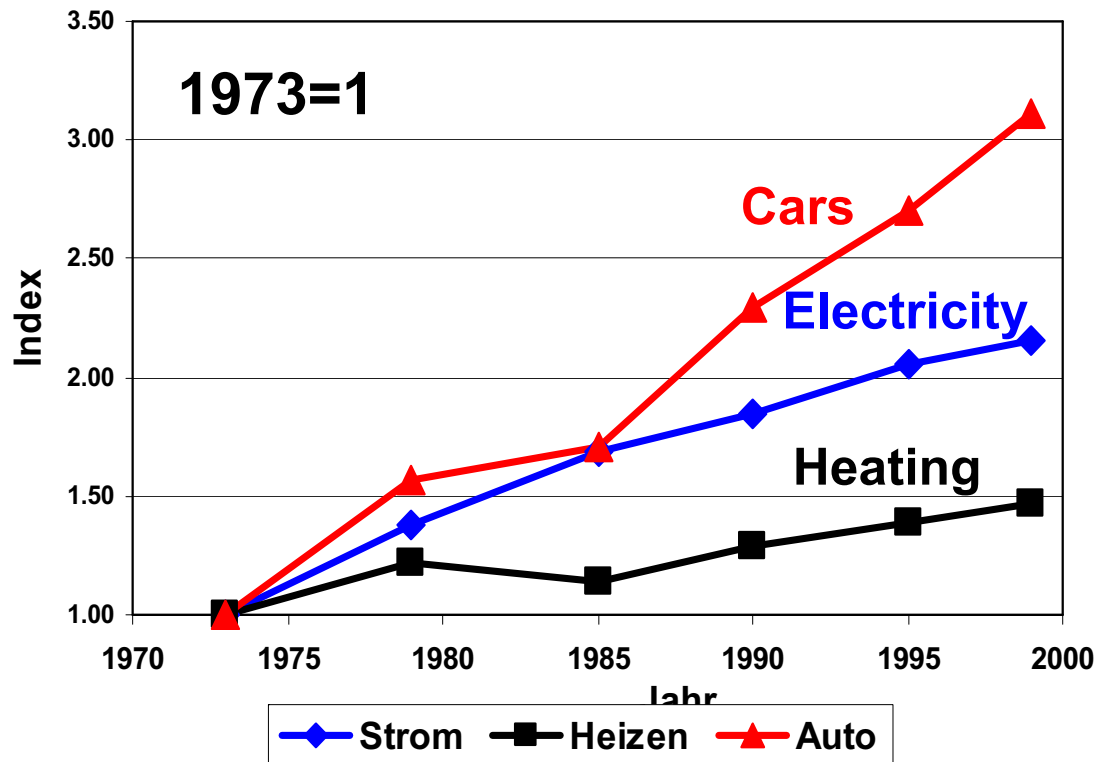
**4. Comparison of end uses: 1970 (1990)  
2004 (3 to 6 fig., 4p., RH and JK(?))**

**5. Historical development of electricity  
consumption by end use (1970-2004)  
(saturation of appliances, specific  
demand by appliance...)  
(3 to 6 figures, 6p., RH and JM(?))**

## AT: HOUSEHOLDS: SHARE OF END USES



**PRIVATE HOUSEHOLDS 1973-2000**



**6. Historical development of prices, income, intensity for total, heating and electricity (1970-2004)**

**(3 to 6 figures, 6p., RH and JK(?))**

**7. Private transport: historical development of number of cars, energy consumption and modal split (1970- 2004)**

**(3 to 6 figures, 4p., RH and (?))**





- 8. Some econometric analyses (4p., RH and (?))
  - 9. Future trends: Existing forecasts and scenarios, special focus on renewables, discussion (3 to 6 figures, 4p., RH, WS and JM(?))
  - 10. Conclusions (1p., all )
- TOTAL: (49p., all )**

## Example: Residential energy demand in Austria 1970-2000

Model ->:	A	B	C	D	E
C (constant)	1.56 (9.57)	2.75 (8.88)	-3.66 (1.86)	1.25 (2.27)	-4.28 (3.05)
$\alpha$ (short term price elasticity)	-	-	-	-0.16 (1.79)	-0.21 (3.19)
$\beta$ (short term income elasticity)	-	-	-	0.59 (3.66)	0.70 (5.80)
$\delta$ (Heating degree days)	-	-	0.74 (3.28)	-	0.65 (4.13)
$\lambda$ (Lag)	-	-	-	0.39 (2.19)	0.37 (2.83)
A (long term price elasticity)	-	-0.31 (-3.41)	-0.36 (4.68)	-0.26 <sup>*)</sup> (-)	-0.33 <sup>*)</sup> (-)
B (long term income elasticity)	0.97 (25.7)	0.83 (10.9)	0.95 (13.0)	0.97 <sup>*)</sup> (-)	1.11 <sup>*)</sup> (-)
R <sup>2</sup> korr	0.66	0.84	0.89	0.90	0.95
F – Test	8.59	59.4	61.7	68.7	99.3
DW	1.6	0.91	0.86	1.81	1.84
Durb. H	-	-	-	0.89	0.48
ESS	0.188	0.088	0.057	0.049	0.025

<sup>\*)</sup> Calculated from:  $A = \alpha / (1-\lambda)$  and  $B = \beta / (1-\lambda)$