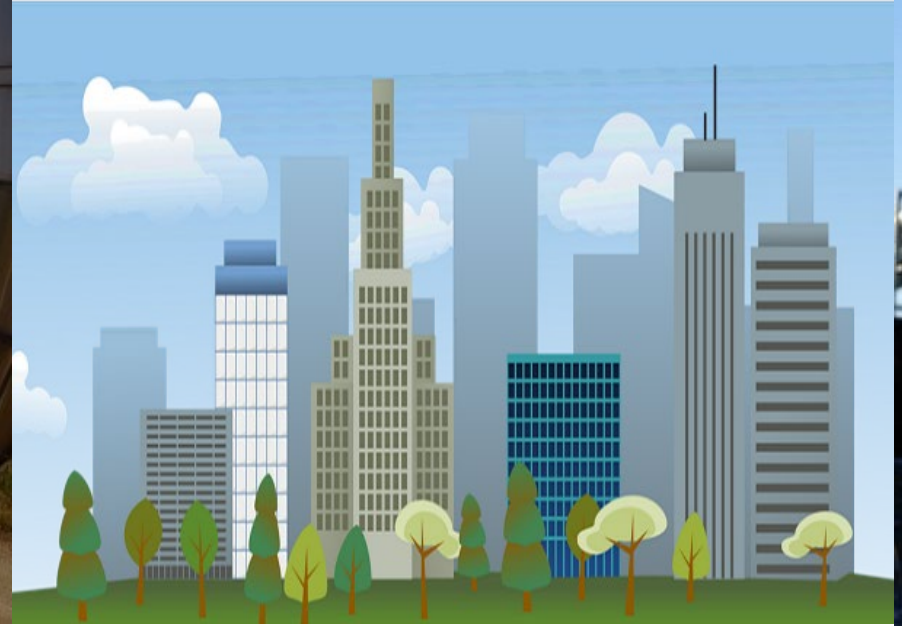




Challenges and Models for Heat Sector Transition

ADB TA 6564 KAZ Supporting Renewable Technology Inclusive Heat Supply

Legislation – Technical and Legal Consultancy. Ilka Lewington

VPC
Member of Dornier Group

- **1st July 2021**

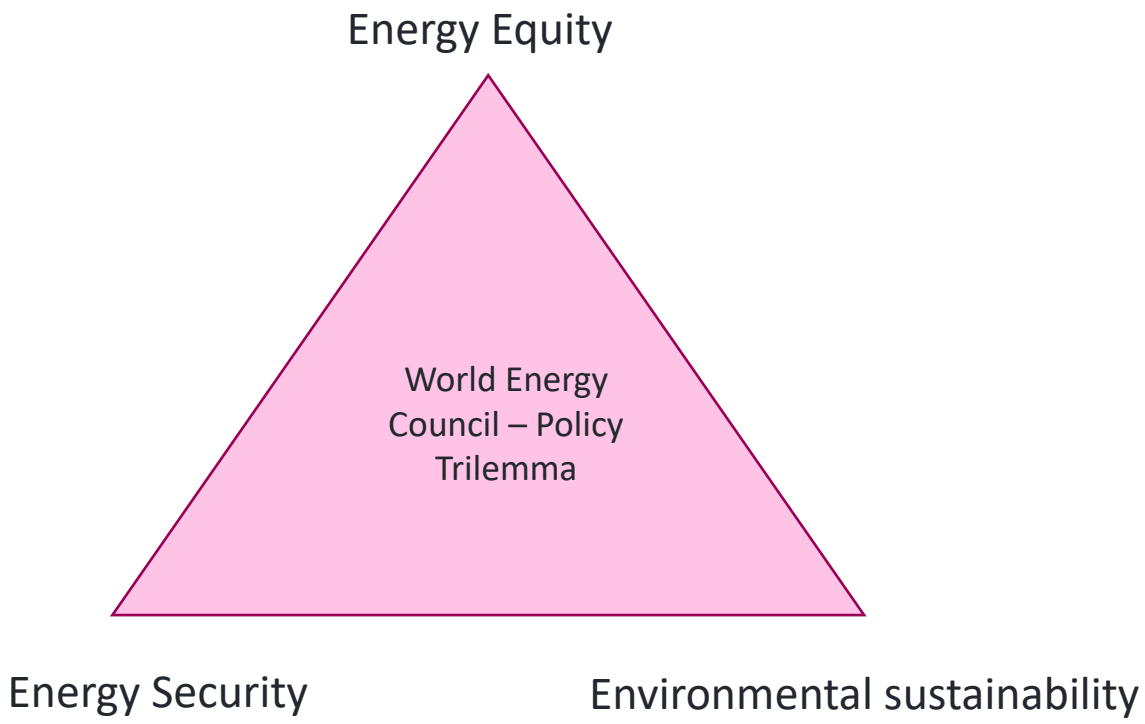
Existing situation at the start of transition

Some similarities, but also differences: each country has its own set of circumstances

	East Germany	Poland	Hungary	Bulgaria	Russia	Lithuania	Belarus	Romania	Ukraine
Share of centralised DH	High compared to non-transition countries (50-60% in cities, 20-30% overall)								
Main type of plant for centralised DH	HOP	CHP (electricity)	CHP (electricity)	CHP (electricity)	CHP (electricity)	HOP	CHP (electricity)	CHP (electricity)	CHP (electricity)
Main fuel	Coal	Coal	Coal	Coal	Coal & Gas		Gas	Coal & Gas	Coal & Gas
Age and condition of generation plant	Very bad	Bad	Medium	Bad	Medium	Medium	Medium	Bad	Medium
Age and condition of pipelines	Relatively good	Medium	Relatively good	Bad	Medium	Relatively good	Medium	Bad	Medium
Competitive alternatives to DH available	Yes (rapid expansion of gas network)	No	Yes (rapid expansion of gas network)	Yes	No	Yes	No	Yes	No
Environmental obligations becoming binding	(Almost) immediately	Medium timeframe	Medium timeframe	Longer timeframe	Much longer timeframe	Medium timeframe	Much longer timeframe	Medium timeframe	Much longer timeframe
Fossil fuel endowment	Very low	Medium	Low	Low	Very high	Low	Very low	Medium	Medium

Challenge of the transition: to solve the Policy Dilemma(s)

Some similarities, but also differences: each country has its own set of priorities and general conditions

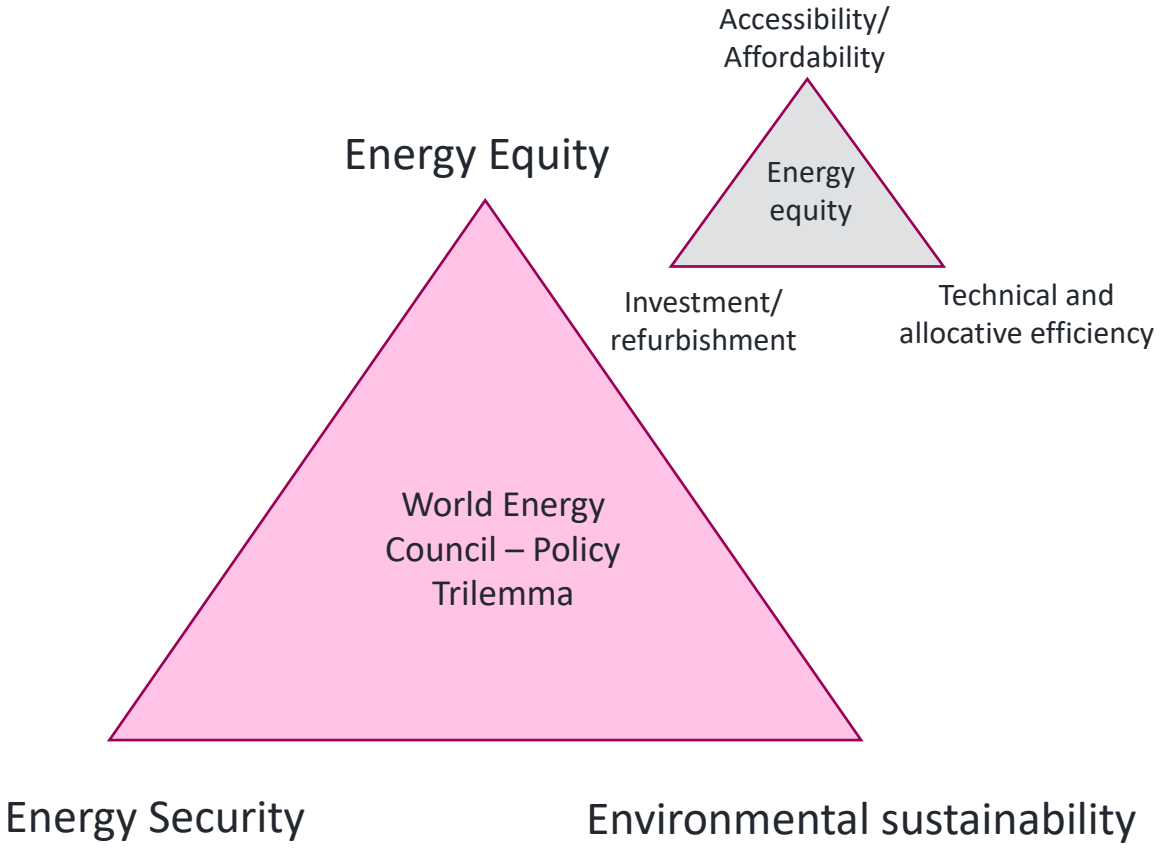


Example: World Energy Council 2020 scores and ranking of some countries

Country	Index rank	Balance grade	Trilemma score	Energy security rank	Energy equity rank	Environmental sustainability rank
Sweden	2	ABA	84.2	6	28	2
Denmark	3	AAA	84.0	4	15	10
Germany	7	AAA	80.9	11	22	25
Lithuania	16	BAA	77.6	43	18	16
South Korea	31	BAC	73.4	45	11	66
Kazakhstan	42	ABD	70.3	15	38	83

Challenge of the transition: to solve the Policy Dilemma(s)

Some similarities, but also differences: each country has its own set of priorities



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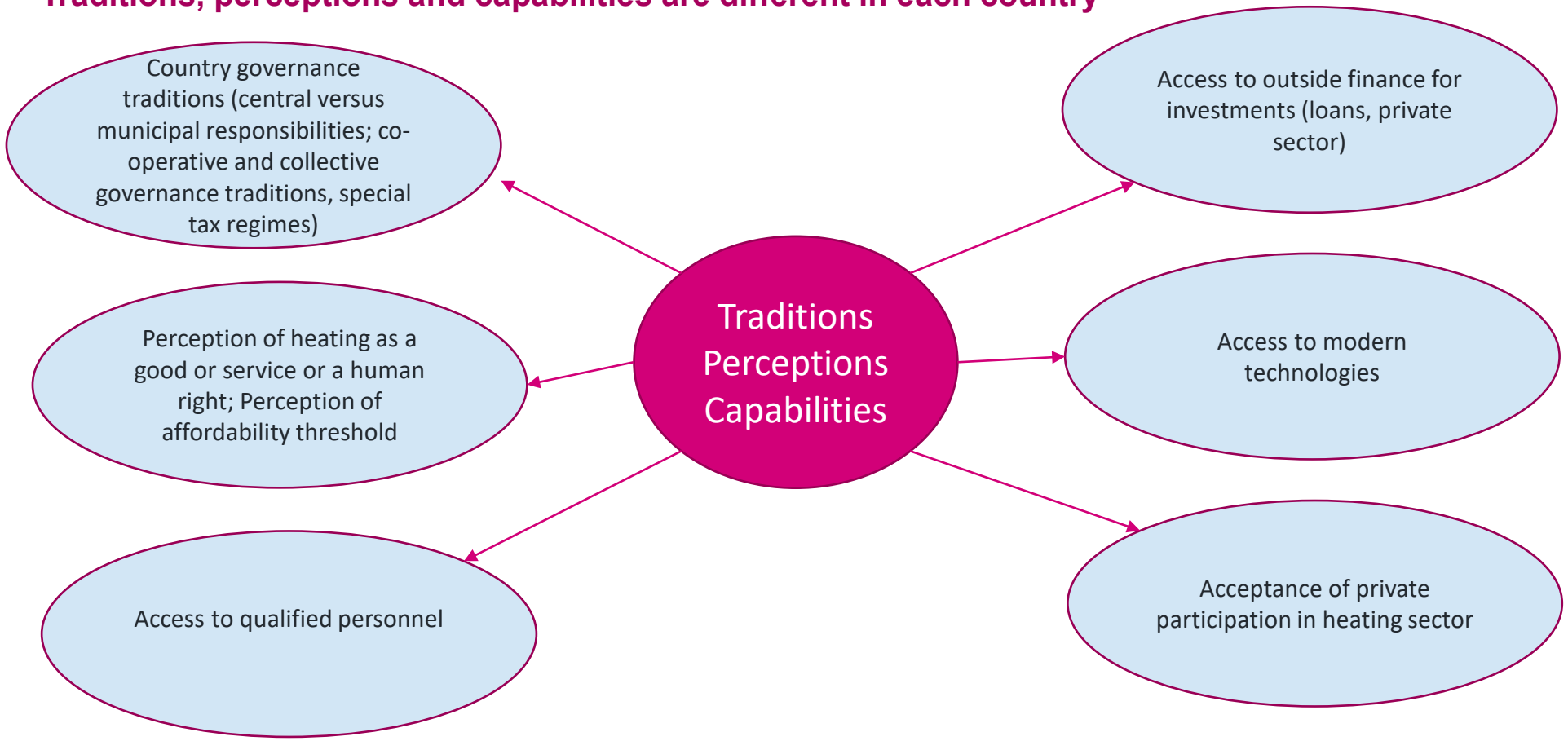
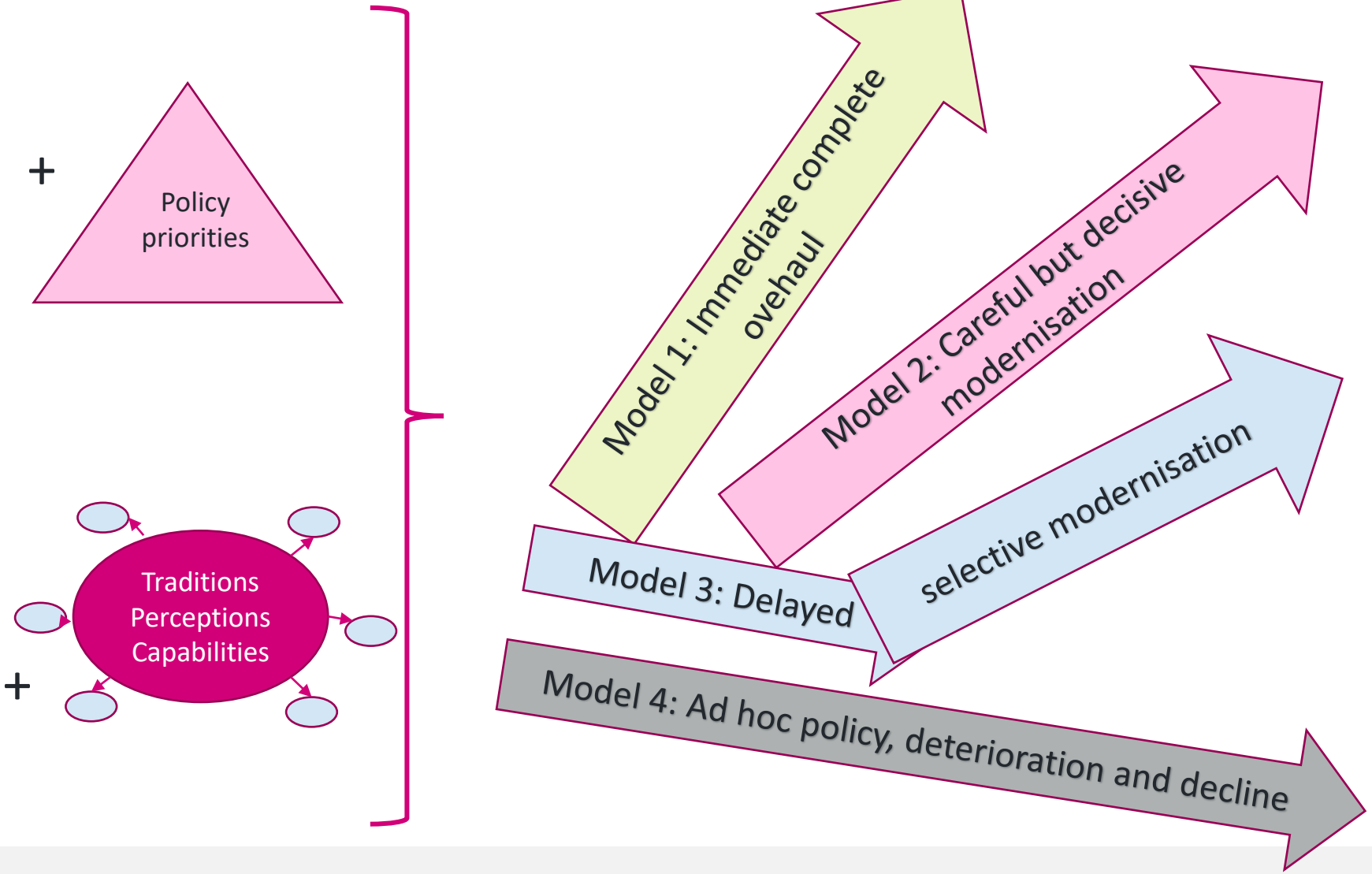
Approach and instruments for the transition

Traditions, perceptions and capabilities are different in each country



Can we define „Stylised Models“ of transition ?

Share of centralised DH
Main type of plant for centralised DH
Main fuel
Age and condition of generation plant
Age and condition of pipelines
Competitive alternatives to DH available
Environmental obligations becoming binding
Fossil fuel endowment



No miracles: every proper transition path required substantial tariff increases

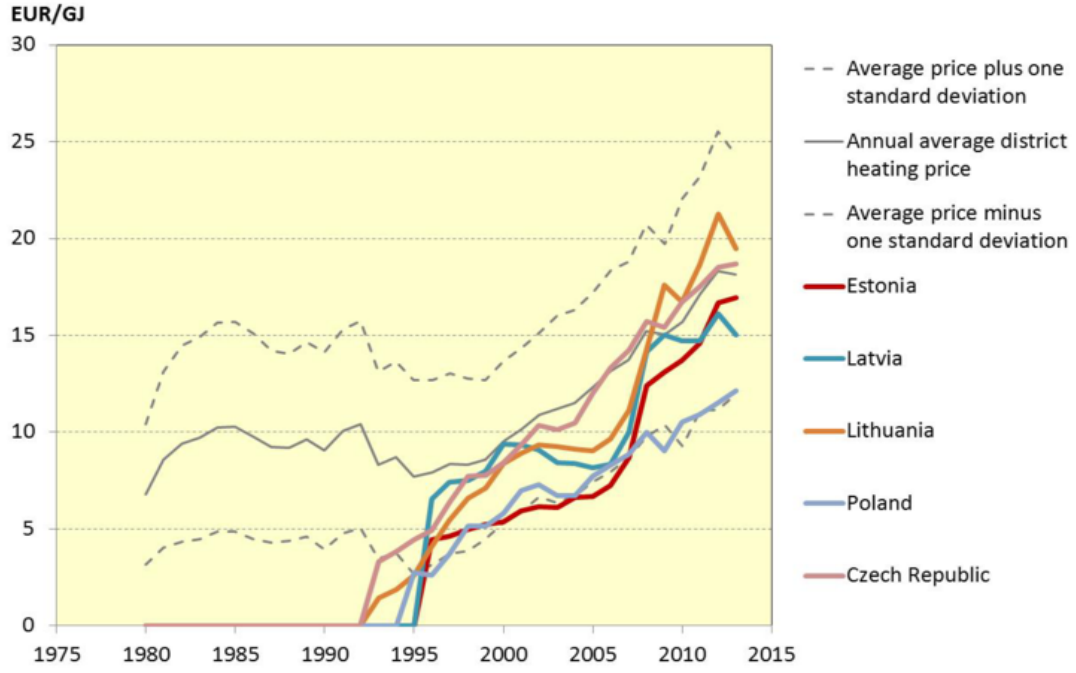


Figure 4. Annual average national district heating prices for the three Baltic countries, Poland, and Czech Republic together with the average European prices and the corresponding standard deviations.

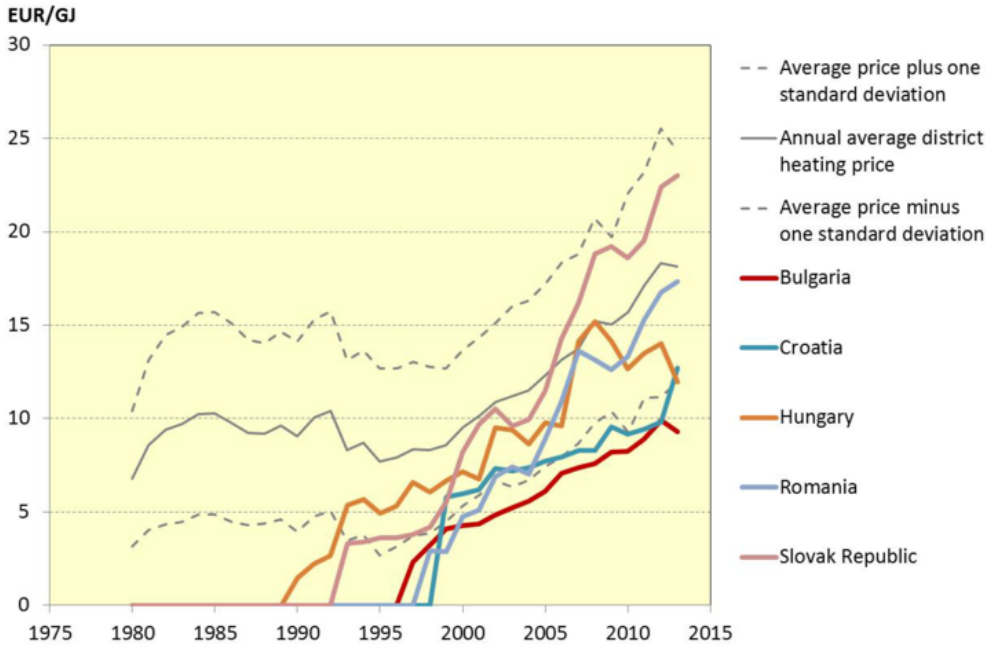
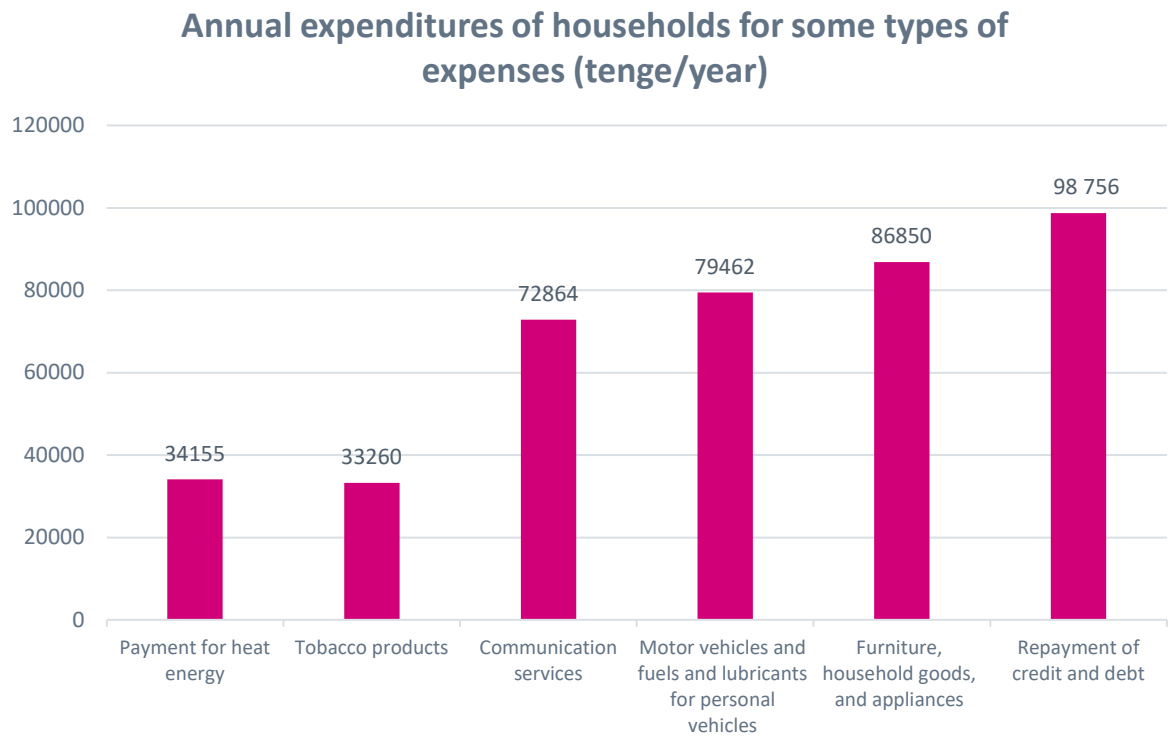


Figure 5. Annual average national district heating prices for Bulgaria, Croatia, Hungary, Romania, and Slovak Republic together with the average European prices and the corresponding standard deviations.

International threshold of affordability: up to 10% of household expenditures spent on energy; or up to 5% of household expenditures spent on heating. In some countries for some transition periods households spent up to 15 % on heating

For comparison: households spending on heating in Kazakhstan (DH)

	Payment for heat energy tg/year	Annual household income, tg	Heat energy costs from annual income, %
Republic of Kazakhstan	34 155	2 353 246	1,5
Akmola	21 870	1 994 983	1,1
Aktobe	32 379	2 501 575	1,3
Almaty	30 164	2 133 867	1,4
Atyrau	25 851	2 791 747	0,9
West Kazakhstan	36 871	2 334 286	1,6
Zhambyl	23 075	1 962 027	1,2
Karaganda	43 886	2 553 944	1,7
Kostanay	47 283	2 116 237	2,2
Kyzylorda	15 461	2 698 156	0,6
Mangistau	23 460	3 460 652	0,7
Pavlodar	35 590	2 210 755	1,6
North Kazakhstan	42 448	2 034 505	2,1
Turkestanskaya	23 549	2 056 784	1,1
East Kazakhstan	39 960	2 135 489	1,9
r. Nur-Sultan	31 499	3 044 357	1,0
r. Almaty	35 598	2 626 779	1,4
r. Shymkent	17 487	1 966 635	0,9



Transition of heating sector in modern times: more challenges and more opportunities