



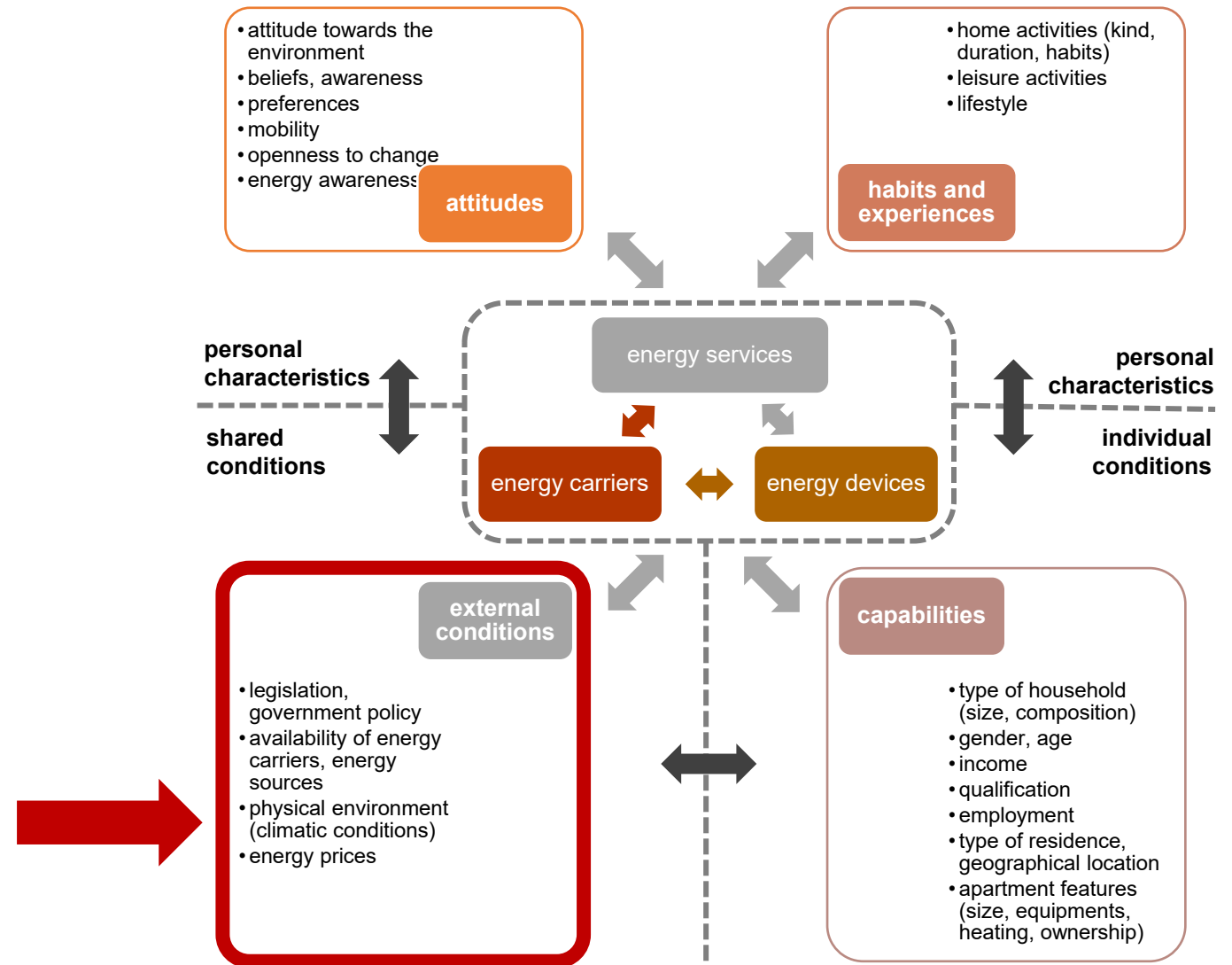
Correlations Between Domestic Hot Water Consumption and Changes in Outdoor Temperature

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Major influencing factors of the energy consumption of the households



Correlation between DHW consumption and outer temperature

- whole housing estate (Budapest, Hungary)
- 72 buildings, 84 months
- regression analysis with two variables

	whole housing estate
R	0.8611
R ²	0.7415
Adjusted R ²	0.7384
Std. Error of the Estimate	4.4784
N	84
F	235.2337
Significance	< 0.001



spatial level	Regression equation
whole housing estate	$y = -0.9461 \times t + 102.2682$

where:

y – estimated DHW consumption of the jth month [l/apt./day]

t – mean temperature of the jth month [°C]

**a 1 °C rise in outer temperature →
1 liter decrease in DHW consumption per apartment per day**

Prognosis based on climate projections

model	current temperature [°C]	ALADIN–Climate (RCP8.5)		RegCM (RCP 4.5)	
period	average of 2010–2016 years	2021–2050	2071–2100	2021–2050	2071–2100
year	12.61	14.11–14.61	15.61–16.11	13.61–14.11	15.61–16.11
winter	2.27	3.27–3.77	4.27–4.77	3.27–3.77	5.27–5.77
spring	12.92	14.42–14.92	15.92–16.42	14.42–14.92	15.42–15.92
summer	22.64	24.64–25.14	26.64–27.14	23.14–23.64	26.14–26.64
autumn	12.63	14.13–14.63	15.63–16.13	13.13–13.63	15.63–16.13



climate projections predict the rising of the mean temperature in all seasons → decreasing DHW consumption

model	current consumption [l/apt./day]	ALADIN–Climate (RCP8.5)		RegCM (RCP 4.5)	
period	average of 2010–2016 years	2021–2050	2071–2100	2021–2050	2071–2100
year	90.34	88.44–88.92	87.02–87.50	88.92–89.39	87.02–87.50
winter	100.13	98.71–99.18	97.76–98.23	98.71–99.18	96.81–97.29
spring	90.04	88.15–88.62	86.73–87.20	88.15–88.62	87.20–87.68
summer	80.85	78.49–78.96	76.59–77.07	79.91–80.38	77.07–77.54
autumn	90.32	88.43–88.90	87.01–87.48	89.38–89.85	87.01–87.48

Thank you for your attention!

