



Kanton Zürich

Office of Waste, Water, Energy and Air, canton of Zurich

Development of the energy regulations and their impacts

Swiss-US Energy Innovation Days 2015

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Energy regulations ...

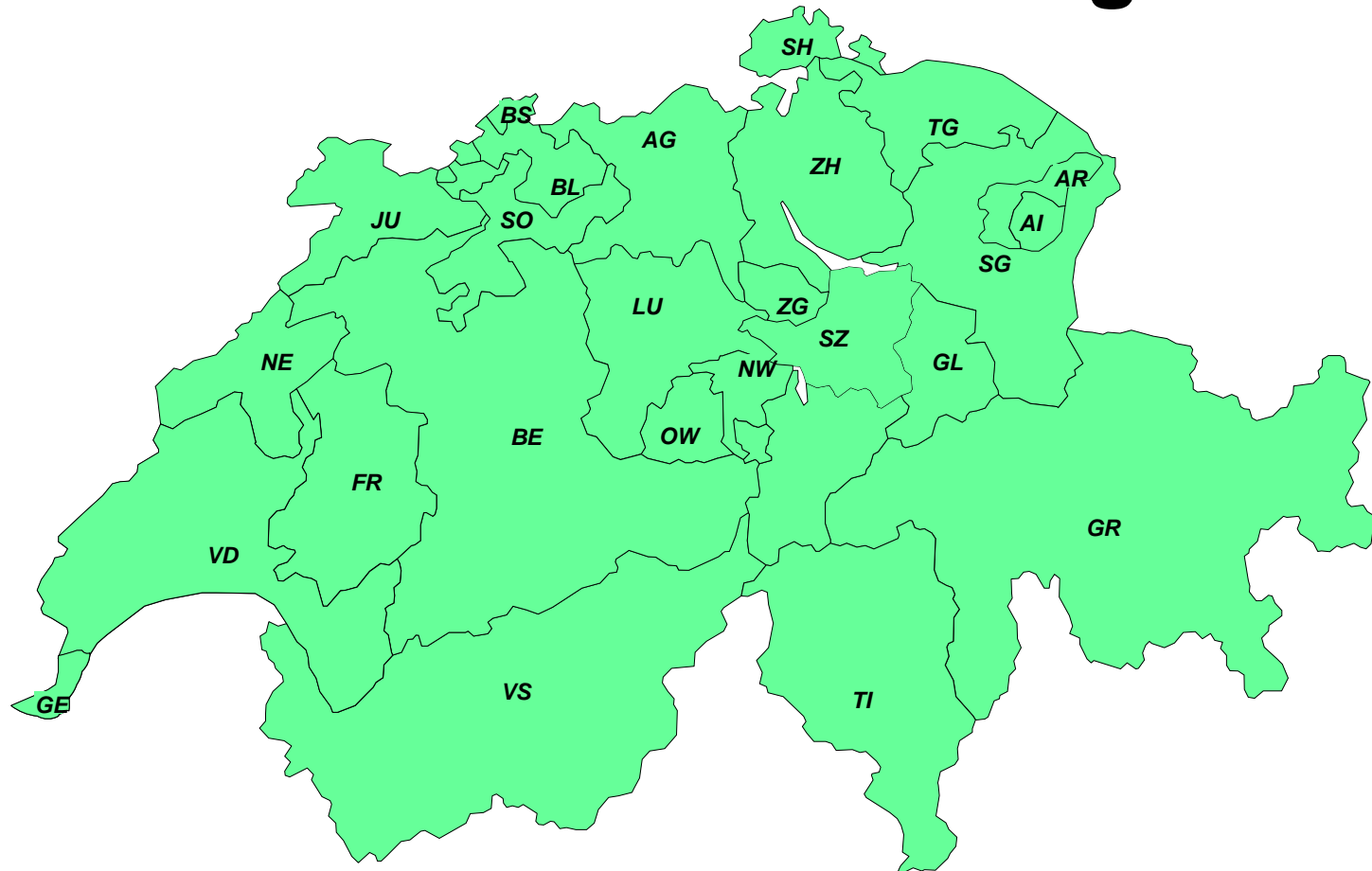
Switzerland (federal):

- regulations concerning vehicles and devices/equipment

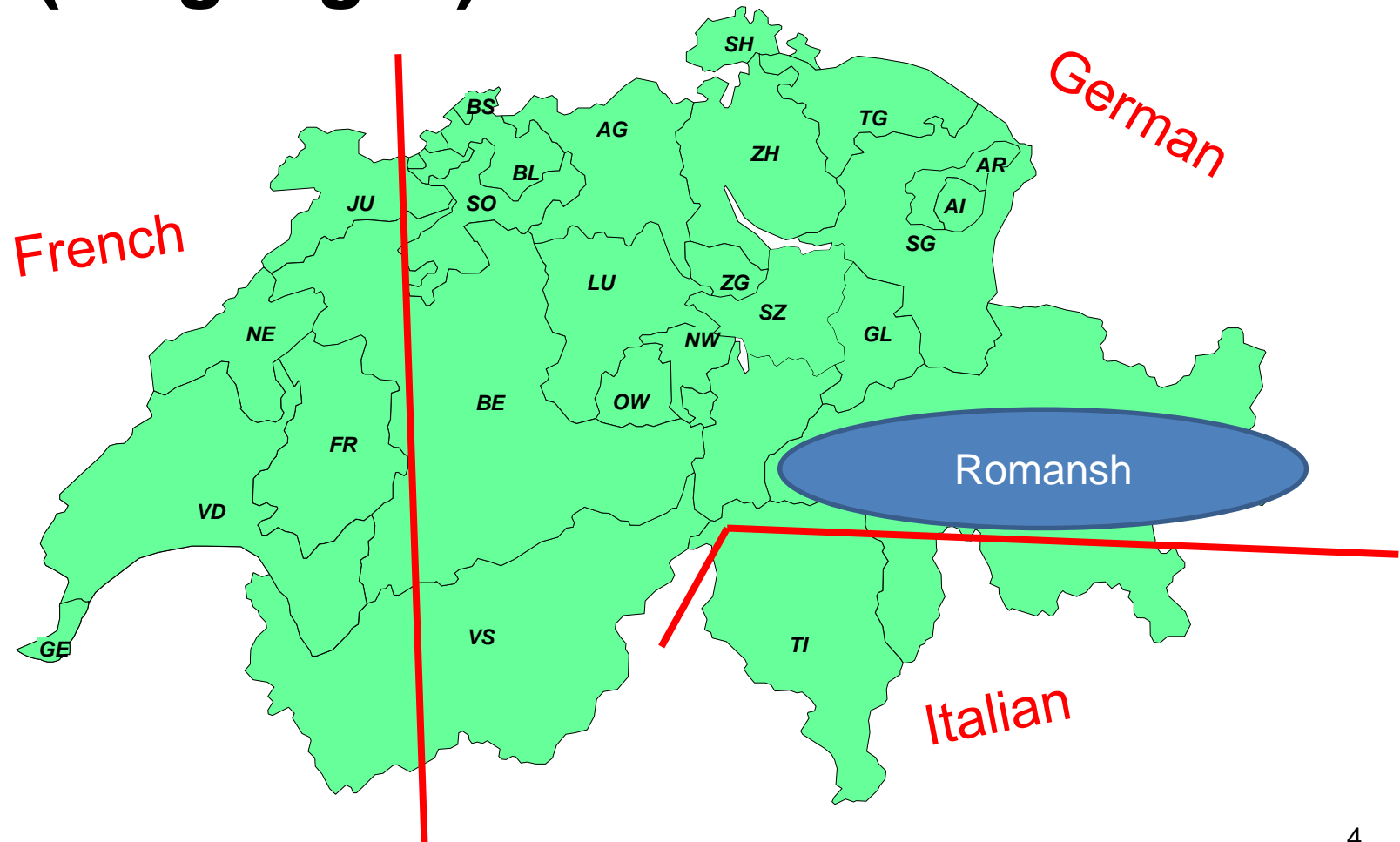
26 Cantons:

- regulations concerning buildings

Model of energy regulations of the cantons in the building sector



Cantons work together ... (languages)



Energy policy of the cantons

year	step
1992	Model regulations for buildings
1998	Establishment of the standard «Minergie»
2000	Model regulations: energy regulations in the building sector (MuKE n 2000)
2003	Model for subsidy program of the cantons (HFM 2003)
2007	Model for subsidy program of the cantons (HFM 2007)
2008	Model regulations: energy regulations in the building sector (MuKE n 2008)
2009	Energy certificate of the cantons for buildings «GEAK ®»
2010	National subsidy program of all the cantons
2013	GEAK - Extension with energy counseling for building owners
2014	Model regulations: energy regulations in the building sector (MuKE n 2014) Decision: 9 January 2015

Model regulations «MuKEEn 2014»

Swiss conference of the
cantonal ministers of
energy (EnDK)

www.endk.ch

Decision: 9th January 2015



Konferenz Kantonaler Energiedirektoren
Conférence des directeurs cantonaux de l'énergie
Conferenza dei direttori cantonali dell'energia
Conferenza dals directurs chantunals d'energia



Konferenz Kantonaler Energiefachstellen
Conférence des services cantonaux de l'énergie
Conferenza dei servizi cantonali dell'energia
Conferenza dals posts spezialisads chantunals d'energia

**Mustervorschriften der Kantone im
Energiebereich (MuKEEn)**
Ausgabe 2014, deutsche Version

**Modèle de prescriptions
énergétiques des cantons (MoPEC)**
Edition 2014, version allemande

**Modello di prescrizioni energetiche dei
cantoni (MoPEC)**
Edizione 2014, versione tedesco

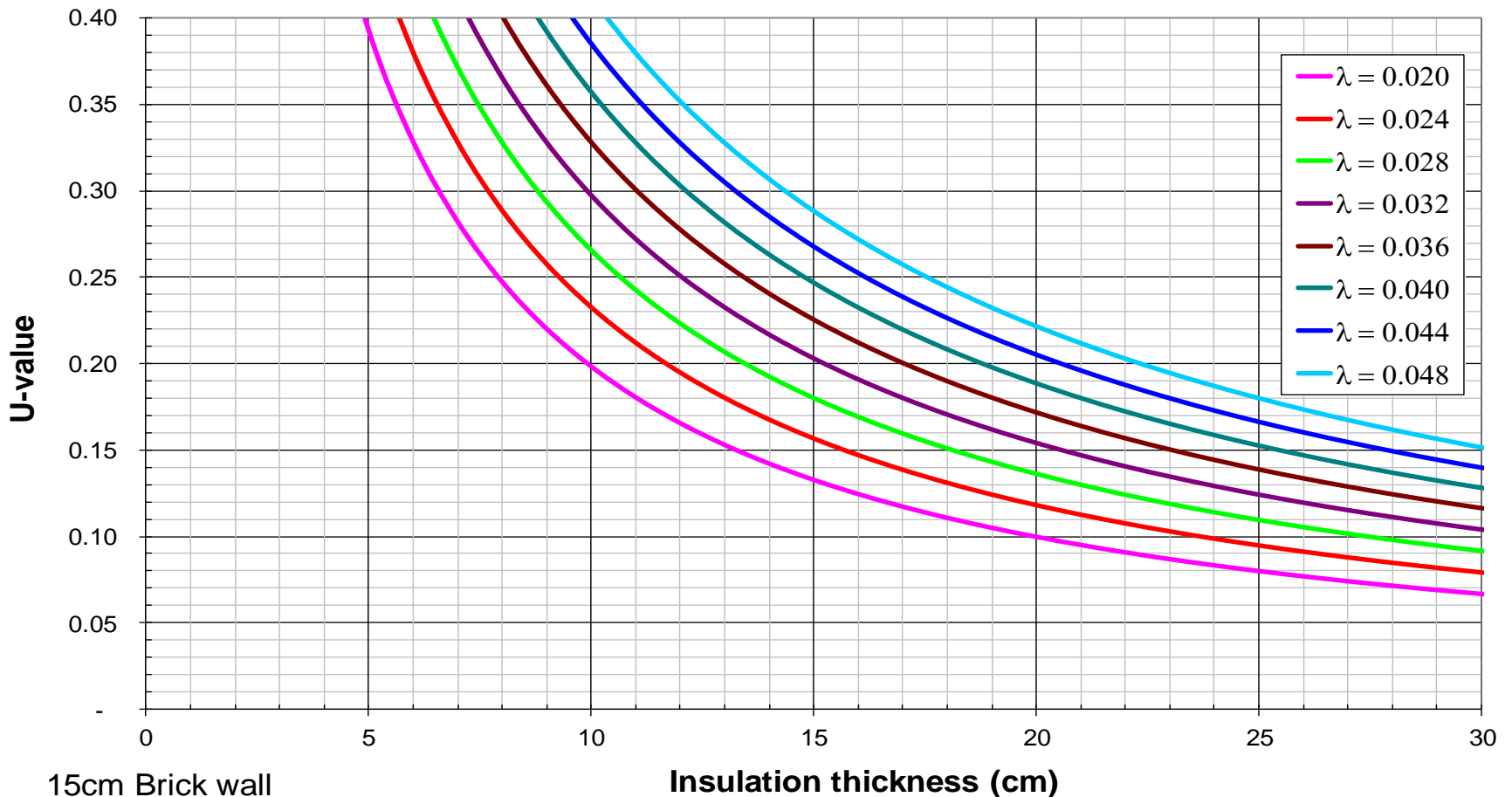
Von der EnDK anlässlich der
Plenarversammlung vom 9. Januar 2015 verabschiedet

Development of regulation: U-value «wall» (U: Heat transfer coefficient)

	new buildings	retrofit
Model regulations 1992	0,3 W/m ² K	0,5 W/m ² K
Subsidy – program 1997		0,3 W/m ² K
Model regulations 2000	0,3 W/m ² K	0,3 W/m ² K
Subsidy – program 2006		0,23 W/m ² K
Model regulations 2008	0,2 W/m ² K	0,25 W/m ² K
Model regulations 2014	0,17 W/m ² K	0,25 W/m ² K

U-value: dependence of insulation material

(λ = thermal conductivity of insulation material, W/mK)



Development of regulation: U-value «window»

	new buildings	retrofit
Model regulations 1992	2,0 W/m ² K	2,0 W/m ² K
Subsidy – program 1997		1,5 W/m ² K
Model regulations 2000	1,7 W/m ² K	1,7 W/m ² K
Subsidy – program 2006		1,5 W/m ² K
Model regulations 2008	1,3 W/m ² K	1,3 W/m ² K
Model regulations 2014	1,0 W/m ² K	1,0 W/m ² K

Comparison: U-values in Europe

	MT	CY	PT	EL	ES	IT	LV ⁽¹⁾	FR	BG	BE	NL	IE	HU	SI
HDD⁽⁵⁾	560	782	1282	1663	1842	1907	1970	2483	2686	2872	2902	2906	2922	3053
Roof	0.59	0.85	0.9-1.25	0.35-0.5	0.45-0.65	0.32-0.65	0.2k-0.35k	0.2-0.25	0.3	0.3	0.4	0.25	0.25	0.2
Walls	1.57	0.85	1.45-1.8	0.4-0.6	0.57-0.94	0.33-0.62	0.25k-0.5k	0.36-0.40	0.35	0.4	0.4	0.37	0.45	0.28
Floor	1.57	2		0.45-0.5	0.62-0.69	0.29-0.38	0.2k-0.35k	0.37-0.40	0.5	0.6	0.4	0.37	0.45	0.9
Window/Door	5.8	3.8		2.6-3.2	3.1-5.7	1.3-3.7	1.8k-2.4k	1.7-1.9	1.8	2.5	4.2	2.2	1.6	1.1-1.6

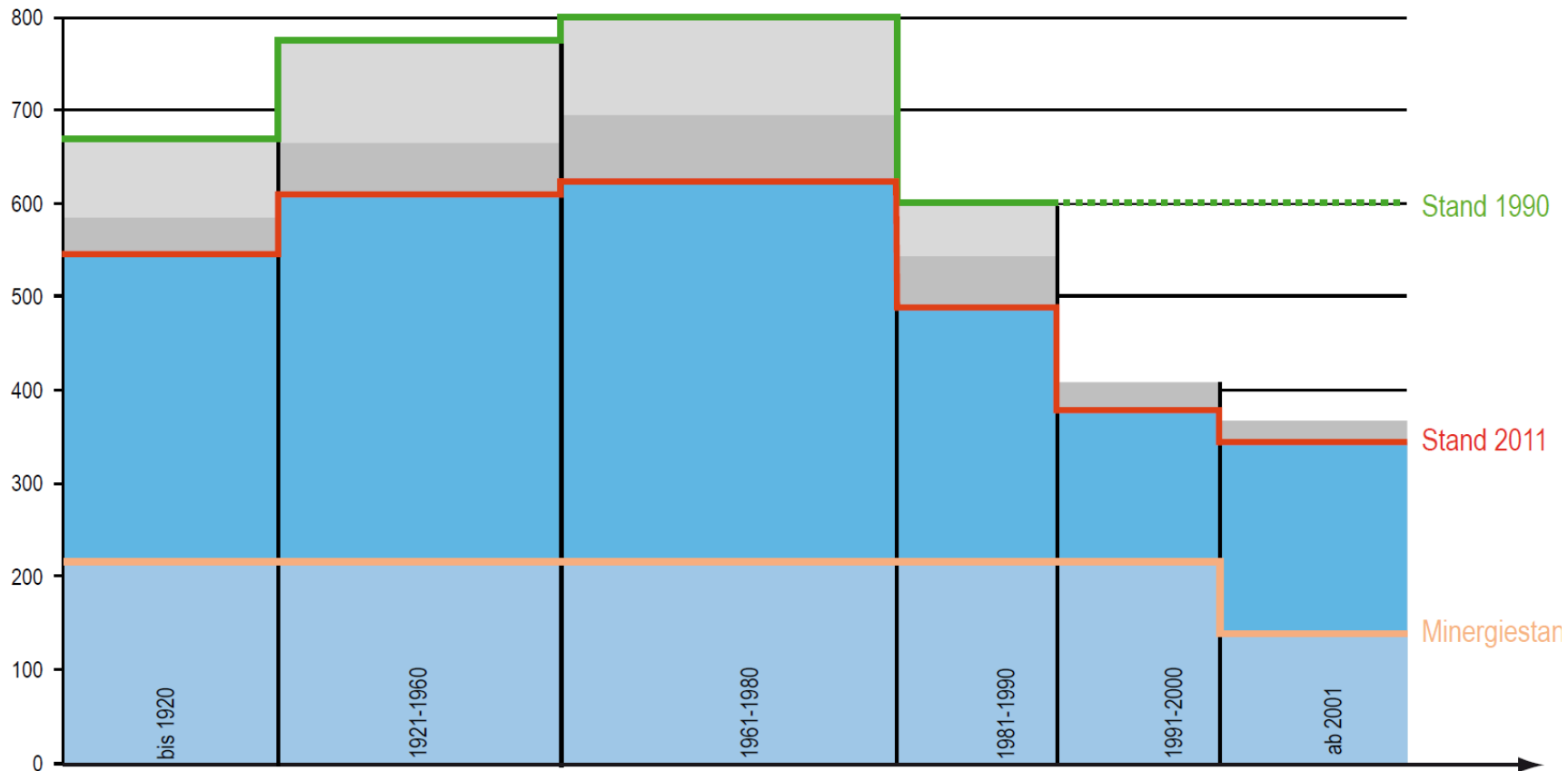
	UK ⁽³⁾	RO	DE	SK	CH ⁽²⁾	DK	CZ	AT	PL	LT	EE	SE ⁽⁴⁾	NO	FI
HDD	3115	3129	3239	3453	3482	3503	3571	3573	3616	4094	4444	5444	5646	5850
Roof	0.2	0.2	0.24	0.19	0.17 or 0.2	0.2	0.24	0.2	0.25	0.16	0.15-0.2	0.4-0.6	0.18	0.09
Walls	0.3	0.56	0.24	0.32	0.17 or 0.2	0.3	0.3	0.35	0.3	0.2	0.2-0.25		0.22	0.17
Floor	0.25	0.35	0.3		0.17 or 0.2	0.2	0.45	0.4	0.45	0.25	0.15-0.2		0.18	0.16
Window/Door	2	1.3		1.7	1.3	1.8	1.7	1.4	1.7	1.6	0.7-1.4		1.6	1.0



CH 2008
(HDD = Heating Degree Days)

Energy use of buildings

Specific energy consumption for heating and warm-water (MJ/m²a) [2011]



Reference area for energy performance (ZH: 87 Mio m²)

Renewable energy

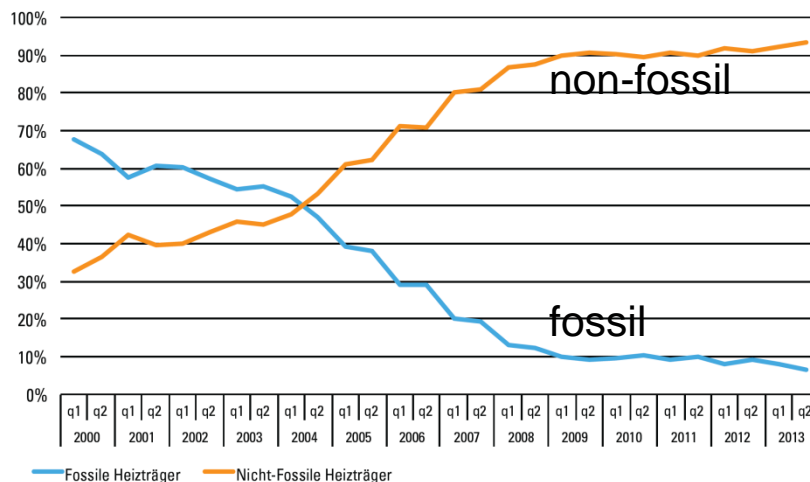
Regulation:

New buildings must be built and equipped in such a way that at the most 80% of the permissible heat demand for heating and warm-water are covered with non-renewable energies.

Heating systems in new buildings

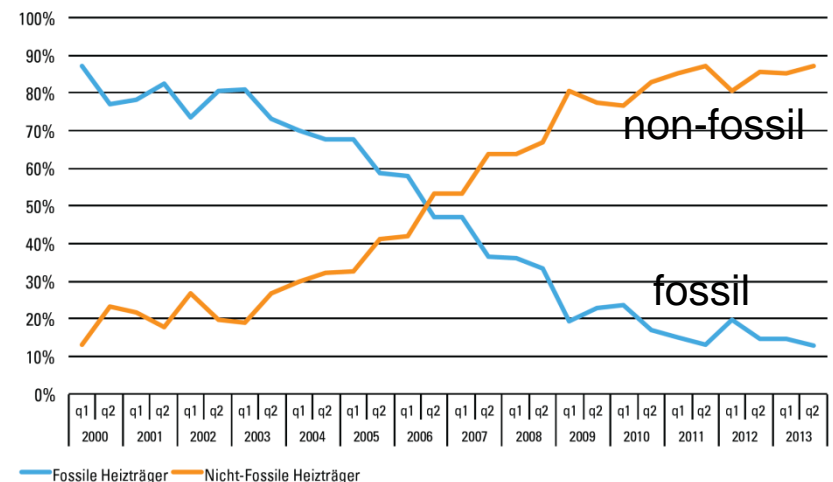
Sinlge family houses

Marktanteile in Neubau



Multi-family houses

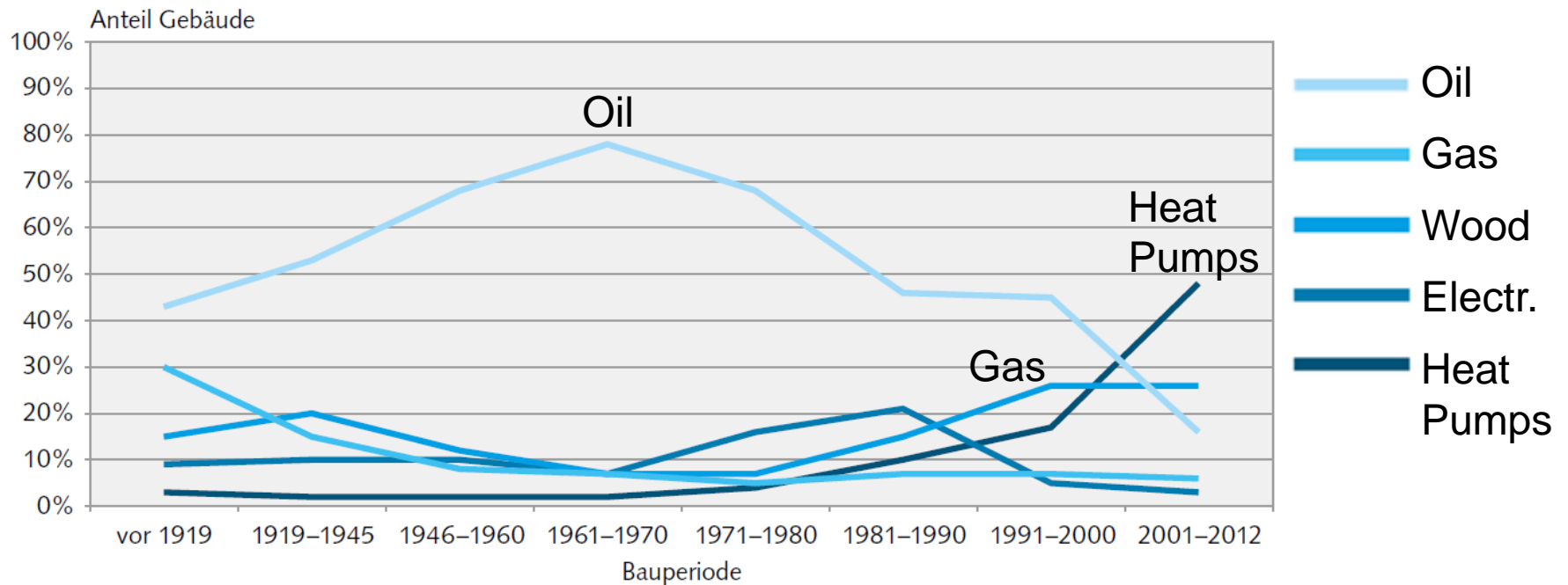
Marktanteile in Neubau



Influence of the regulations of the cantons?

- 1997: ZH amount of renewable energy for new buildings
- From 2000: other cantons (model regulations 2000)

Energy for heating systems

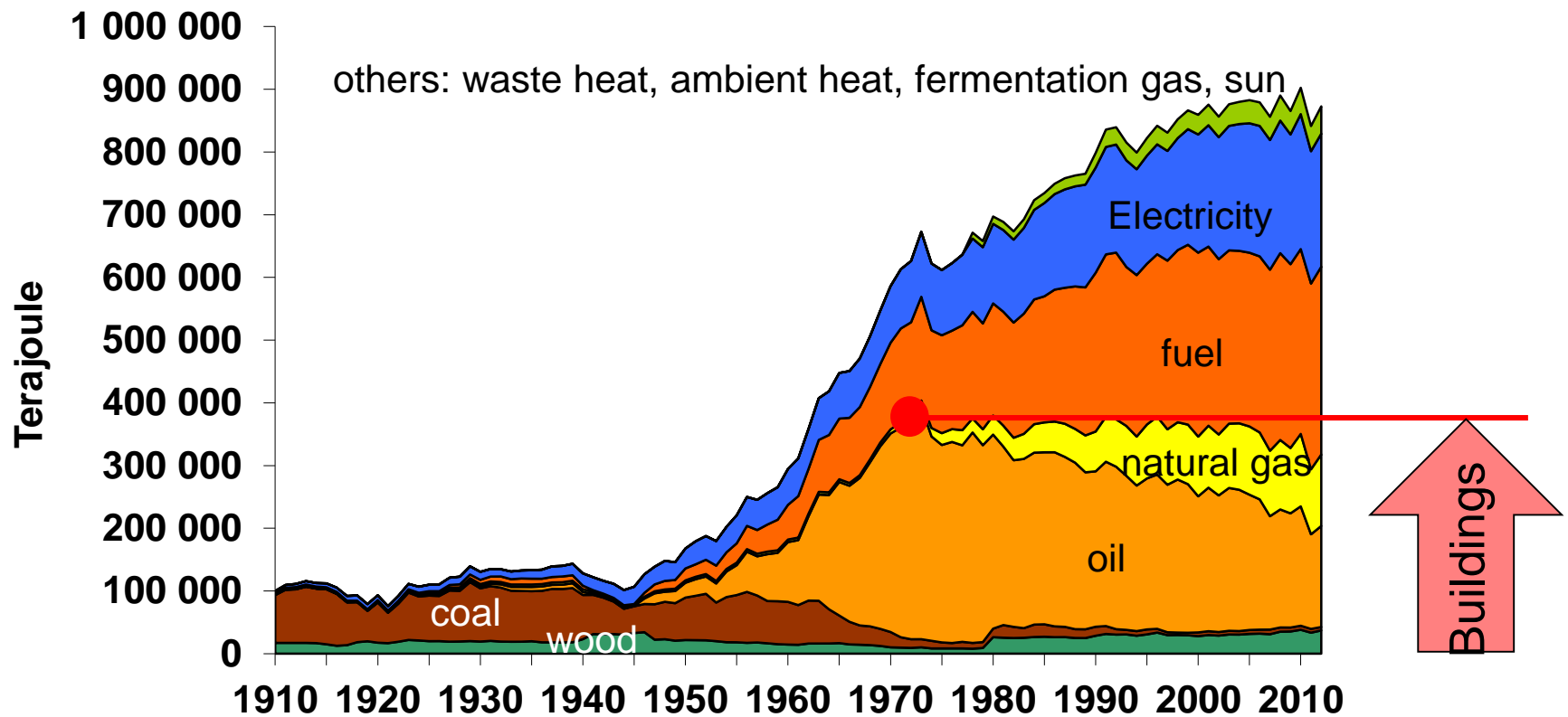


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The regulations limit the employment of non-renewable energy

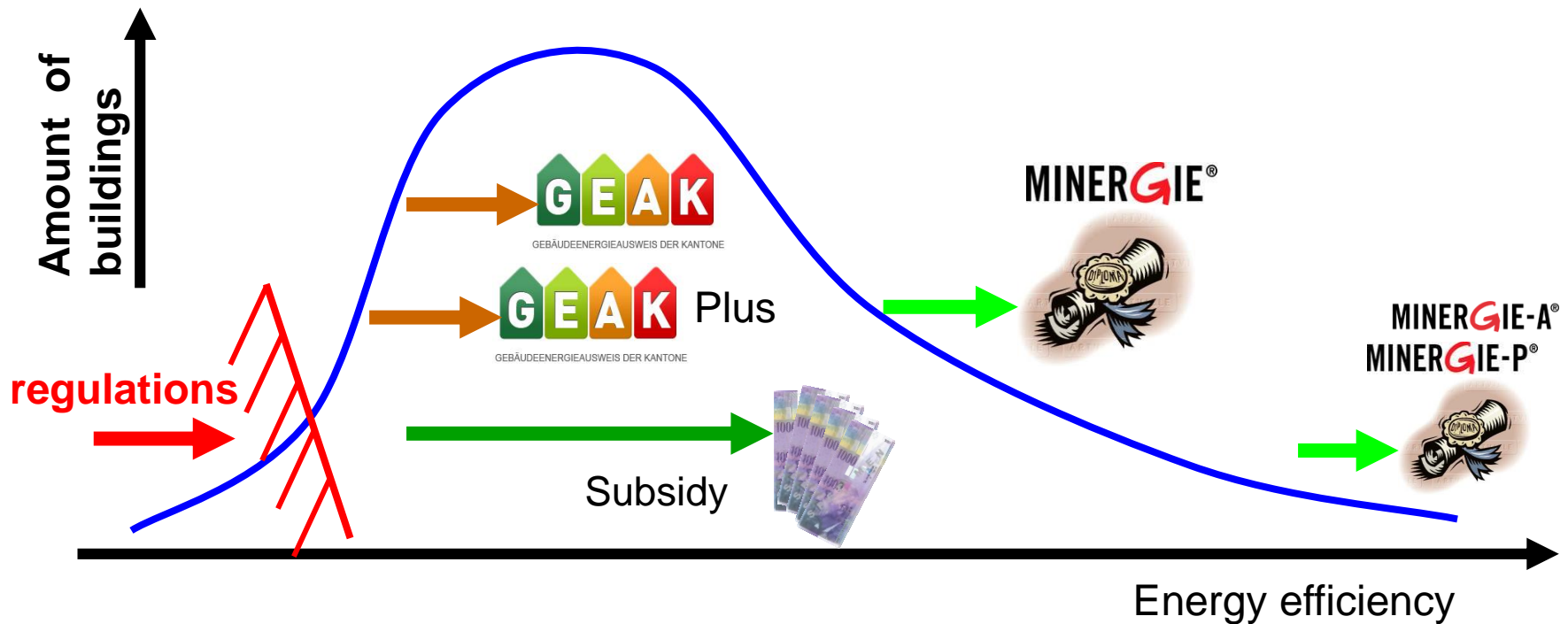
Energy consumption Switzerland


→ CO₂



Last but not least ...

Instruments of the energy policy of the cantons



A scenic landscape featuring rolling green hills, dense forests, and a small town in the distance. The sky is clear blue with a faint rainbow visible. The text "Thank you for your attention" is overlaid in the center.

**Thank you for your
attention**