ENTRANZE

Co-funded by the Intelligent Energy Europe Programme of the European Union

ADVANCED BUILDINGS MODELLING AND DATA, EU

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Vienna University of Technology,
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CONTENT

- The model Invert/EE-Lab
- Data collected in the project ENTRANZE
- Selected results for a few EU countries

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THE MODEL INVERT/EE-LAB

- Bottom-up modelling tool of building stock and related heating, cooling and hot water systems
- Simulates substitution and/or renovation of technologies and building components
- Takes into account user behaviour
- Delivers scenarios for energy demand, energy carrier mix, investment activities, …

- Development has started in 2002
- Has been used in more than 30 projects in more than 15 countries and has been extended to EU-28 (+Serbia) in the IEE project ENTRANZE (www.entranze.eu).
- www.invert.at

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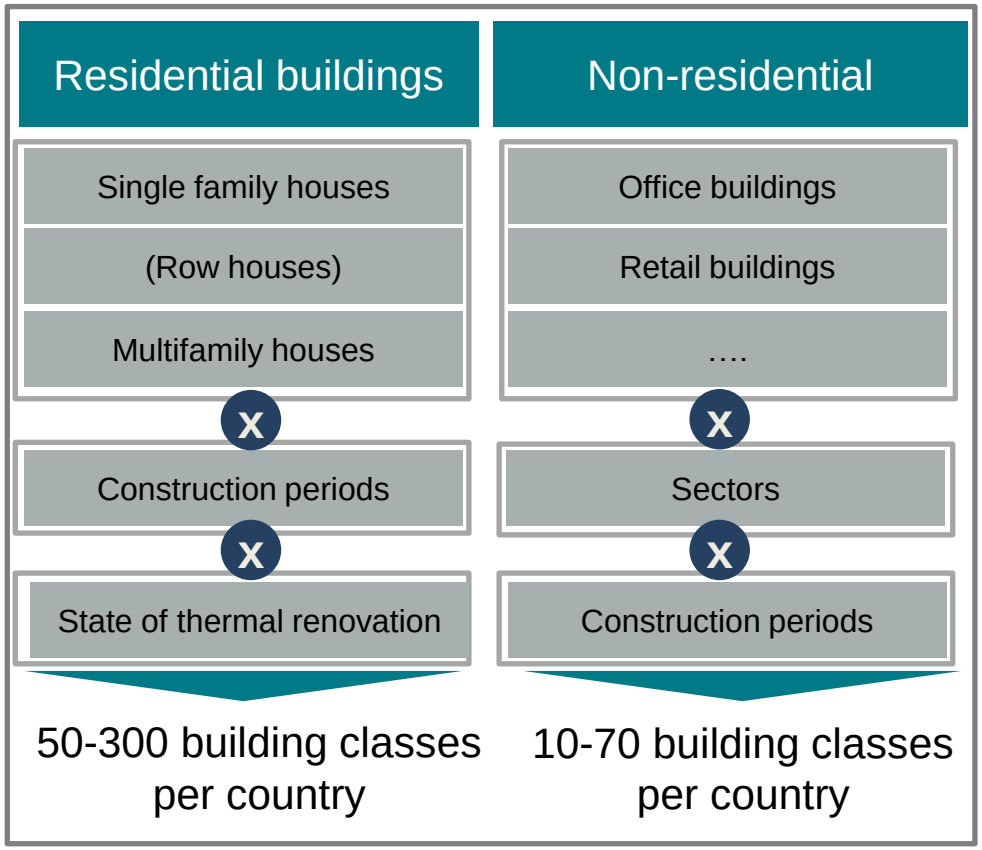
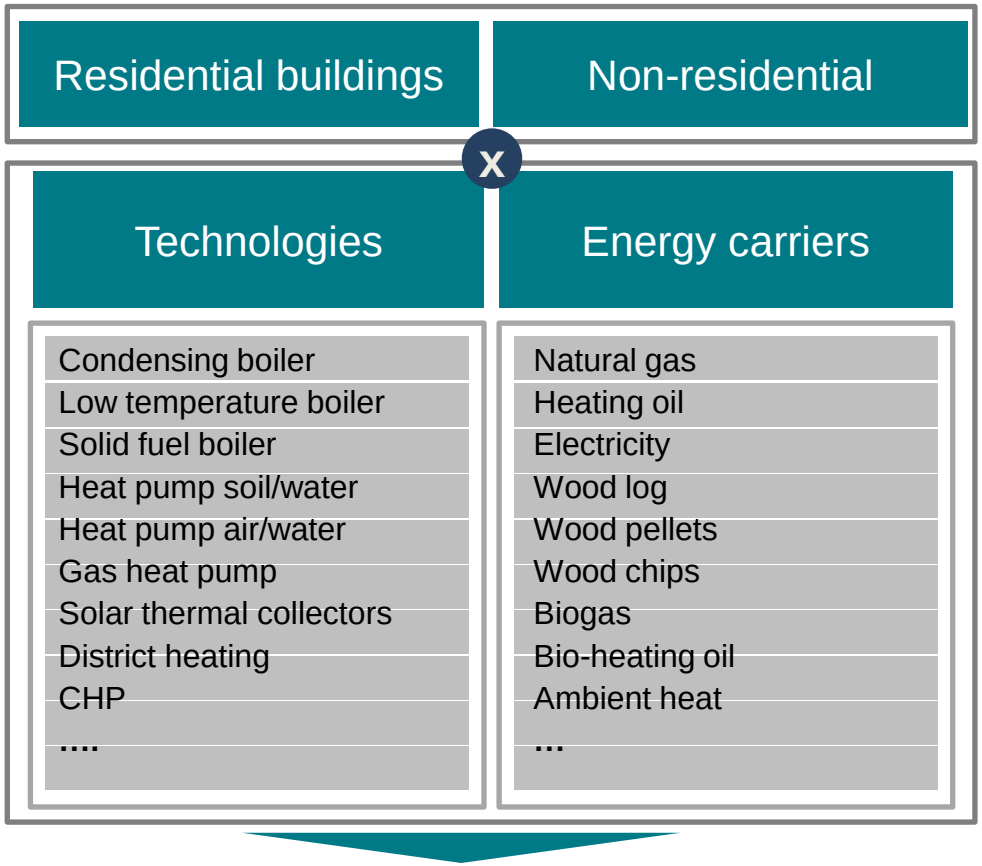
DISAGGREGATED MODELLING OF THE BUILDING STOCK

- Highly disaggregated representation of the building stock
- Demolition and construction of buildings



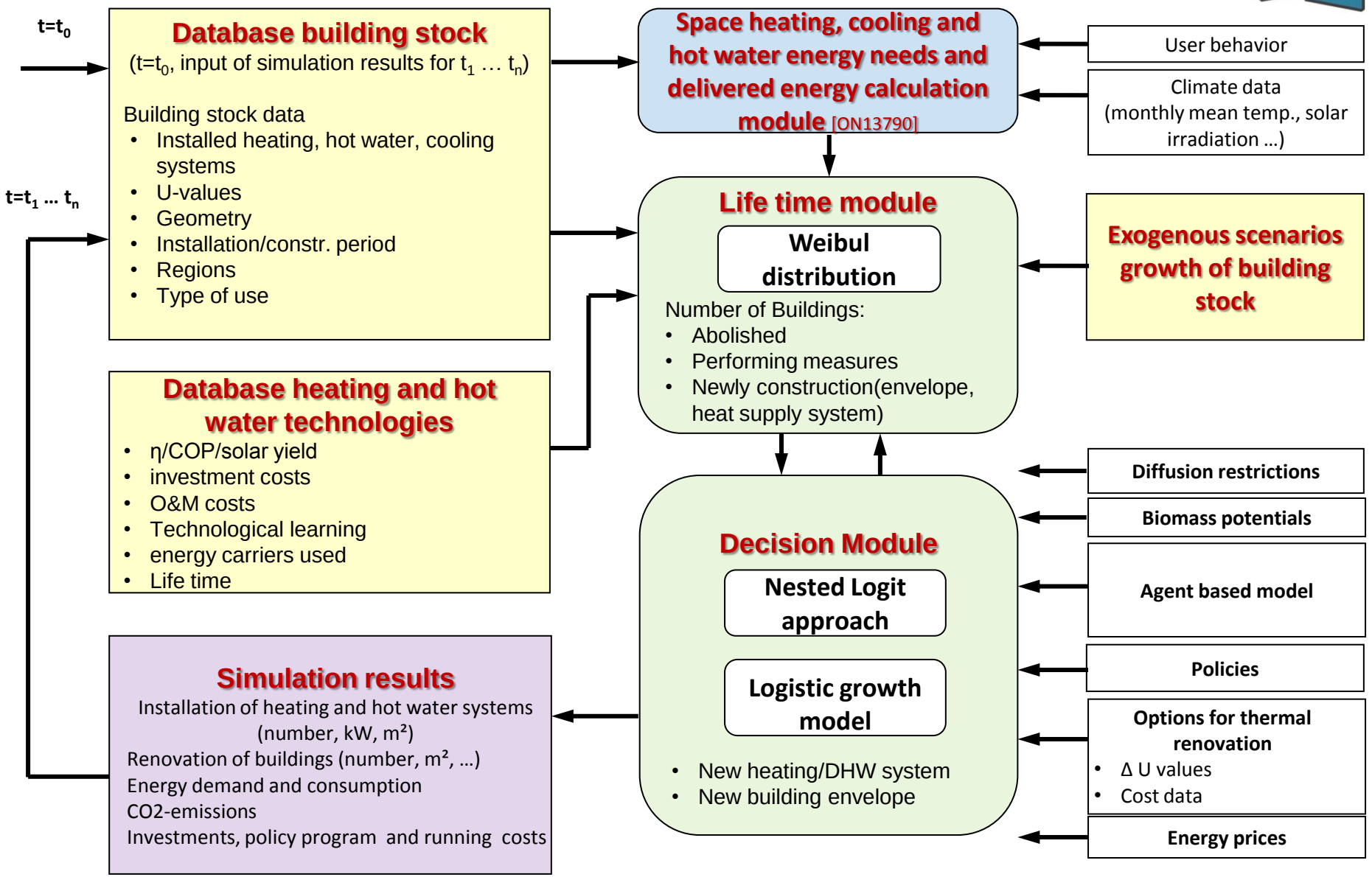
DISAGGREGATED MODELLING OF THE BUILDING STOCK

- Highly disaggregated representation of the building stock
- Demolition and construction of buildings
- Various heating and hot water systems



500 - 4500 reference building segments per country

STRUCTURE INVERT/EE-LAB



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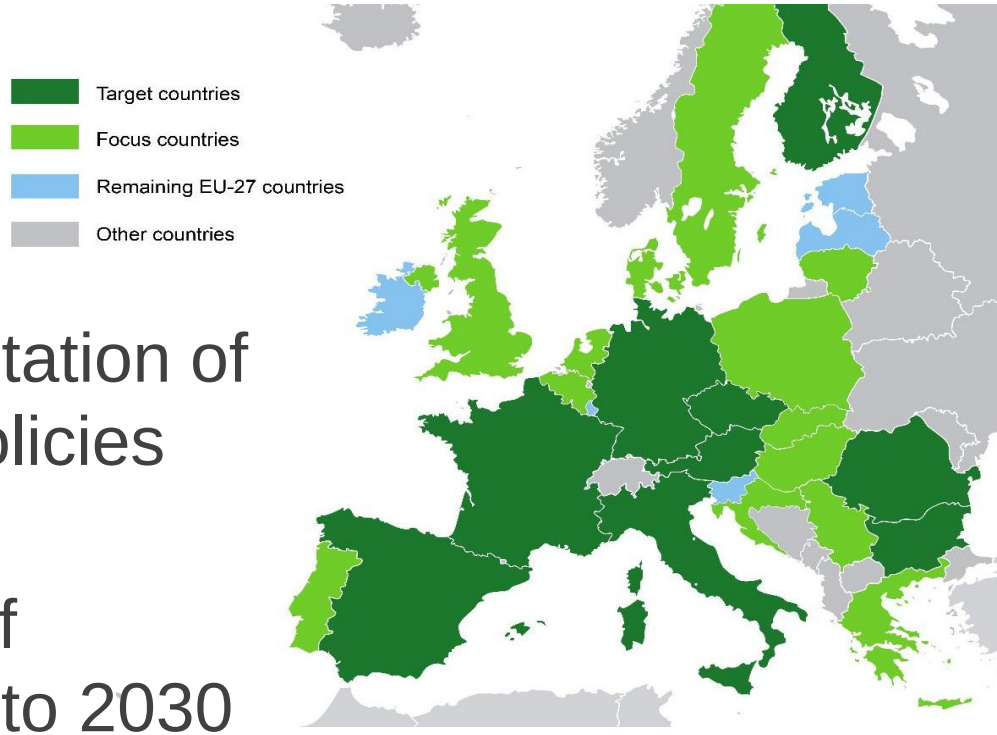
- Selected results for a few EU countries

POLICIES TO ENFORCE THE TRANSITION TO NZEBS IN THE EU (ENTRANZE)



- IEE Project
- Support of policy makers in the implementation of effective and efficient policies for nZEBs
- Investigate the impact of policies in scenarios up to 2030 in target countries and EU-28 (+Serbia)
- Set up a comprehensive database of policies, costs, building stock, HVAC stock

ENTRANZE DATABASE COVERS:

- Residential and non-residential buildings (industrial buildings excluded)
- EU-28 (+Serbia)
- Split into climatic regions for selected EU countries
- Building stock data
  - Installed heating, hot water and cooling systems
  - U-values
  - Geometry
  - Installation/constr. period
  - Regions
  - Type of use
  - (Previous renovation activities: year, type, depth => relevance)
- Techno-economic data of heating, hot water, cooling systems

DATA SOURCES

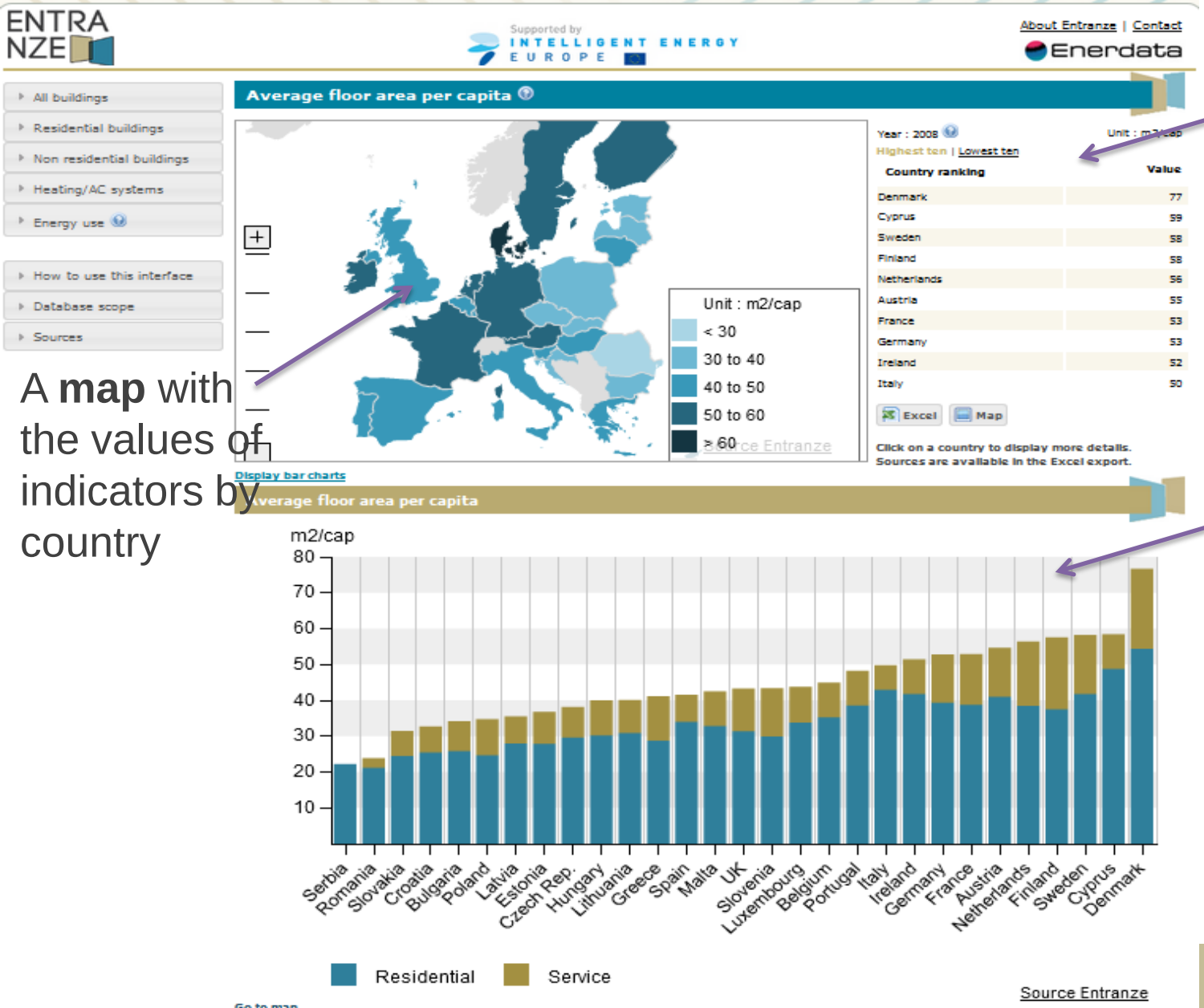
- ENTRANZE database (www.entranze.eu), building on:
  - BPIE data hub (www.buildingsdata.eu)
  - Odyssee - Mure
  - Eurostat
  - National building statistics
  - National statistics on various economic sectors for non-residential building data
  - Tabula and similar projects regarding building typologies

- The level of detail the number of construction periods etc. depends on the data availability and structure of national statistics.

ONLINE DATA TOOL

www.entranze.eu

ONLINE DATA TOOL



A **map** with the values of indicators by country

A **table** showing the country **ranking**

A **bar chart** providing additional detail for the indicator

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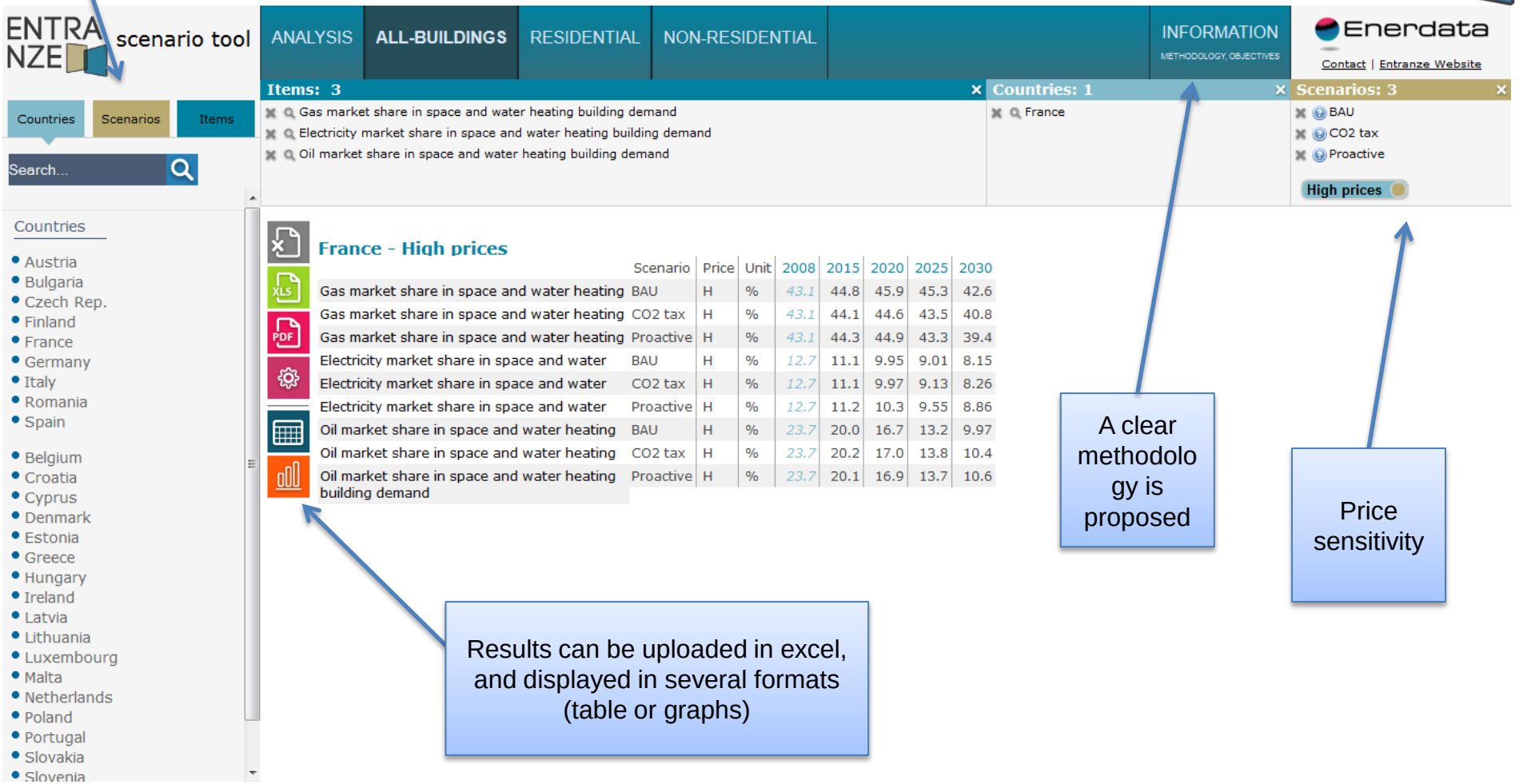
- Exemplary, selected results for a few EU countries

ONLINE SCENARIO TOOL

User chooses country, scenarios and indicators



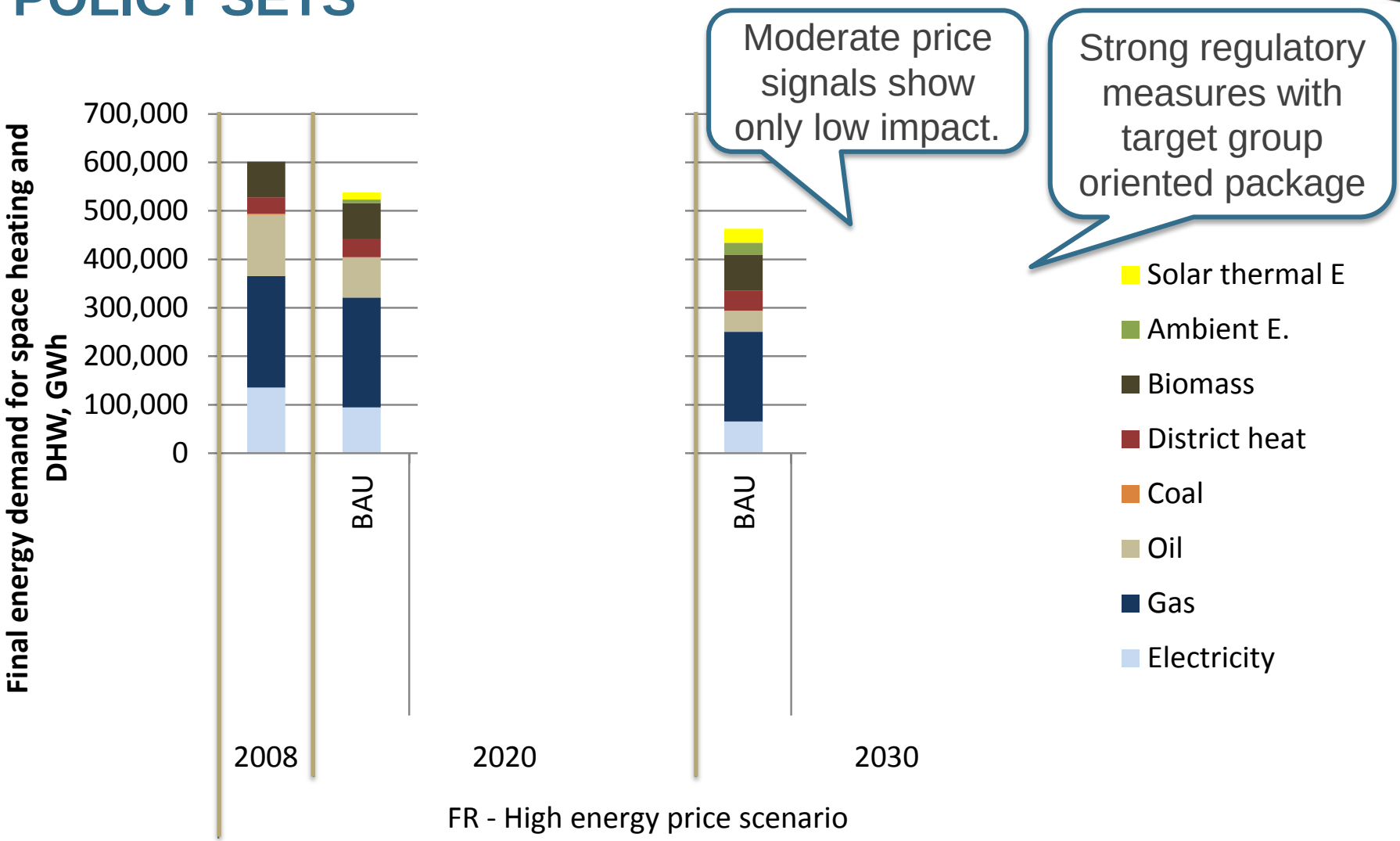
	Scenario	Price	Unit	2008	2015	2020	2025	2030
Gas market share in space and water heating	BAU	H	%	*43.1*	44.8	45.9	45.3	42.6
Gas market share in space and water heating	CO2 tax	H	%	*43.1*	44.1	44.6	43.5	40.8
Gas market share in space and water heating	Proactive	H	%	*43.1*	44.3	44.9	43.3	39.4
Electricity market share in space and water	BAU	H	%	*12.7*	11.1	9.95	9.01	8.15
Electricity market share in space and water	CO2 tax	H	%	*12.7*	11.1	9.97	9.13	8.26
Electricity market share in space and water	Proactive	H	%	*12.7*	11.2	10.3	9.55	8.86
Oil market share in space and water heating	BAU	H	%	*23.7*	20.0	16.7	13.2	9.97
Oil market share in space and water heating	CO2 tax	H	%	*23.7*	20.2	17.0	13.8	10.4
Oil market share in space and water heating building demand	Proactive	H	%	*23.7*	20.1	16.9	13.7	10.6

A clear methodology is proposed

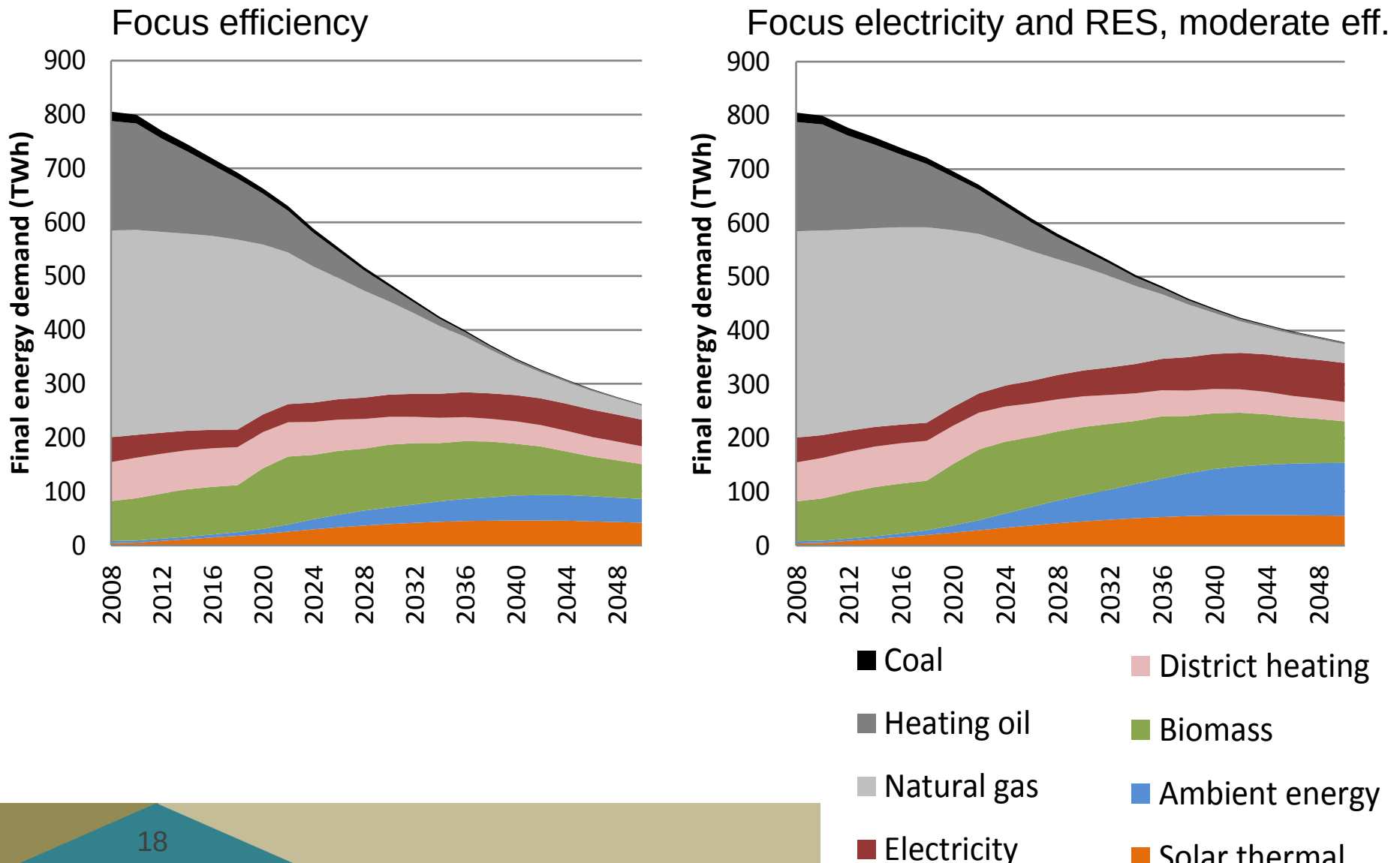
Price sensitivity

Results can be uploaded in excel, and displayed in several formats (table or graphs)

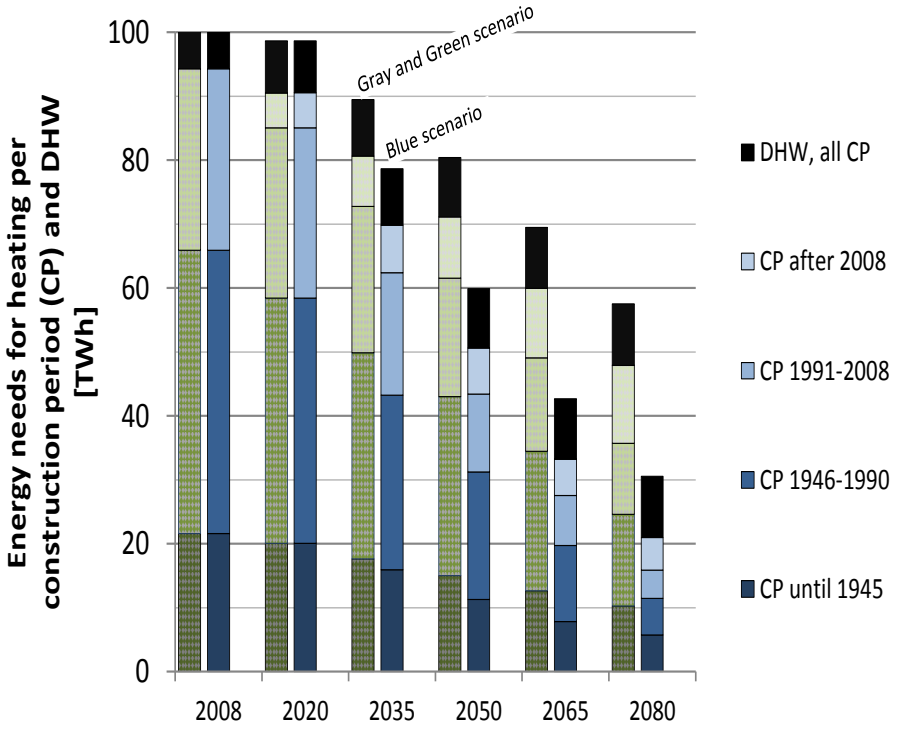
E.G. FRANCE: CO2/ENERGY-TAX VS. PROACTIVE, TARGET GROUP ORIENTED POLICY SETS

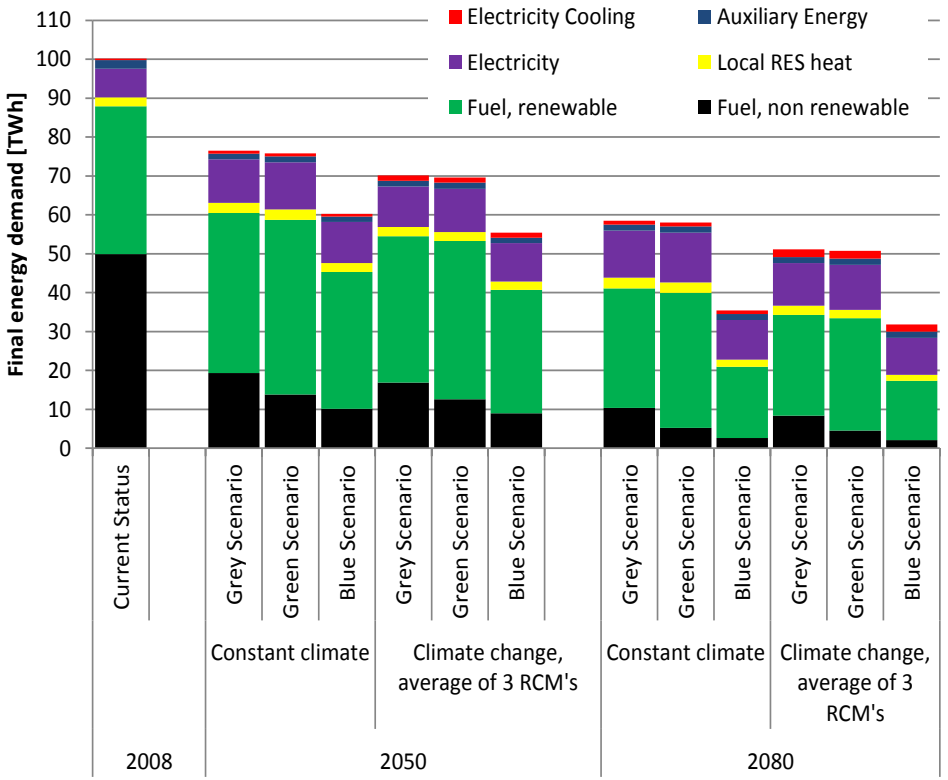


E.G. GERMANY: LONG-TERM SCENARIOS



E.G. AUSTRIA: CLIMATE SENSITIVE SCENARIOS





Thank you for your attention!

Further information: www.entranze.eu
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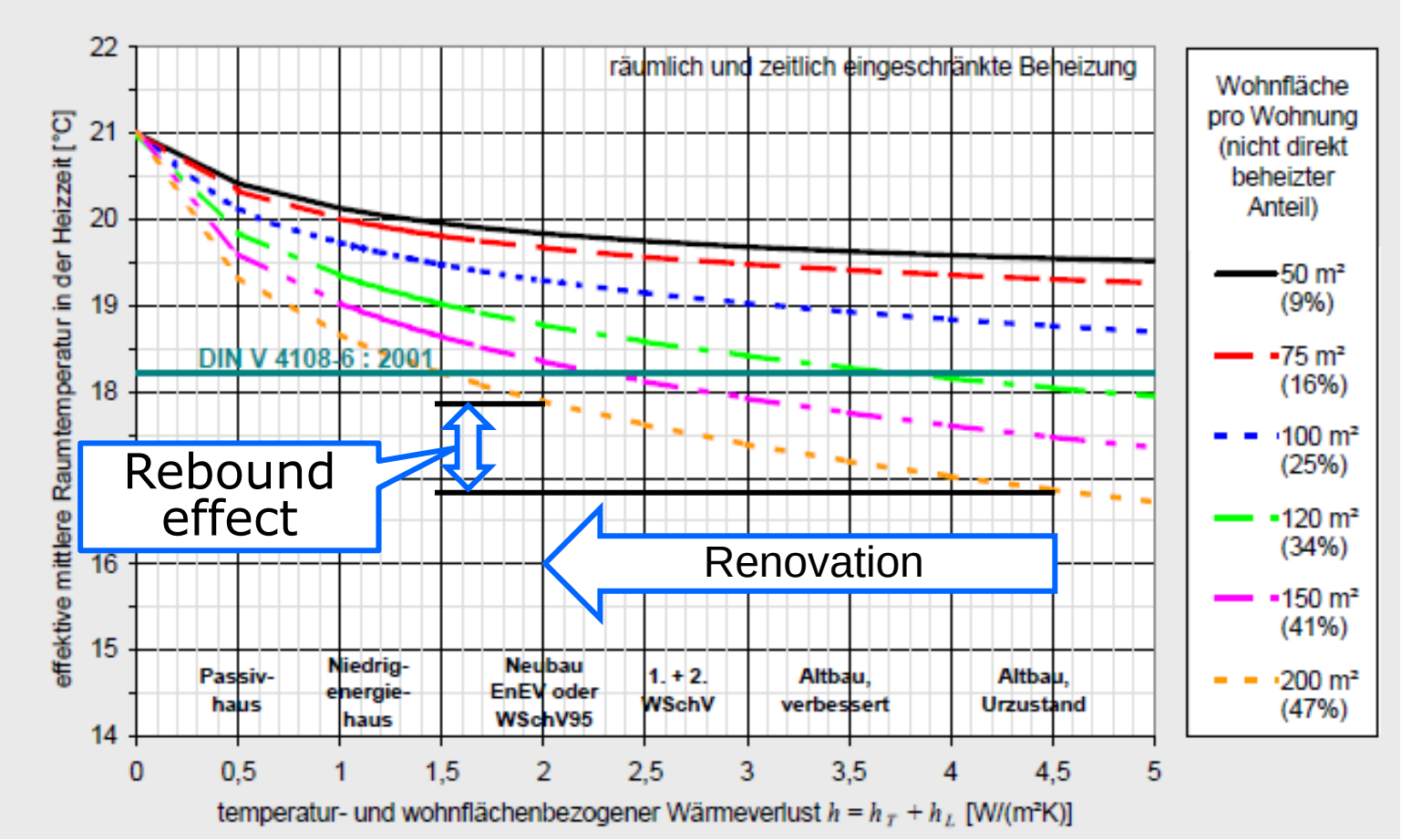
SERVICE FACTOR AND REBOUND EFFECT

Impact of dwelling size and building quality on average indoor temperature



Source: IWU, 2004