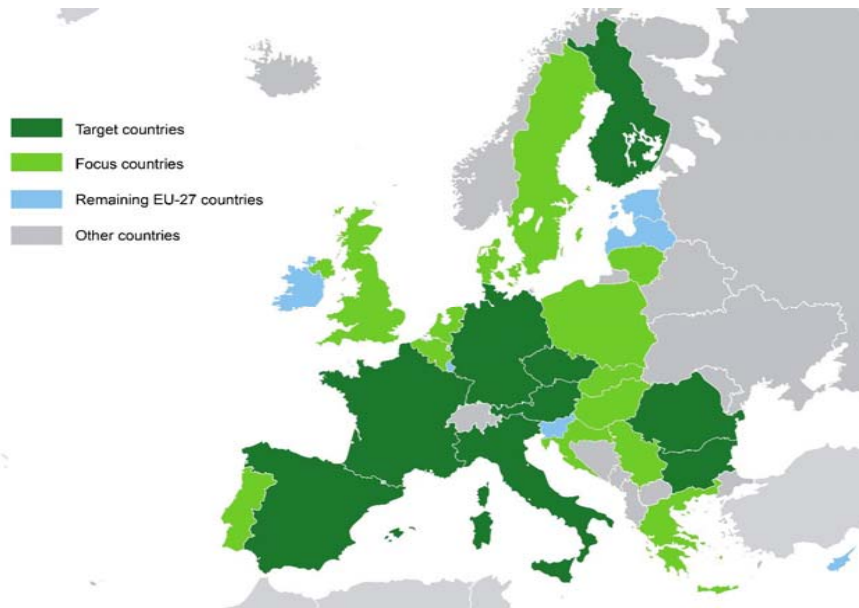


ENTRANZE

Policies to enforce the Transition to nearly
zero energy buildings in the EU-27

REGIONAL COVERAGE: EU-28+RS



Project partners:

- Energy Economics Group/TU Vienna (AT),
- BPIE(BE),
- National Consumer Research Centre (FI),
- Fraunhofer ISI (DE),
- Enerdata, with support of ADEME (FR),
- CENER (ES),
- End use Efficiency Research Group, Politecnico di Milano (IT),
- Öko-Institut e.V. (DE),
- Sofia Energy Agency (BG),
- SEVEEn (CZ).

Project duration:

April 2012-November 2014

CONSORTIUM



TECHNISCHE
UNIVERSITÄT
WIEN
Vienna University of Technology

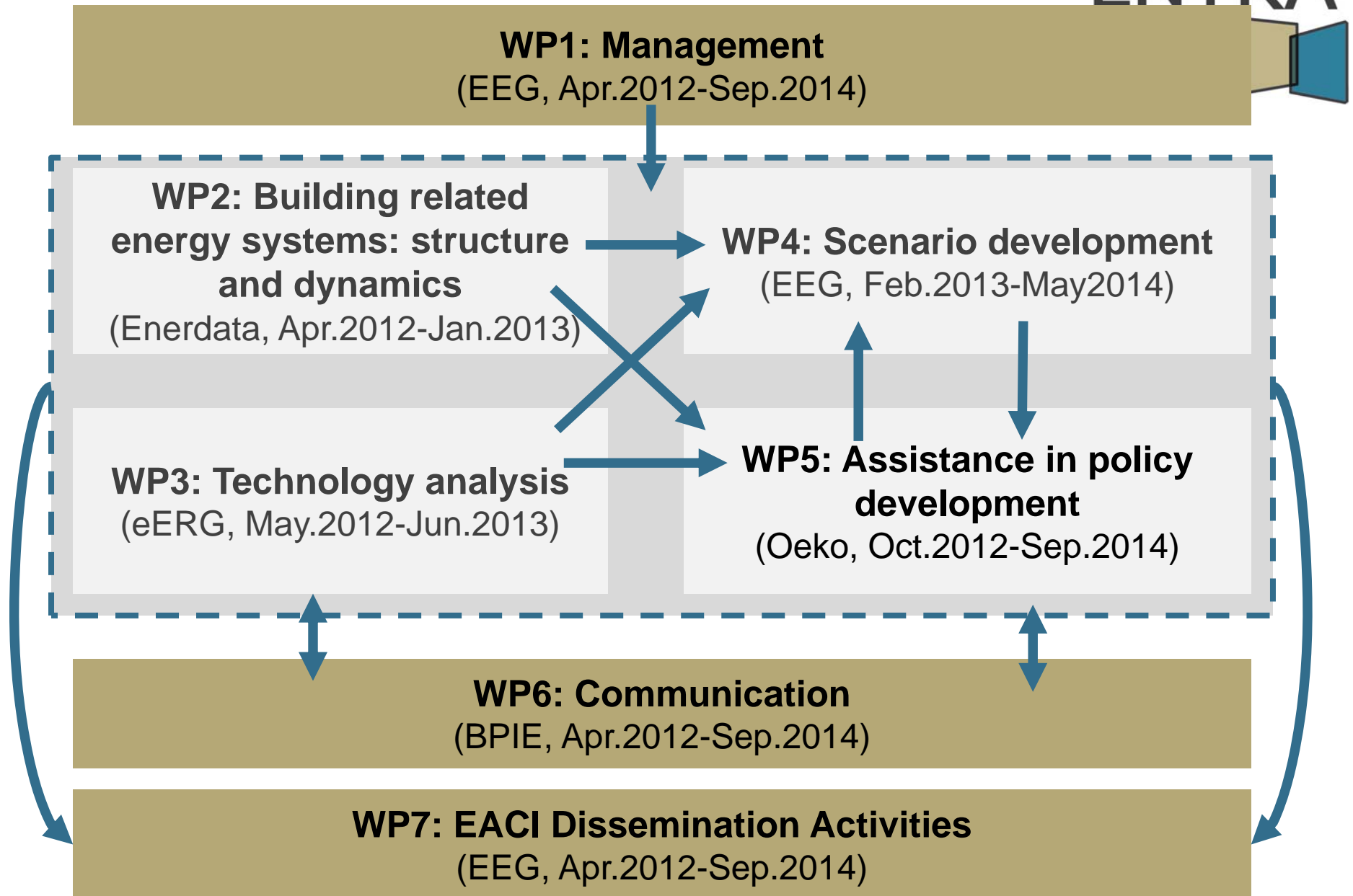


NATIONAL CONSUMER RESEARCH CENTRE



end-use Efficiency Research Group
Gruppo di ricerca sull'efficienza negli usi finali dell'energia





FOCUS ON

- **nZEB refurbishment of public and residential buildings:**
 - Residential buildings
 - Offices with a particular focus on public sector
 - Other relevant building categories (e.g. educational and health buildings, hotels etc.)

- **Sustainable heating/cooling market dynamics and forecasts for the whole range of buildings** (residential, tertiary, existing and new buildings)

- **Main technical/social/economic challenges in implementing policy measures**, in overcoming the existing barriers and in designing effective policy measures

OBJECTIVES AND MAIN OUTCOMES



- **Development of integrated, effective and efficient policy packages in close cooperation with policy makers and national experts** for a fast penetration of nZEB and RES-H/C (both for renovation and new buildings) in line with EED, EPBD and RED
- **Elaboration of user friendly and target group oriented database** on building stock (energy, usage, age, size, heating systems, users/investors typology):
- **Cost/energy curves** that allow identifying cost-optimal technology configurations of deep renovation activities
- **Quantitative assessment of existing policies** and their impact on scenarios up to 2020 and 2030
- **Tailor-made policy recommendations and implementation roadmaps** for fostering the nZEB renovation of the existing building stock
- Effective and comprehensive **communication with policy makers and other stakeholders.**

ACTUAL STATUS : CURRENT ACTIVITIES

- Cost-optimal calculations
- Policy process:
 - Policy selection and discussion of policy assessment together with policy makers in target countries (policy groups)
 - Consultation of experts and policy makers
- Scenario development of energy demand, energy carrier mix, share of RES-H, uptake of renovation measures
 - Integrative modeling approach with Invert/EE-Lab and POLES
 - Modeling policies selected together with policy makers
 - Detailed scenario development and discussion for target countries
 - More aggregated scenarios for all EU-28+RS
- Mid-term-workshops in target countries

ACTUAL STATUS: AVAILABLE REPORTS

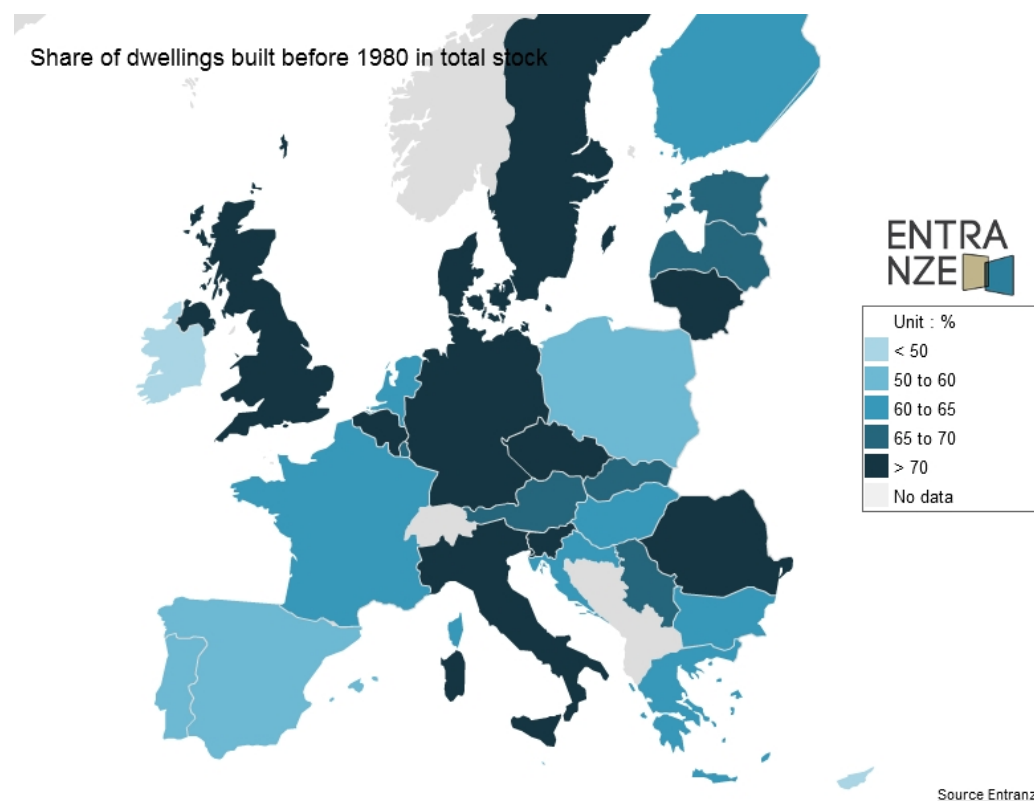
- Reports available at www.entranze.eu/publications:
 - Report on existing buildings policies and programmes
 - EU comparative analysis and overview
 - Country fact-sheets
 - Country factsheets on building sector and energy demand
 - Report on public perception and social acceptance of nZEB and RES H/C
 - Report on stakeholders, user and investor groups behaviour, preferences and interests
 - Preferences and decision making structure of different user groups

WP 2: BUILDING RELATED ENERGY SYSTEMS: STRUCTURE AND DYNAMICS

DATAMAPPER

- Datamapper online at www.entranze.eu with cross-country comparative maps and graphs regarding e.g.
 - Age of building stock
 - U-values
 - Floor area
 - Size of buildings
 - Owner ship structure
 - Low-income households

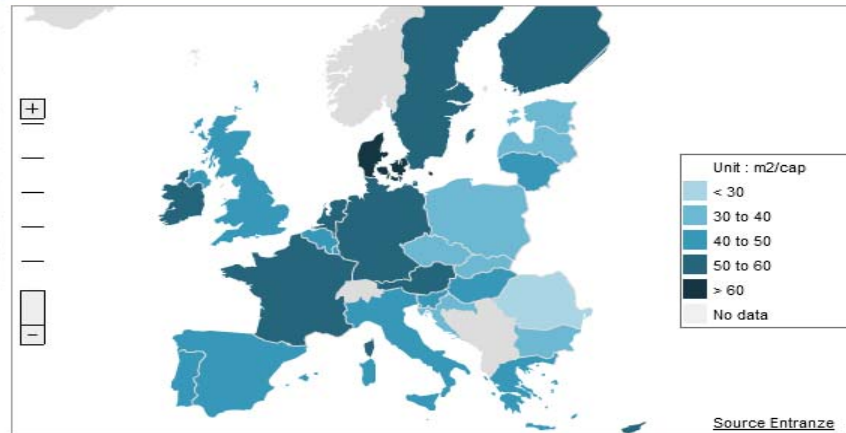
- Residential buildings
- Non-residential buildings



- ▶ All buildings
- ▶ Residential buildings
- ▶ Non residential buildings
- ▶ Heating/AC systems
- ▶ Energy use

- ▶ How to use this interface
- ▶ Database scope
- ▶ Sources

Average floor area per capita



Year : 2008

Unit : m2/cap

[Highest ten](#) | [Lowest ten](#)

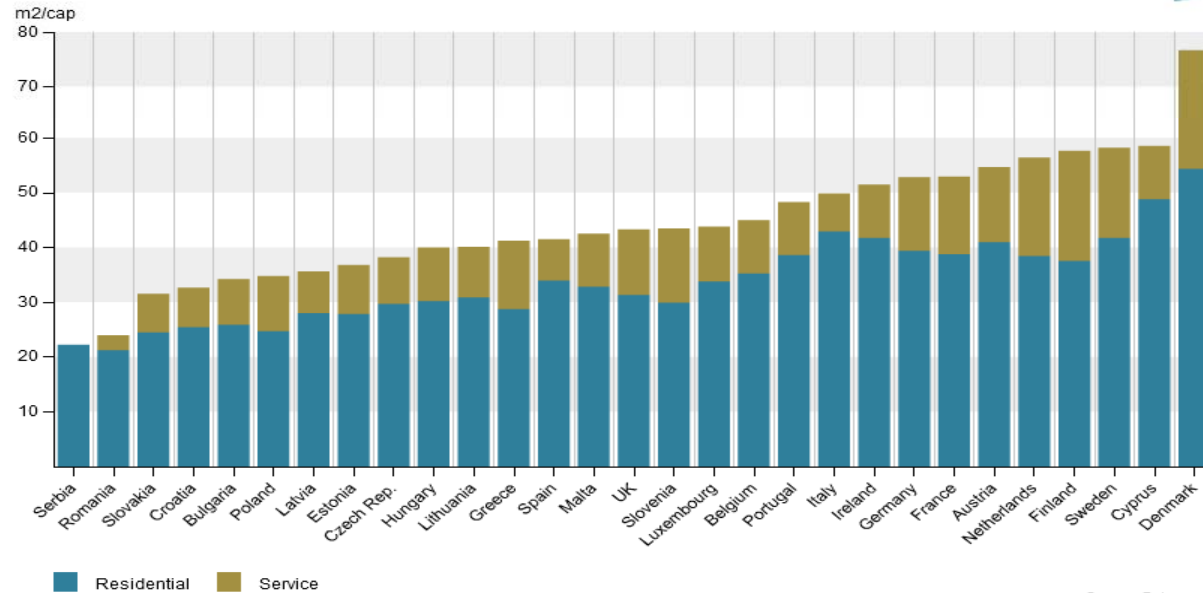
Country ranking	Value
Denmark	77
Cyprus	59
Sweden	58
Finland	58
Netherlands	56
Austria	55
France	53
Germany	53
Ireland	52
Italy	50

[Excel](#) [Map](#)

Click on a country to display more details. Sources are available in the Excel export.

[Display bar charts](#)

Average floor area per capita

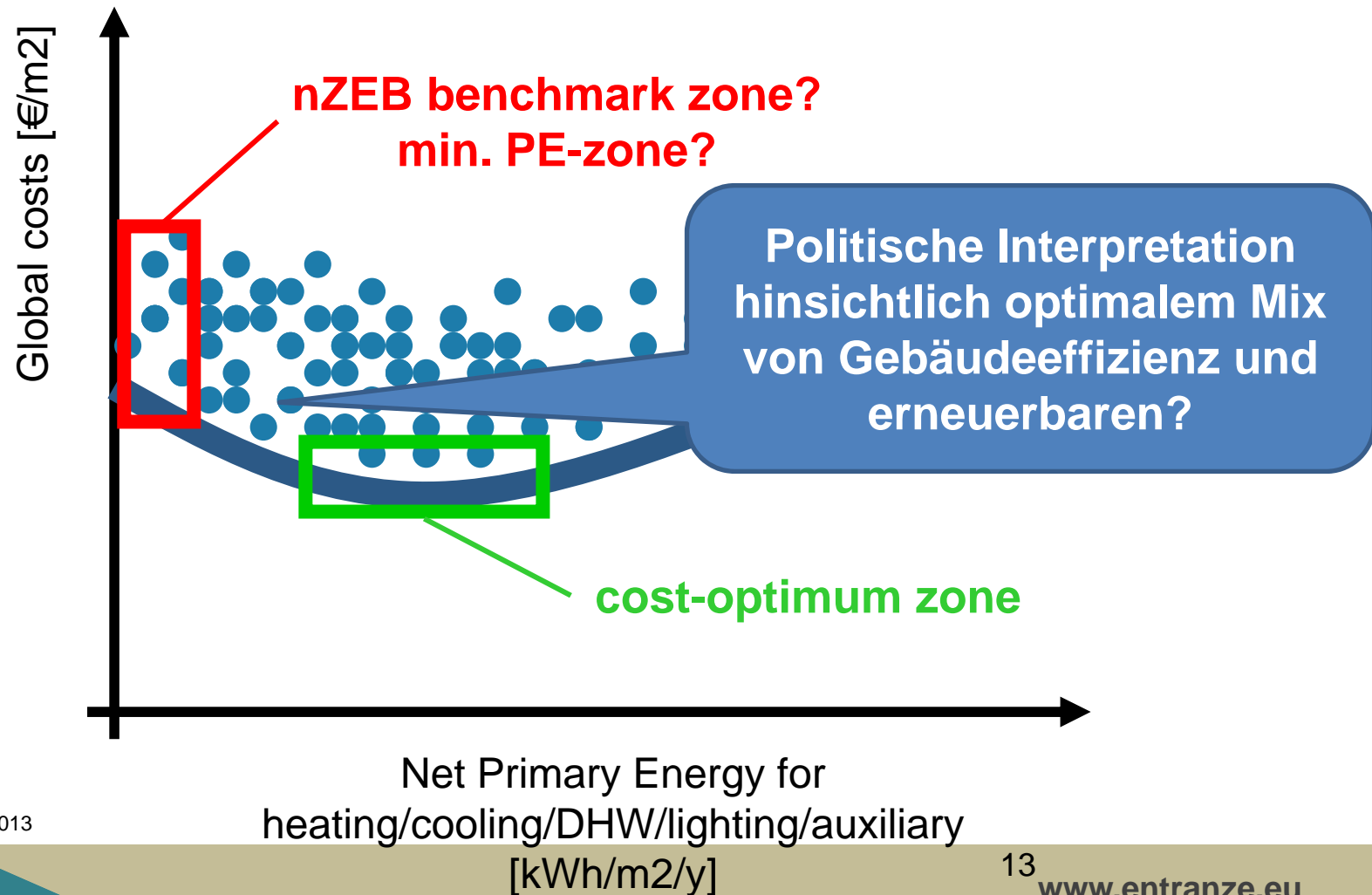


[Go to map](#)

Source Entranze

WP 3: COST OPTIMALITY CALCULATIONS

COST OPTIMALITY CALCULATIONS



Quelle: Zangheri et al 2013

COST OPTIMALITY CALCULATIONS FOR RENOVATION OPTIONS

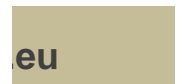
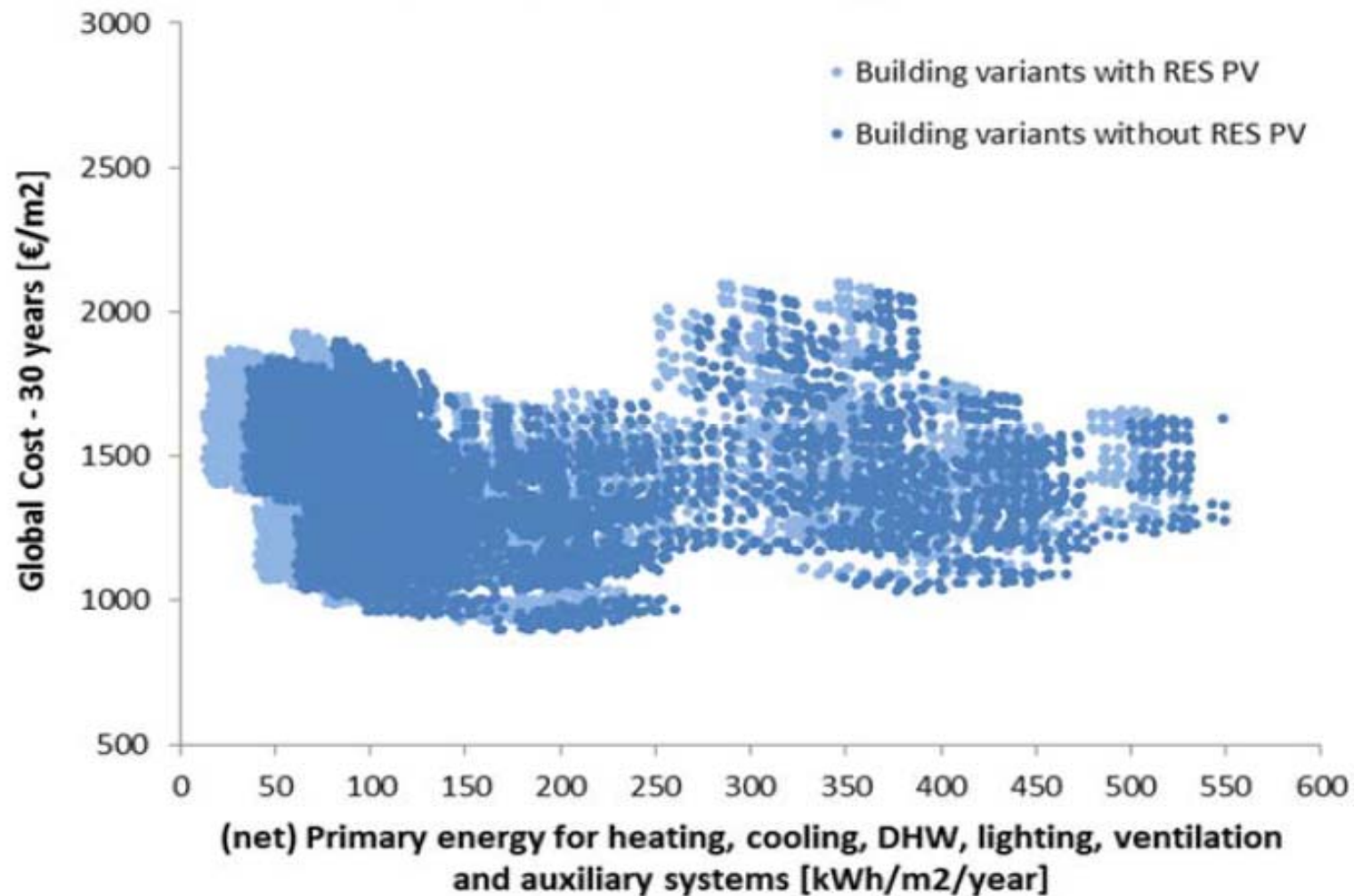
4 Reference Buildings:

- Single family house
 - Multiple family house
 - Office building
 - School building
-
- Climate data and reference building definition from 9 Target-Countries



PRELIMINARY RESULTS OFFICE BUILDING IN VIENNA

Vienna - Office - Refurbishment - Starting Year: 2011
Standard private perspective - Energy scenarios: reference



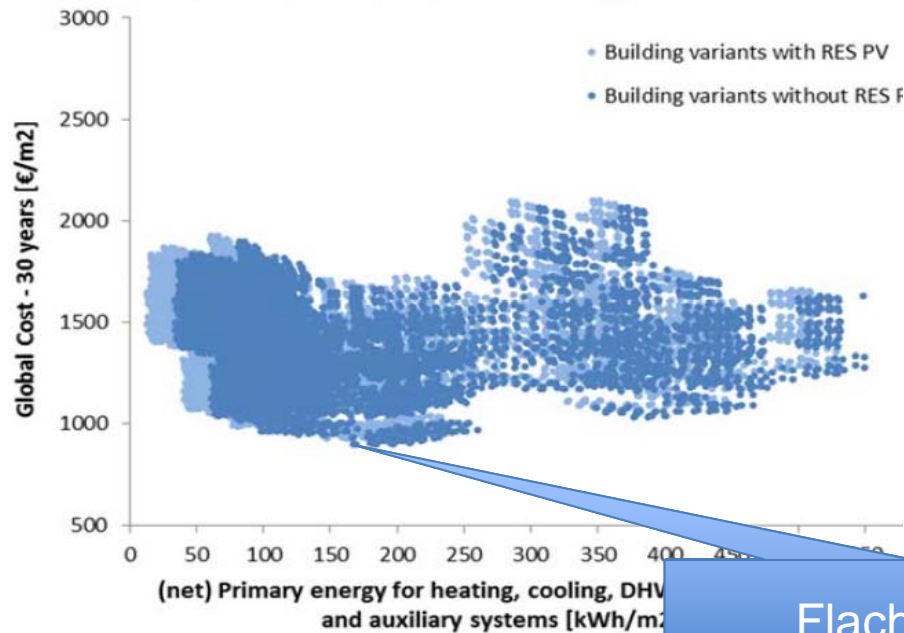
PRELIMINARY RESULTS OFFICE BUILDING IN VIENNA



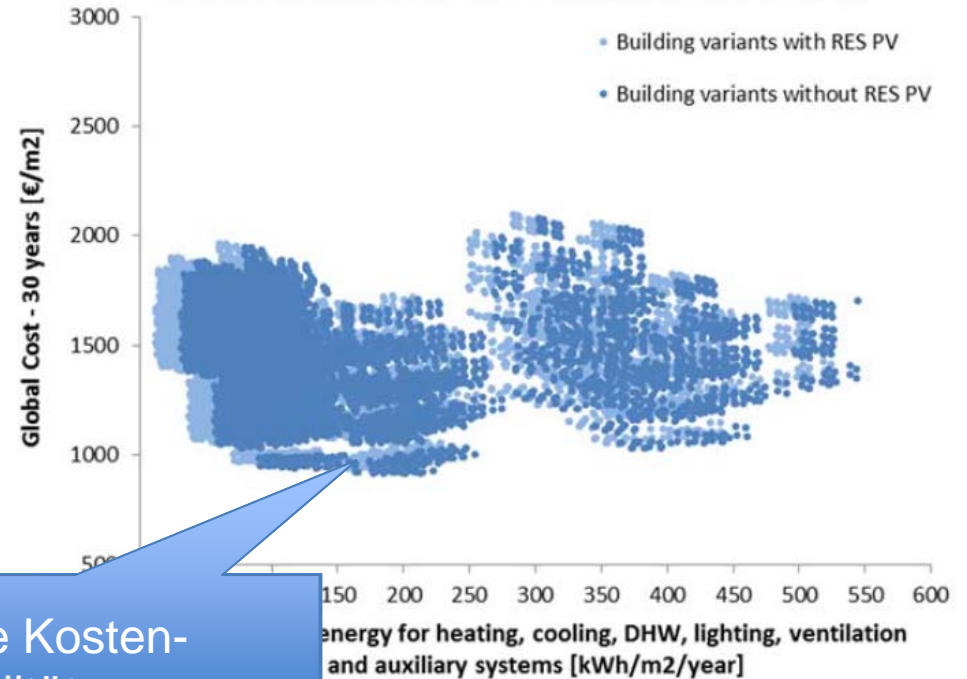
2011

2020

Vienna - Office - Refurbishment - Starting Year: 2011
Standard private perspective - Energy scenarios: reference



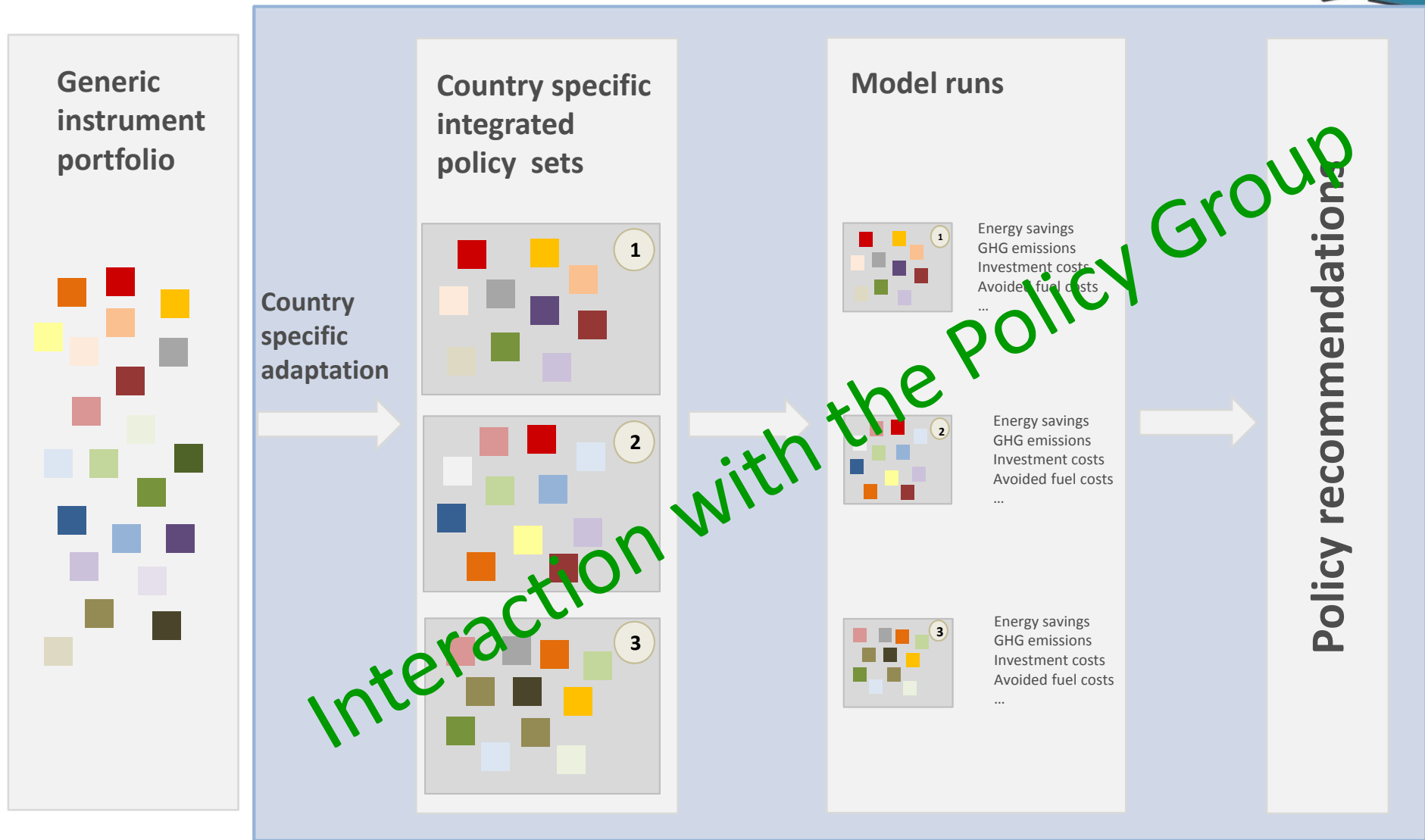
Vienna - Office - Refurbishment - Starting Year: 2020
Standard private perspective - Energy scenarios: reference



Flache Kosten-
Optimalitätszone

WP 5: ASSISTANCE IN POLICY DEVELOPMENT

POLICY PROCESS



SCOPE OF THE ANALYSIS

- list of generic instruments -> national adaptation necessary!
- Focus on instruments addressing the modernisation of the building stock
- Modernisation includes building envelope and heating and cooling systems (incl. RES-H)
- Residential and non-residential
- Taking into account different ownership structures (especially private vs. commercial, single vs. joint ownership)
- Cross-sectoral instruments (e.g. energy tax) included insofar as under national competence
- Not covered:
 - policies with a clear social focus
 - policies with a clear regional component

EU POLICY REQUIREMENTS



- Buildings Directive (EPBD)
- Renewable Directive (RED)
- Efficiency Directive (EED)
- Ecodesign Directive
- Energy Labelling Directive

THE LONG-TERM PERSPECTIVE

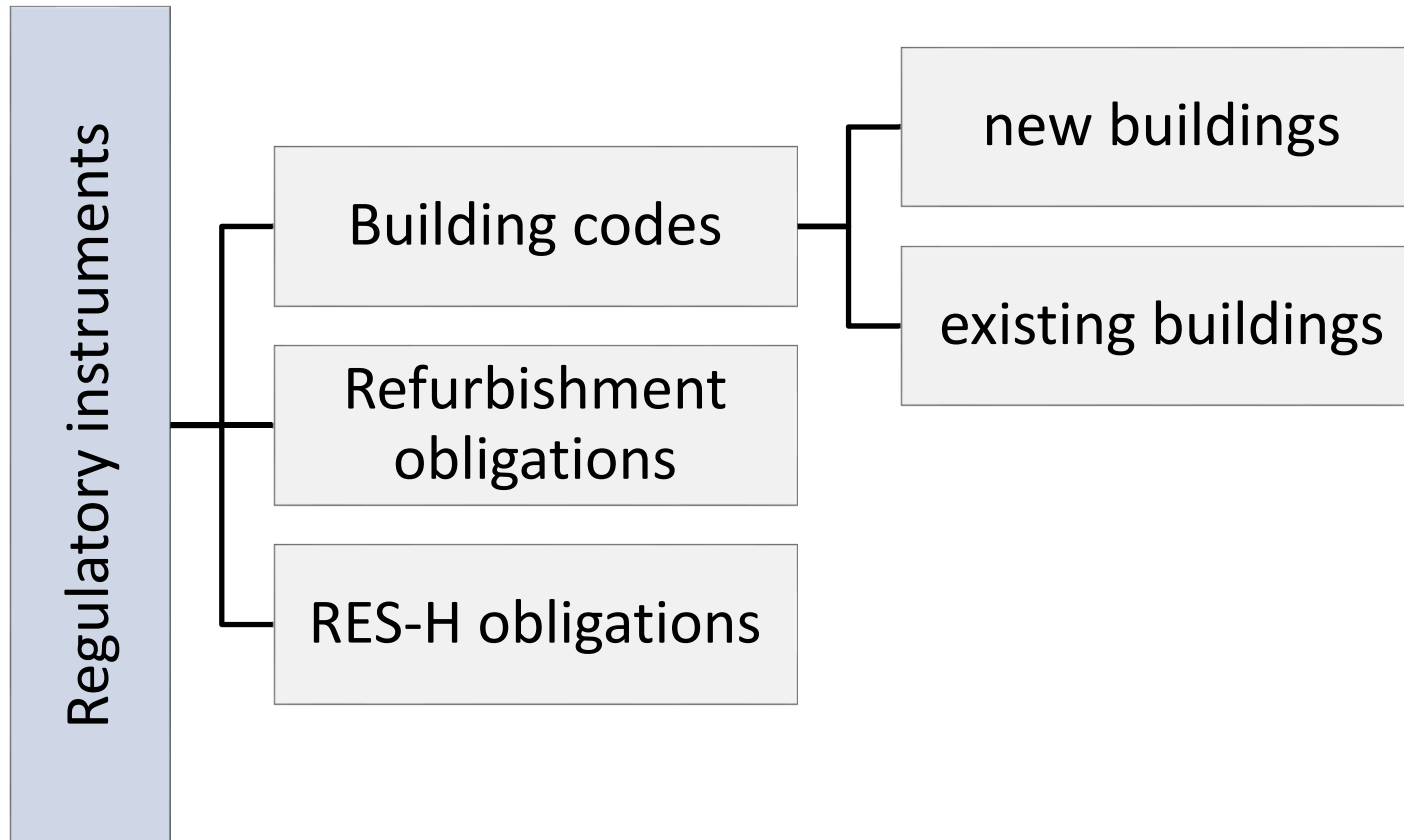
- Long-term perspective -> taking into account
 - 2050 GHG mitigation needs
 - very long re-investment cycles (especially outer walls, roof)
 - in some countries limited long-term RES potentials and availability for heating sector
- Modernisation standard: Modernisation measures should aim at nZEB standard
 - staged refurbishment: Building owners should be incentivised to ensure that all single refurbishment steps are long-term compatible
- Modernisation rate: Stimulation of sufficient number of refurbishment projects
- Discuss flexibility between thermal insulation requirements for buildings (envelope) and supply technologies -> nZEB definition
- Discuss long-term interaction between the electricity and the heating and cooling sector (assumption: increasing integration)

INSTRUMENT PORTFOLIO

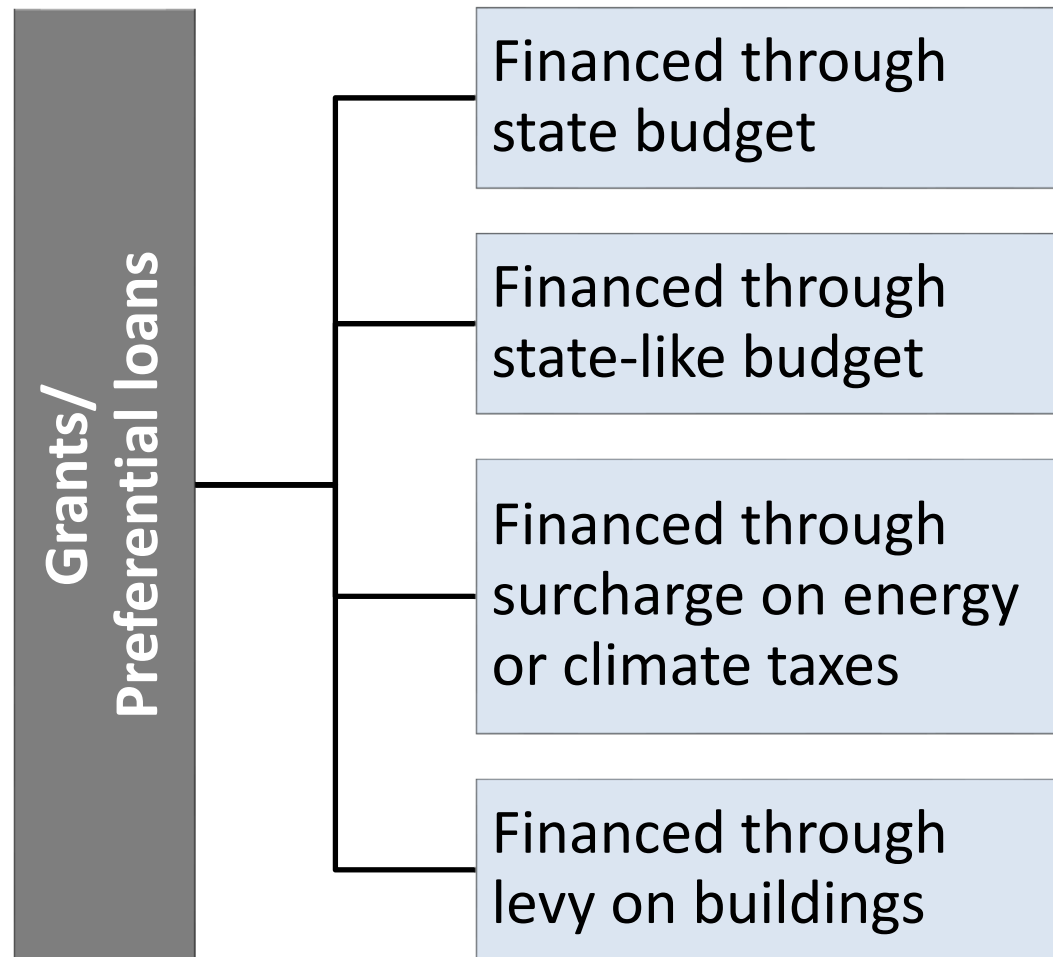


Instrument type		Comments
Regulatory instruments		Command and control type regulations, works with orders and/or bans
Economic instruments	Grants and preferential loans	Different ways of financing the programs
	Tax incentives	Positive or negative incentives (add. fiscal burden)
	Non fiscal instruments with market elements	Financial support or finance provided by market actors -> state budget independent support
Qualification and quality assurance		Important to assure quality -> keep confidence high; targets at sufficient number of skilled manpower
Information, motivation, advice		
Target-group specific	Owner associations	Targets the heterogeneous barriers in MFH
	Rental homes	Split incentive problem
	Low-income owners	Financing barrier
	Non-residential	Different use patterns and demand characteristics
	Public buildings	Exemplary role, poor state of public finance

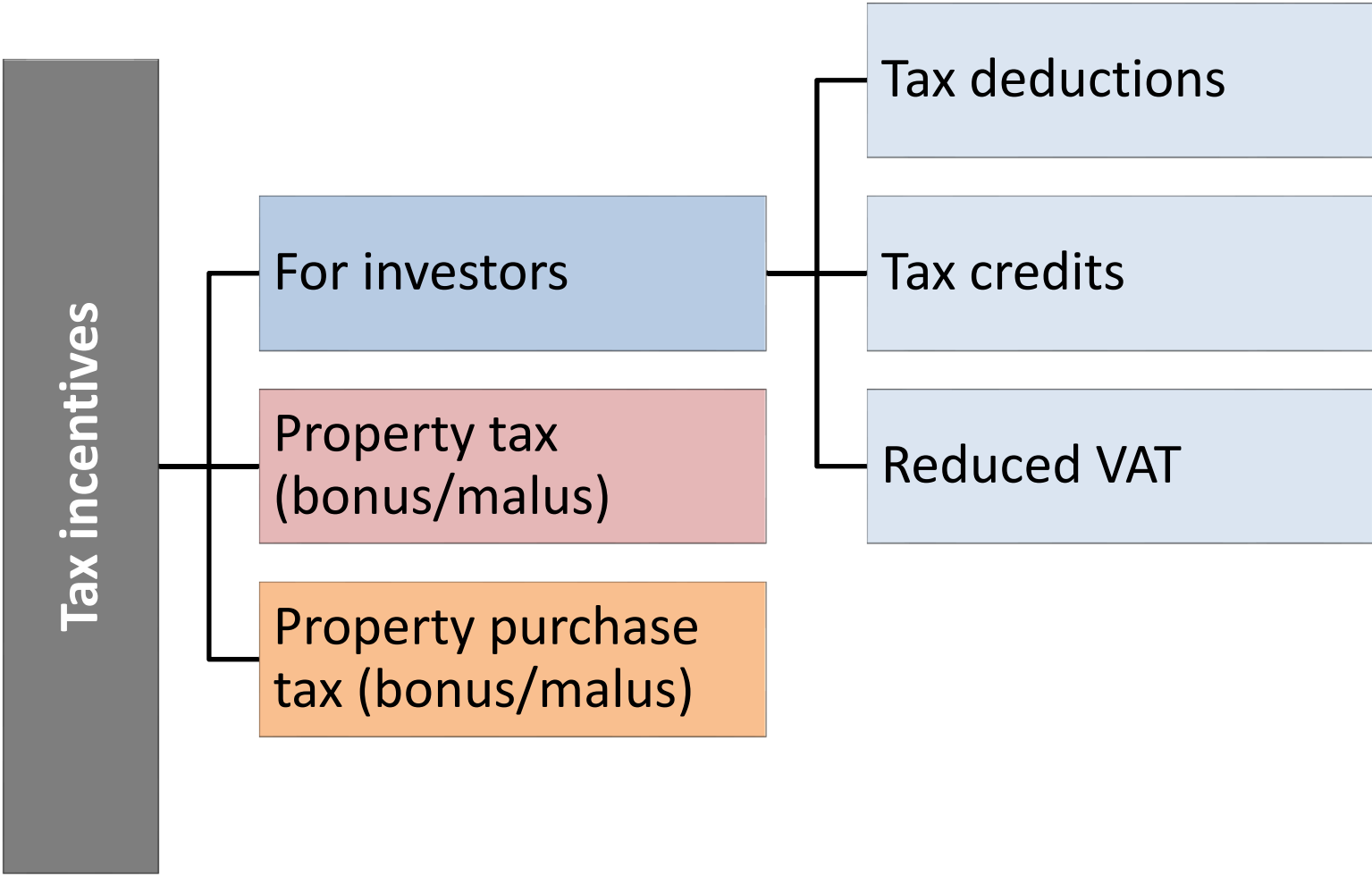
REGULATORY INSTRUMENTS



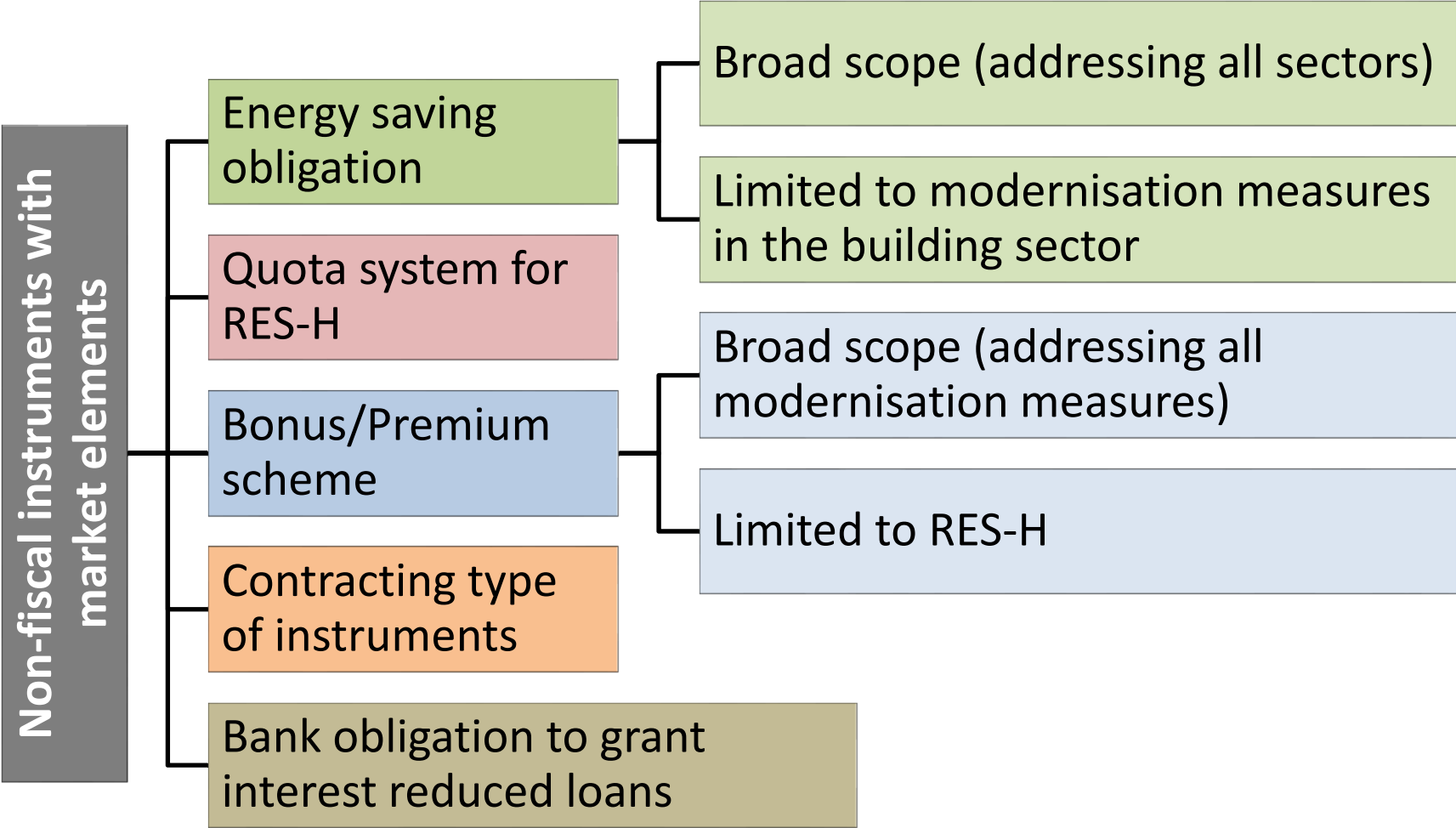
ECONOMIC INSTRUMENTS - GRANTS/PREFERENTIAL LOANS



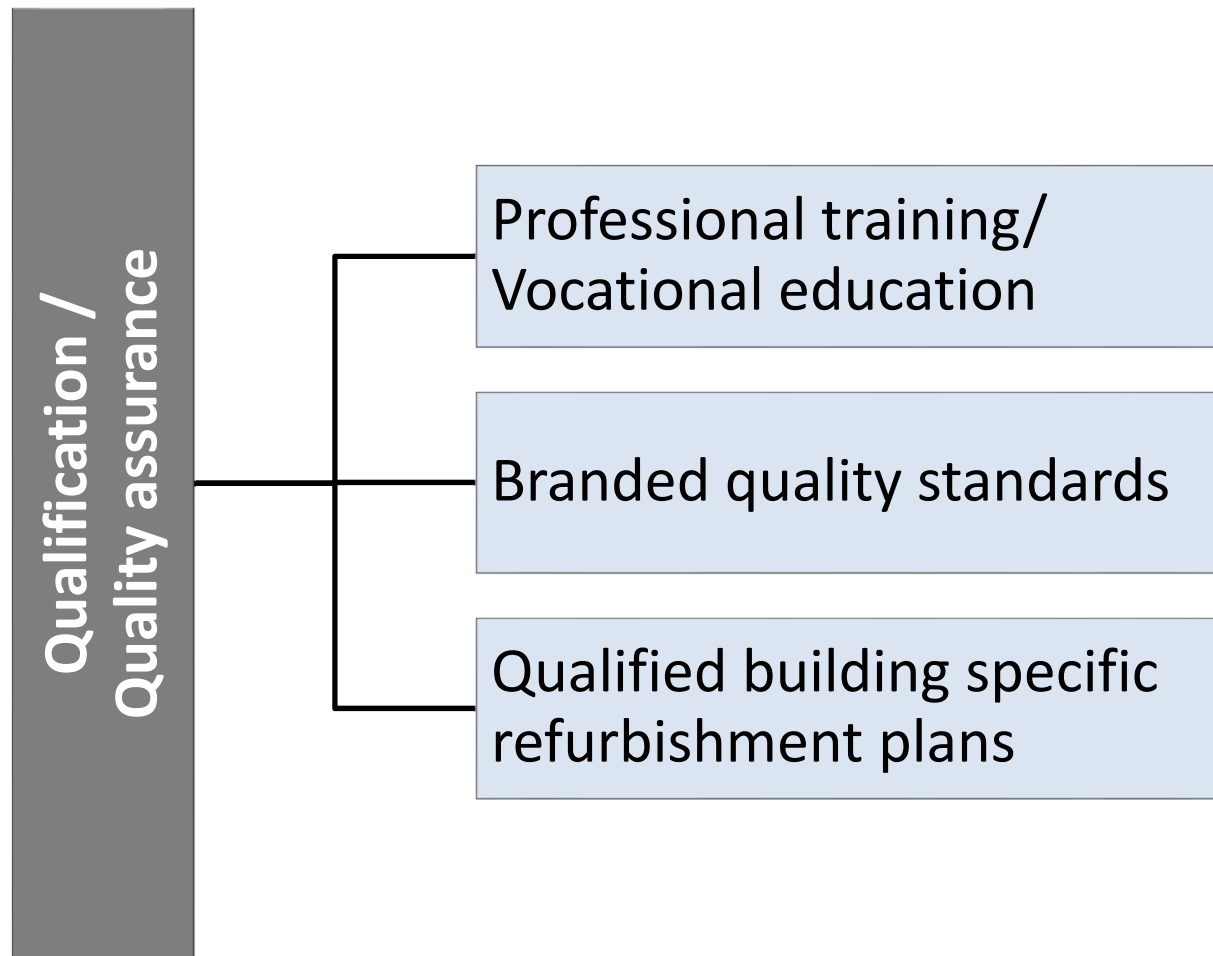
ECONOMIC INSTRUMENTS – TAX INCENTIVES



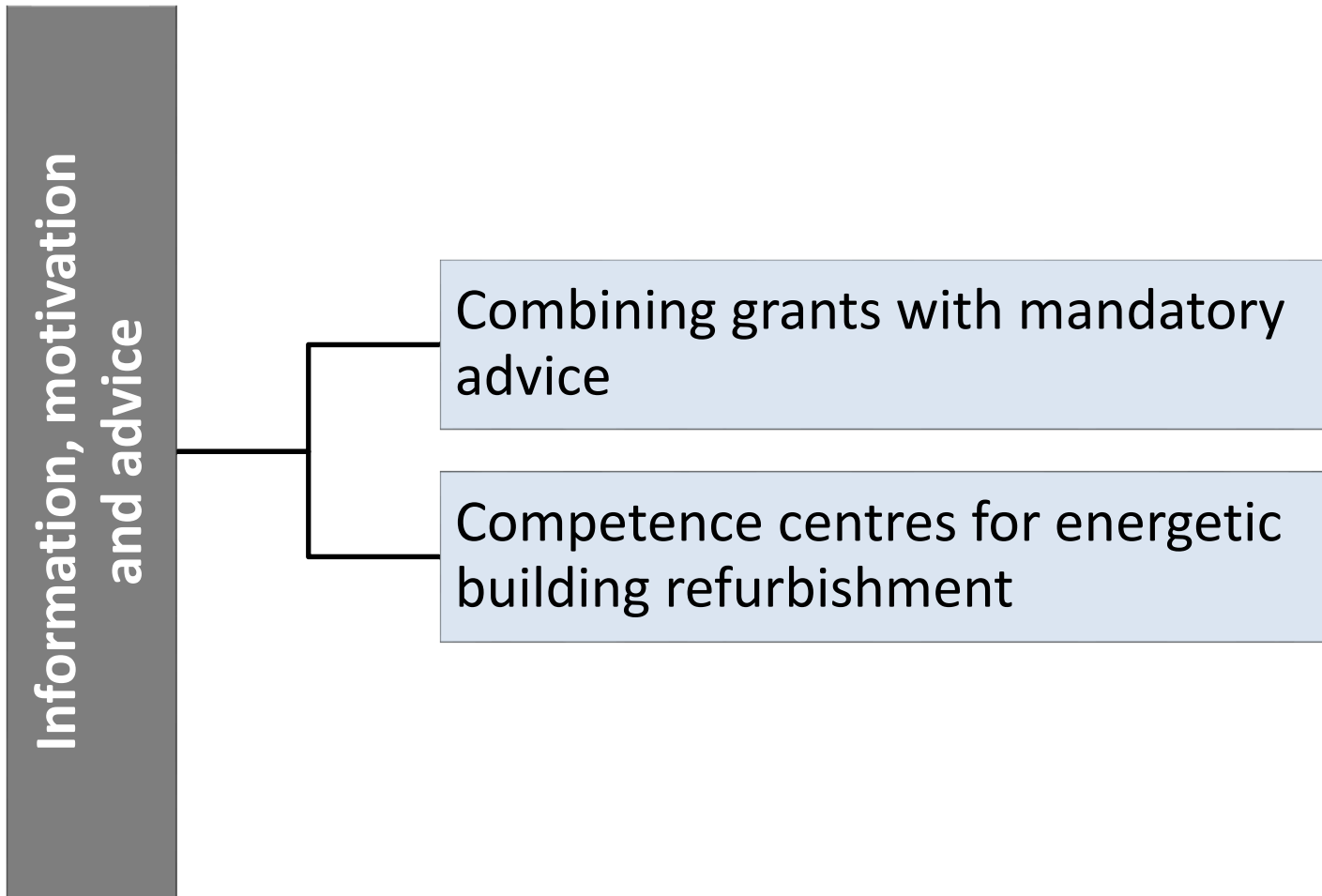
ECONOMIC INSTRUMENTS – NON-FISCAL WITH MARKET ELEMENTS



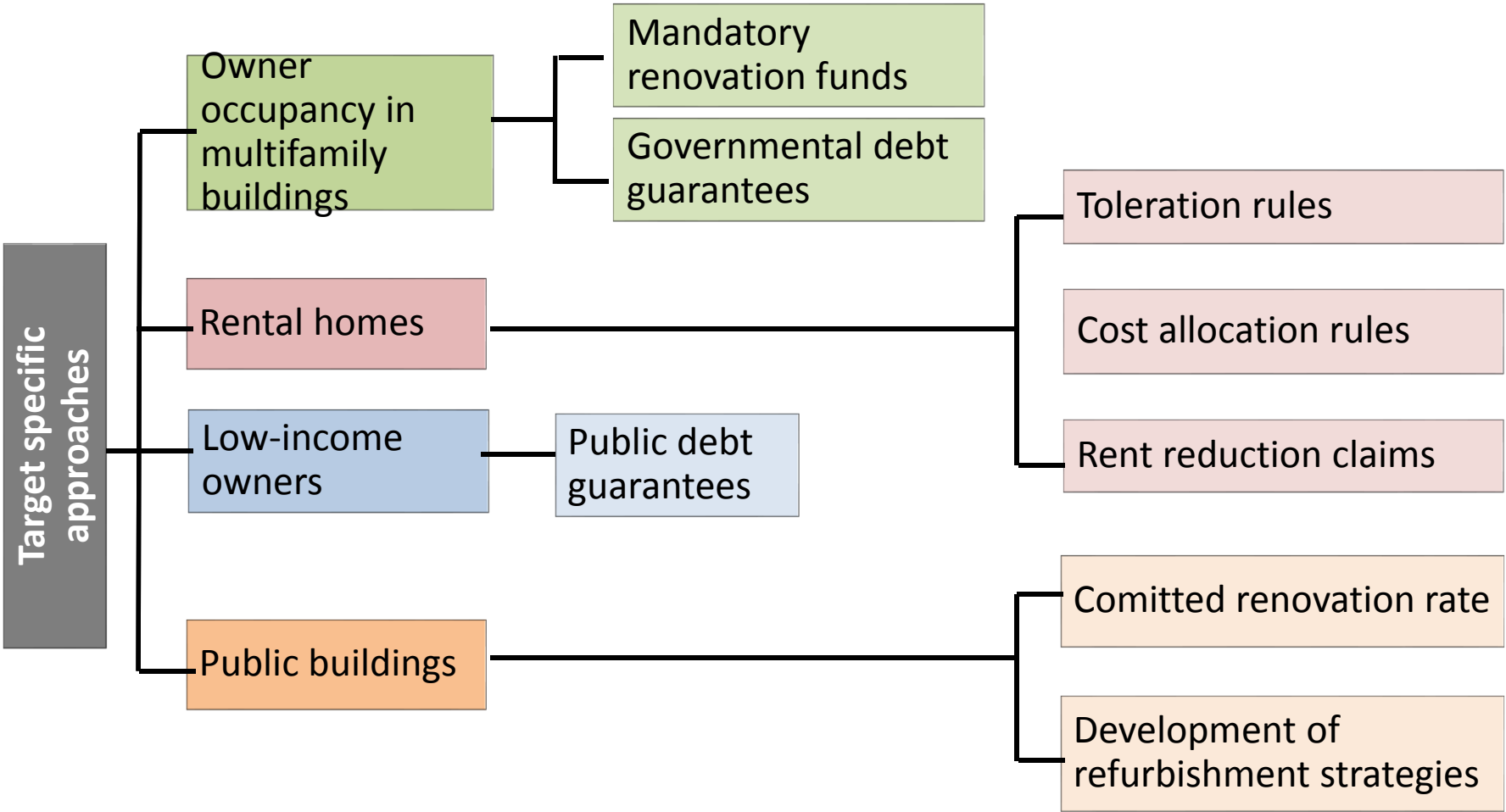
QUALIFICATION AND QUALITY ASSURANCE



INFORMATION, MOTIVATION AND ADVICE



TARGET SPECIFIC APPROACHES



FROM THE INSTRUMENT PORTFOLIO TO INTEGRATED POLICY PACKAGES



- Rationale for establishing policy packages:
 - different target groups have different barriers
 - most energy saving potentials are not hampered only by one barrier but rather a bundle of different barriers
 - need of policy packages addressing the different target-group specific barrier bundles
- Key considerations for defining policy packages:
 - Main barriers should be addressed; all major target groups should be targeted
 - Transaction costs should be minimised (for the state but also all other system participants), synergies (e.g. in administering different instruments) should be exploited
 - Keep it simple as possible; main elements should be easy to communicate

Thank you for your attention!

Further information: www.entranze.eu

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