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Eceee 2017 Summer Study on energy efficiency Giens, 30 May 2017

The future of EU Energy Efficiency policies – a Comprehensive Analysis of Gaps, Shortcomings, and Potential Remedies

Presentation: Dr. Stefan Thomas

Background and methodology

- Study for the German environmental agency (UBA), consortium with Ecofys and IFEU-institute
- Provide information to the agency (and the energy and environment ministries) about good practice and how to develop EU energy efficiency policies further
- For use in EU negotiations, eg on Winter Package
- **Methods**: (1) started from knowledge on sectoral policy packages to overcome multiple barriers, including institutional/governance framework (from literature and projects, eg Energy Efficiency Watch (EEW) and bigee.net)
- (2) Policy gap analysis: Compared existing EU-level policies with these packages to identify complete gaps and weak instruments (policies with shortcomings)
- (3) Developed proposals for filling gaps with new EU policies (if EU policy make sense) or for strengthening existing policies (also using EEW, Coalition etc - our science-based wishlist ☺ - not necessarily the position of UBA or the Geman government)

The Governance Framework for Energy Efficiency

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Policy package to increase energy efficiency with selected EU policies

Governance framework

Targets and Concepts	Infrastructure and funding	Eliminating distortions
• **Energy Efficiency Targets**: e.g. 20/20/20 targets, 27% energy savings by 2030 (Conclusion on 2030 Climate and Energy Policy Framework SN 79/14), Article 3 & 7, EED • **Several Roadmaps and Strategies**: e.g. Clean Energy For All European; A policy framework for climate and energy in the period 2020 to 2030; Energy Efficiency Plan; Heating and Cooling Strategy	• **Energy Agencies**: DG Energy, Concerted Action, European Energy Network, Joint Research Centre • **Energy Efficiency Funds**: Structural and Investment Funds, Cohesion Fund, Energy Efficiency Fund, Article 20 EED • **Energy Saving Obligations**: Article 7, EED • **Energy services**: Article 18, EED	• **Energy / CO2 taxation**: Energy Tax Directive **Emission Trading**: EU Emission Trading Scheme

Specific policies for each sector

Regulation	Planning	Information and Advice	Incentives and Financing	Capacity Building and Networking	Research and Development and BAT promotion

The Governance Framework for Energy Efficiency: Proposals for improvement of EU-level policies

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Governance Framework

Highest priority

- Binding target of 40 % until 2030 and differentiated targets for each Member State, adding up to 40% overall
- Extend and adapt Article 7 (EED): increase annual energy savings to 2 % for each MS, elimination of exemptions, include transport, adjustment of calculation methods, energy efficiency sub-targets for the main sectors
- Secure and increase budget and human capacities for energy efficiency policies - EU and MS level (in ministries, agencies, etc.)
- Increase minimum rates of energy taxes, use tax and EU-ETS revenues for energy efficiency policies as needed
- Strengthen monitoring activities for all energy efficiency policies and measures including control and enforcement
- Compulsory implementation of energy efficiency obligation scheme (Article 7) and an energy efficiency fund (Article 20) but freedom in share of Article 7 target achieved by either, except for a minimum of e.g. 10% for each
- Targets for MS to develop energy services markets, with clearer definitions
- Obligation for all MS to set up national and support regional and local energy agencies

Lowest priority

Policy package for energy efficiency in private households

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Policy package for energy efficiency in private households with selected EU policies

Governance framework		
Targets and Concepts	**Infrastructure and funding**	**Eliminating distortions**

Specific policies					
Regulation	**Planning**	**Information and Advice**	**Incentives and Financing**	**Capacity Building and Networking**	**Research and Development and BAT promotion**
• **Minimum energy performance standards and other regulation**: EPBD; Ecodesign Directive; Article 5 & 9, EED	• **Heat/Cold supply concepts for districts**: *no EU policies implemented*	• **Mandatory comparative labelling scheme:** Energy Labelling Directive • **Energy Performance Certificate**: Article 11-13, EPBD • **Energy advice and energy audits**: Article 8, EED • **Provision of targeted information**: Article 12 & 17, EED • **Voluntary endorsement labelling scheme**: EU Ecolabel Regulation, EU Energy Star Regulation	• **Financial incentives**: Article 10, EPBD; Article 7, EED	• **Education and training**: BUILD UP Skills; • **Energy efficiency network**: BUILD UP Portal	• **Funding for R&D projects**: Horizon 2020 • **Public sector programmes**: Article 6, EED

Policy package for energy efficiency in private households: Proposals for improvement of EU-level policies

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Private Households

Highest priority

- Develop building strategy until 2050 with concrete (interim) targets, for climate-neutral building stock. Also address living space
- Ambitious Ecodesign standards and accelerated regulatory processes; resource aspects; top runner roadmaps for all products
- For new build and renovation: Harmonized and ambitious definition of nZEBs throughout Europe; also minimum requirements for net zero or plus energy buildings towards 2030
- Improved conditions for standardized high quality energy advice, with training and certification for energy efficiency experts. Linked to:
- Effective financial support for ‘deep’ renovations
- Improvement of EPCs: clear energy classes and recommendations for deep renovations; public database (key indicators for each building)
- Building-specific refurbishment roadmaps out of energy audits to make nZEB the standard in comprehensive or partial renovation too
- Return to the energy labelling classes A to G; related to the real energy consumption; public database for all labelled products
- Specific electricity consumption target for sector private households
- Heating and cooling strategy: concrete targets and transformation paths
- Obligation for MS: Promotion and implementation of local/regional networks for the refurbishment of buildings and whole districts.

Lowest priority

Policy package for energy efficiency in the industry sector

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Policy package to increase energy efficiency in industry with selected EU policies

Governance framework

Targets and Concepts	Infrastructure and funding	Eliminating distortions

Specific policies

Regulation	Planning	Information and Advice	Incentives and Financing	Capacity Building and Networking	Research and Development and BAT promotion
• **Minimum energy performance standards**: Industrial Emissions Directive; Ecodesign Directive **Energy audits and energy management**: Article 8, EED	• **Voluntary Agreements with commercial organisations**: Article 7 (9c), EED: Voluntary agreements • **Heat-/Cold-/Power supply plans for commercial areas**: *no EU policies implemented*	• **Provision of information**: *no EU policies implemented* • **Energy advice:** Articles 7 and 8, EED	• **Financial incentives**: Article 7 (9b), EED	• **Education and training**: Article 7 (9f), EED • **Energy efficiency clusters and networks**: *no EU policies implemented*	• **Funding for R&D projects:** Horizon 2020 • **BAT promotion**: New Entrants Reserve (NER) Programme

Policy package for energy efficiency in the industry sector: Proposals for improvement of EU-level policies

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Industry

Highest priority

- EU-wide strategy for industry => a climate-neutral economy, including a strategy for key technologies
- From energy audit requirement (Art. 8 EED) to obligation for energy management systems for all companies above X GWh/year
- Obligation to implement proposed actions (that meet certain criteria), also from an energy management system
- Obligation for MS to promote energy audits and energy management systems also for SMEs below the energy consumption threshold
- Obligation for MS: promotion of energy efficiency networks of companies
- Obligation for companies to build up and to fill-in database with the aim to identify benchmarks (then: elaboration of standards and benchmarks)
- Specification of requirements and targets to MS for information campaigns, advice programmes and the promotion of investments
- Minimum standards and obligation for MS to implement capacity building programmes for energy experts; certification of energy auditors
- Industrial Emissions Directive: delete Article 9(2) => requirements for emission reduction and energy efficiency also ETS installations; include binding and ambitious energy efficiency requirements into BAT BREFs
- Quota for low-carbon demo projects under NER 300 innovation fund

Lowest priority

Policy package for energy efficiency in the transport sector

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Policy package for energy Efficiency in the transport sector with selected EU policies

Governance Framework

Targets and Concepts	Infrastructure and Funding	Eliminating Distortions
• **Energy Efficiency Targets and Strategies**: Cooperative Intelligent Transport System (2016); Low-Emission Mobility (2016); Clean and Energy Efficient Vehicles (2010); Air Transport and the Environment (1999); White Paper (2011); Action Plan on Urban Mobility (2009)	• **Agencies and other actors**: European railway agency; European energy and transport forum • **Energy Efficiency Funds**: Structural and Investment Funds and Cohesion Fund; Connecting Europe Facility	• **Energy Tax**: Energy Tax Directive • **Road charging**: Road charging of heavy goods vehicles

Specific Policies

Regulation	Planning	Information and Advice	Incentives and Financing	Capacity Building and Networking	Research and Development and BAT promotion
• **Minimum energy performance standards and other regulation:** EED, fuel quality, clean vehicles, CO2 emission performance standards for passenger cars and light-duty vehicles (fleet targets), test cycles used to measure emissions	• Deployment of alternative fuels infrastructure, Trans-European Transport Network (2013), Single European railway area, Air traffic management system, Sustainable urban mobility plans (SUMPs) • **Integrated mobility concepts (overall transport modes):** *no policies implemented*	• **Information on energy efficiency in the purchasing process:** Labelling of tyres with respect to fuel efficiency, Labelling of cars with respect to fuel economy and CO2 emissions • **Eco-driving:** *no policies implemented* • **Mobility management/ education:** *no policies implemented*	• **Traffic based taxes:** Communication with respect to taxation of passengers cars; *no policies implemented in regard to an uniform taxation of passenger cars/ company cars throughout the EU* • **Financial purchase incentives***: no policies implemented*	• **Education and training of car salespersons on energy efficiency:** *no policies implemented*	• **Funding for R&D projects:** Horizon 2020, Establishing the Clean Sky

Policy package for energy efficiency in the transport sector
Proposals for improvement of EU-level policies

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Transport

Highest priority

- Implement transport sector White Book and 2016 strategy; advance it to an **EU integrated strategy for sustainable mobility,** with targets and measures: reducing traffic, modal shift, decarbonisation, energy efficiency
- Mandatory inclusion of transport sector in Article 7 EED in the calculation of the saving target and saving measures
- Change basis of assessment for fleet targets and energy labelling: use vehicle basis area
- Harmonised taxation of motor vehicles and fuels on the basis of CO_2 emissions and energy consumption/content across EU
- Realistic test methods for fuel consumption, CO_2 emissions, pollutants
- Harmonise road charges for heavy duty vehicles and introduce for buses: based on distance driven and greenhouse gas emissions
- Shift TEN funds from road to rail; revival of European night trains
- Introduce fleet targets for heavy duty vehicles
- Harmonized taxation of company cars: incentives for energy efficiency
- Consider mobile air conditioning systems in the Ecodesign Directive
- Obligatory implementation of SUMPs by MS across European Union
- Develop public product database on EE of vehicles and components

Lowest priority

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Thank you for your attention

Conclusions on Energy Efficiency

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- Energy efficiency has **multiple benefits**. It usually is a win-win-win option for all aspects of sustainability
- We need much more evaluation and communication of these multiple benefits – to citizens, companies, and politicians!
- Energy efficiency will still only to a part happen by itself
  - because of the manifold and strong market barriers
- Governance and **policy packages for energy efficiency are needed** to tap the full potential and develop energy efficiency markets – also support local governments' activities
- Evaluation shows they can achieve **around 2% per year of additional energy savings** – we need more policy evaluation too
- **Harnessing the cost-effective energy efficiency potential will allow and drive more ambitious climate goals and making the energy transition a reality**

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FES/WI workshop: *Sustainable energy system transformation in oil-rich states*

Wuppertal, 09.05.2017

Sectoral energy policy gap analysis

Transport sector: Gap analysis

Policy instrument	Implementation in the European Union	Gap analysis
Regulation	• Renewable Energy Directive 2009/28/EG • Directive on the promotion of clean and energy-efficient road transport vehicles 2009/33/EC • Energy Efficiency Directive 2012/27/EU • Fuel Quality Directive 2009/30/EC • Directive on the promotion of clean and energy-efficient road transport vehicles 2009/33/EC • Test cycles used to measure emissions	• The fleet targets should be based on vehicle basis area instead of vehicle weight in order to create an incentive to produce lighter vehicles • A transition from an emission-based (output) assessment to an energy-based (input) assessment is essential • More stringent fleet targets for passenger cars and light duty vehicles are crucial for the period after 2021 • Fleet targets for heavy duty vehicles need to be implemented too • Regulations are needed to continuously reduce CO2 emissions (and pollutants) of vessels, rail vehicles, and aircraft.
Planning	• Directive 2014/94/EU on the development of alternative fuels infrastructure • Regulation No 1315/2013 on Union guidelines for the development of the trans-European transport network (TEN-T) and Regulation 1316/2013 establishing the Connecting Europe Facility • Directive 2012/34/EU establishing a single European railway area • Regulation 219/2007 on the establishment of a Joint Undertaking to develop the new generation air traffic management system • SUMP support (IEE, Horizon 2020)	• TEN-T only guidelines. Responsibilities for the planning and construction of transport infrastructure lie with the MS • SUMPs good practices should be extensively spread, for instance by making their implementation mandatory for MS

Transport sector: Gap analysis

Policy instrument	Implementation in the European Union	Gap analysis
Information and Advice	• Regulation 1222/2009 on the labelling of tyres • Information on the fuel consumption and CO2 emissions of new cars 1999/94/EC	• Energy labelling should be based on the vehicle area • Effects on buying behaviour unclear • Public product database is needed
Incentives and Financing	• Communication from the Commission – Taxation of passengers cars in the European Union COM(2002)431	• The taxation of motor vehicles varies widely in the EU. It should be based on CO2 emissions and specific energy consumption from energy efficiency perspective • Taxation of company cars should be harmonized • No financial incentives to buy energy efficient vehicles
Research and Development and BAT promotion	• Horizon 2020 (2014-2020) • Regulation 558/2014 establishing the Clean Sky 2 Joint Undertaking. Budget: 4 billion EUR (Industry, Horizon 2020, others)	• Effect of Horizon projects unclear (ongoing) • Evaluation missing

The Governance Framework for Energy Efficiency

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Policy package to increase energy efficiency

Governance framework

Targets and Concepts	Infrastructure and funding	Eliminating distortions
• Energy Efficiency Targets • Roadmaps and Strategies • Voluntary Agreements with commercial and public organisations • International co-operation	• Energy Agencies • Energy Efficiency Funds • Energy Saving Obligations for energy companies • Feed-in-tariff for certified energy savings • Energy services	• Removal/reform of subsidies to end-use energy prices and on energy supply • Energy / CO2 taxation • Emission Trading • Removal of legal barriers • Regulation of energy companies

Specific policies for each sector

Regulation	Planning	Information and Advice	Incentives and Financing	Capacity Building and Networking	Research and Development and BAT promotion

The policy package for private households

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Policy package for energy efficiency in private households

Governance framework		
Targets and Concepts	**Infrastructure and funding**	**Eliminating distortions**

Specific policies					
Regulation	**Planning**	**Information and Advice**	**Incentives and Financing**	**Capacity Building and Networking**	**Research and Development and BAT promotion**
• Minimum energy performance standards • Other regulation such as individual metering, energy management for larger buildings and regular inspections of heating, ventilation and air conditioning systems	• Heat/Cold supply concepts for districts	• Mandatory comparative labelling scheme • Energy Performance Certificate • Energy advice and energy audits • Provision of targeted information • Voluntary endorsement labelling scheme • Best practice examples	• Financing • Financial incentive	• Education and training • Energy efficiency network • Certification schemes	• Funding for R&D projects • Public sector programmes • Demonstration buildings

Policy package for energy efficiency in the industry sector

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Policy package to increase energy efficiency in industry (selection)

Governance framework		
Targets and Concepts	**Infrastructure and funding**	**Eliminating distortions**

Specific policies					
Regulation	**Planning**	**Information and Advice**	**Incentives and Financing**	**Capacity Building and Networking**	**Research and Development and BAT promotion**
• Minimum energy performance standards • Energy audits and energy management:	• Voluntary Agreements with commercial organisations • Heat-/Cold-/Power supply plans for commercial areas	• Provision of information • Energy advice • Good practice examples	• Financial incentives	• Education and training • Energy efficiency clusters and networks	• Funding for R&D projects • BAT promotion

Policy package for energy efficiency in the transport sector

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Policy package for energy Efficiency in the transport sector with selected EU policies

Governance Framework

Targets and Concepts	Infrastructure and Funding	Eliminating Distortions
• Energy Efficiency Targets • Roadmaps and Strategies	• Agencies and other actors • Energy Efficiency Funds • Obligation schemes	• Energy Tax • Road charging • Removal of legal barriers

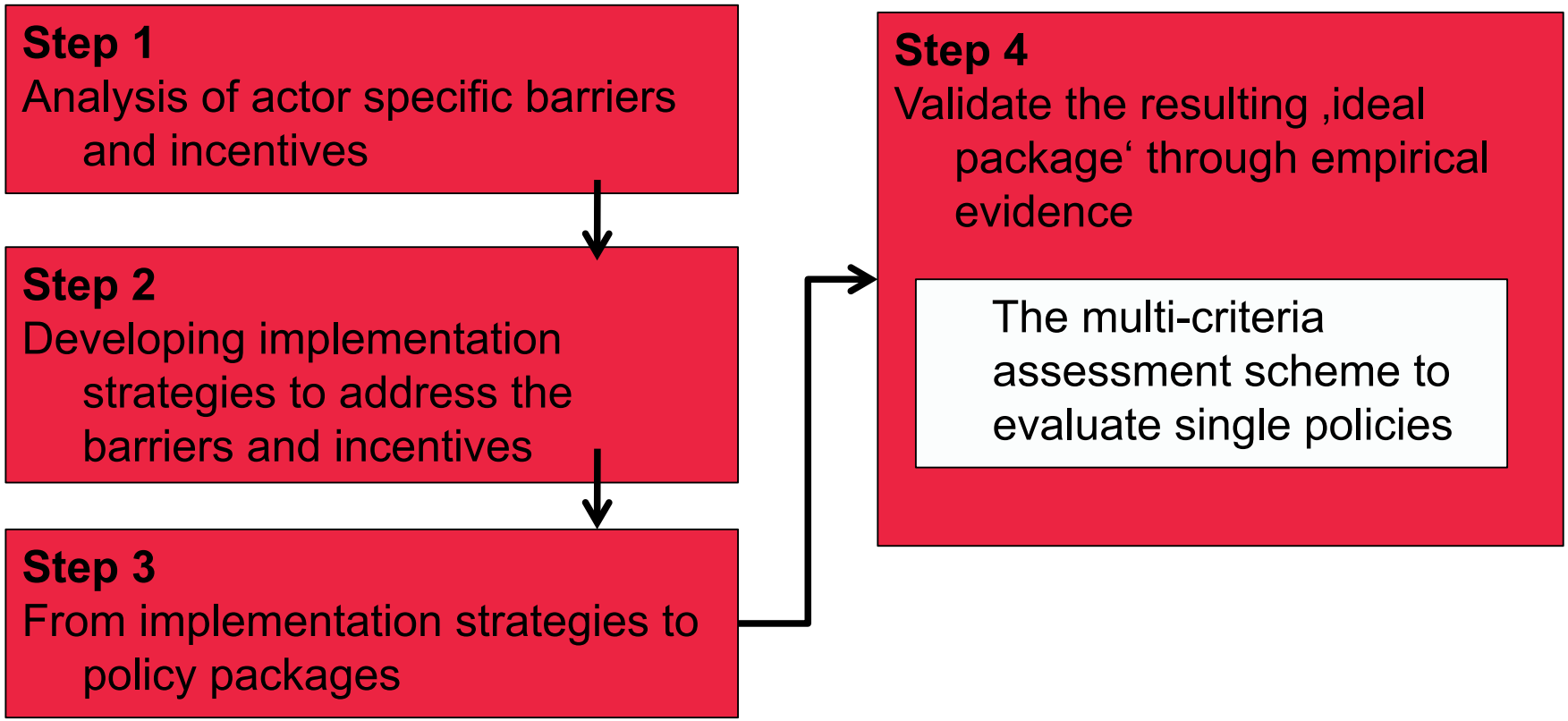
Specific Policies

Regulation	Planning	Information and Advice	Incentives and Financing	Capacity Building and Networking	Research and Development and BAT promotion
• Minimum energy performance standards and other regulation • Public procurement • Restrictions on the use of certain vehicles	• Sustainable Urban Mobility Plans	• Information on energy efficiency in the purchasing process • Eco-driving • Mobility management/ education • Information and advice	• Traffic based taxes • Financial purchase incentives • Taxation on company cars • Public product database	• Education and training of car salesmen on energy efficiency	• Funding for R&D projects • Demonstration projects • Awards

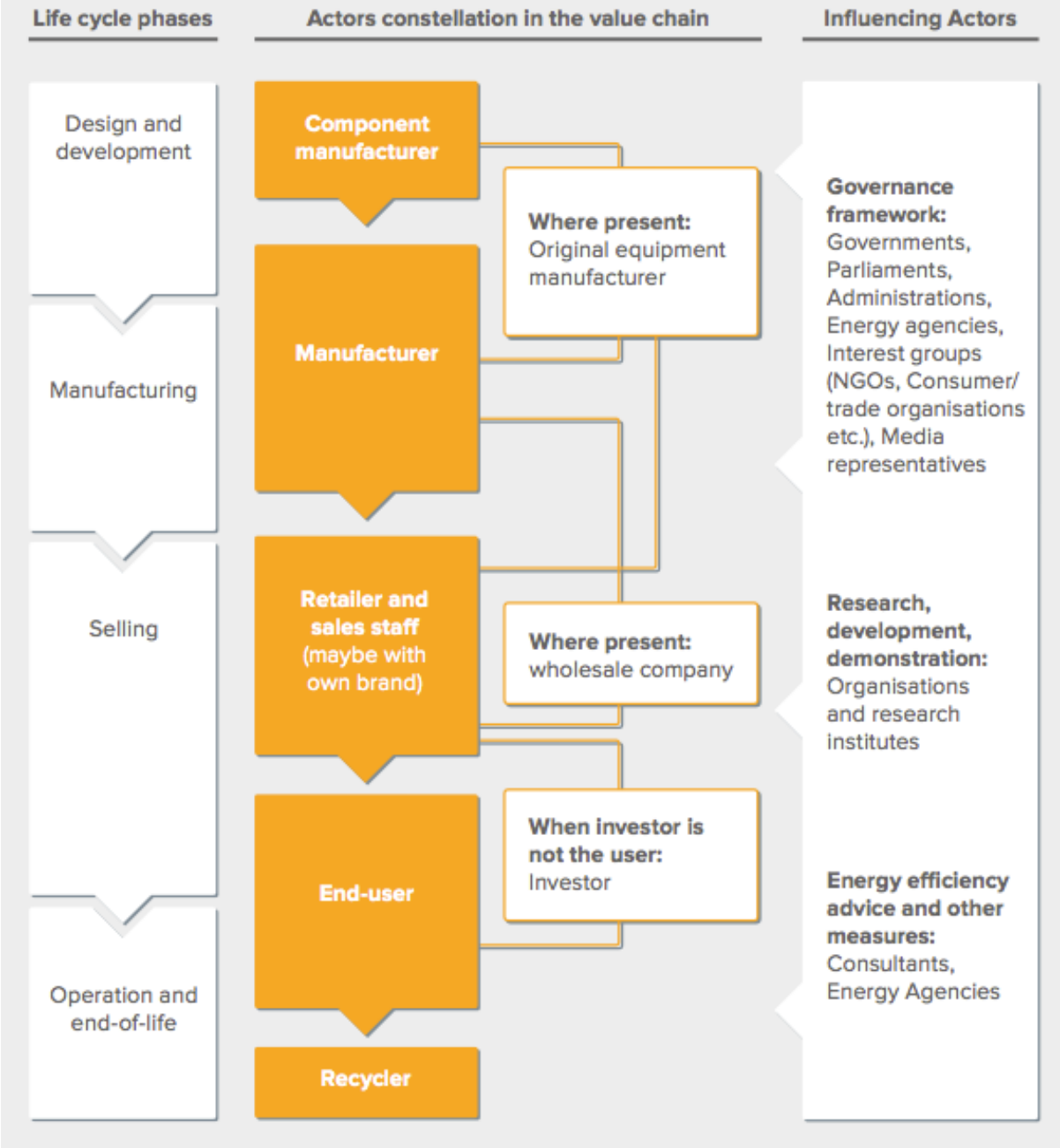
Methodology

Actor-oriented theoretical analysis

The empirical proof



Actors constellation in the supply chain of appliances



Developing implementation strategies to address the barriers and incentives

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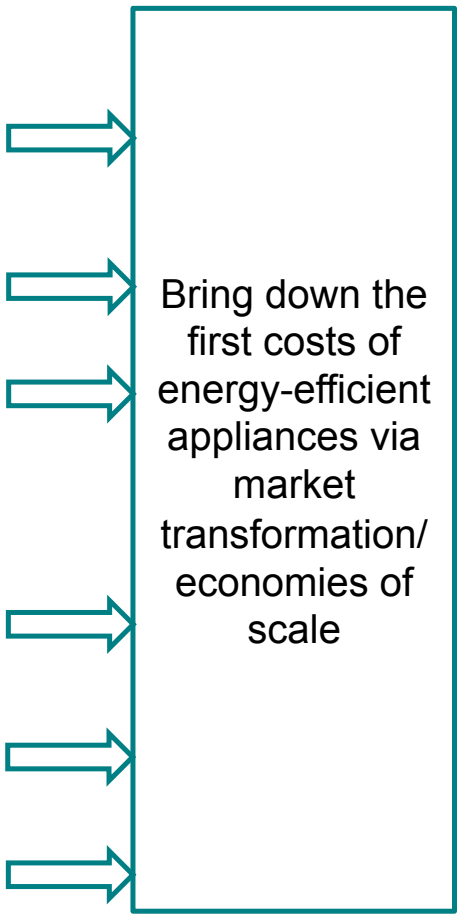
Barriers tackled

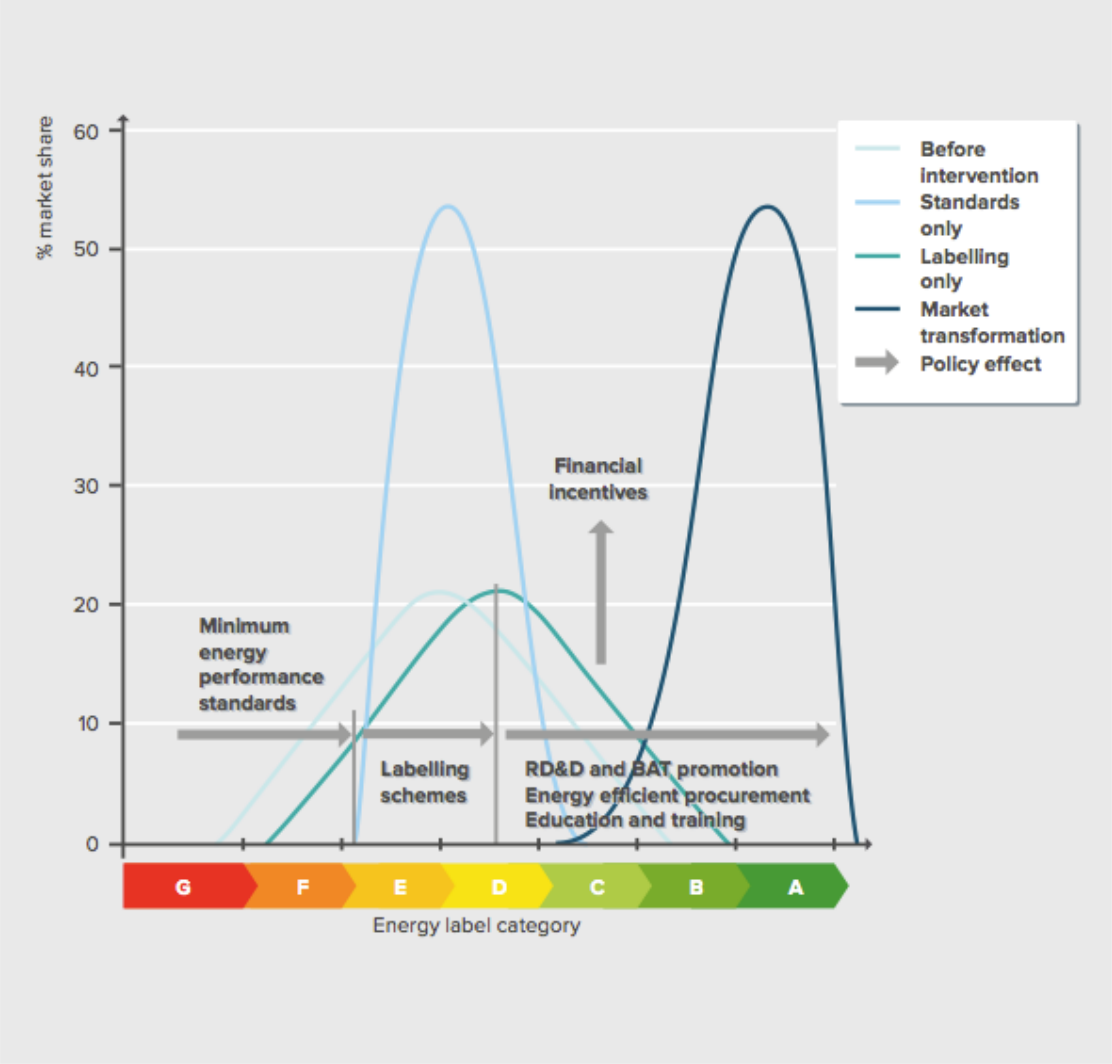
- (Manufacturers, retailers, wholesalers) Prevailing price competition or predominance of other product features over energy efficiency; therefore low priority by manufacturers and low willingness to pay (more) for energy-efficient products.
- (Investors, users) Lack of motivation because savings are too small, uncertainty about level of benefits and costs (is it worth it?), other priorities etc.
- (Investors, users) Lack of capital real or perceived costs, innovations only with short payback period

Incentives strengthened

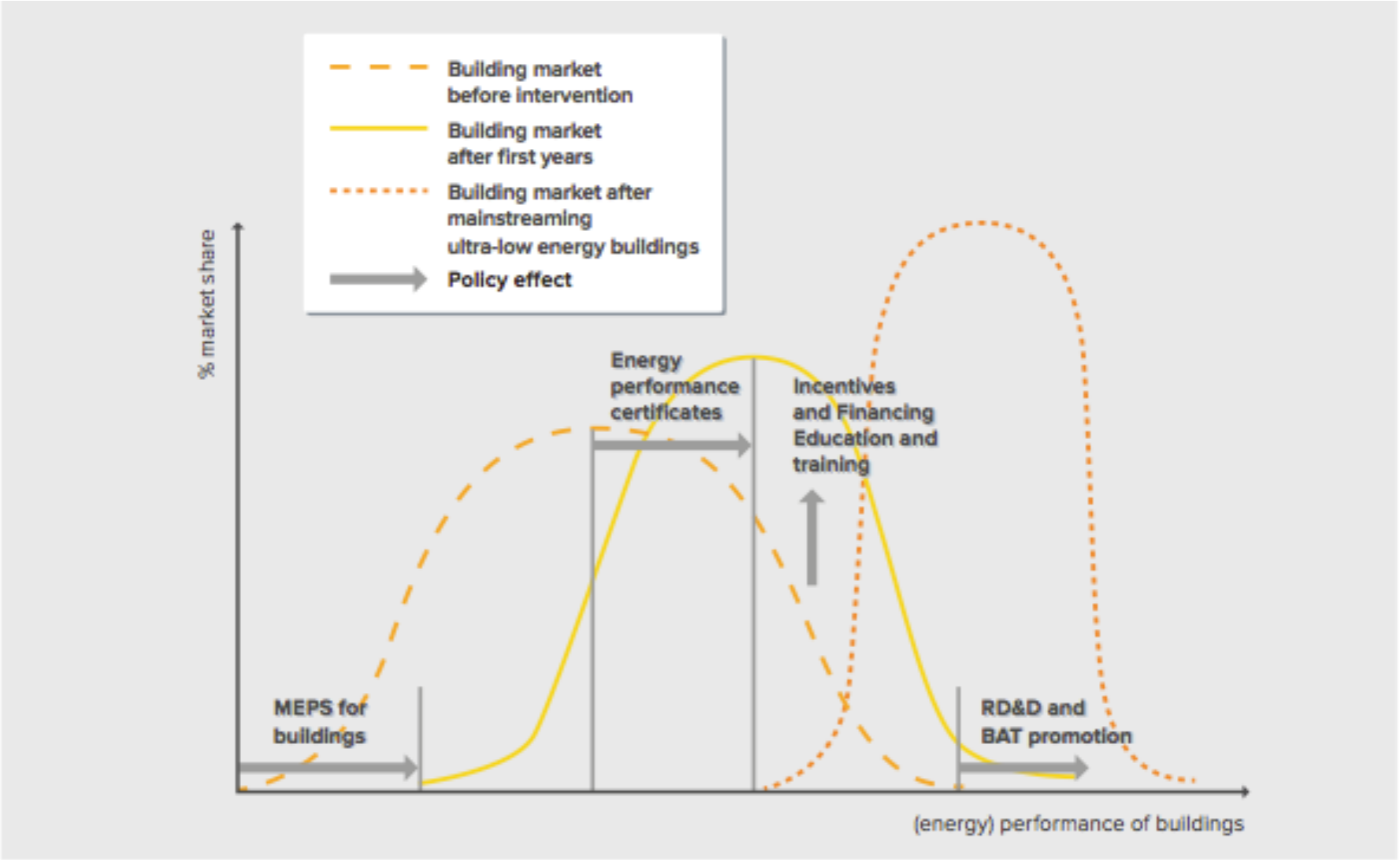
- (Investors) save energy costs. The energy efficient product is often the cost effective solution
- (Investor ≠ user, manufacturer) Increase value of the property; from a supply perspective, this means higher revenues and possible higher profits. Justification for higher prices
- (Manufacturers, users) Contribution to protect the environment



The policy package for appliances and the interaction of policy instruments



The policy package for new buildings and the interaction of policy instruments



Why do we need governance for energy efficiency?

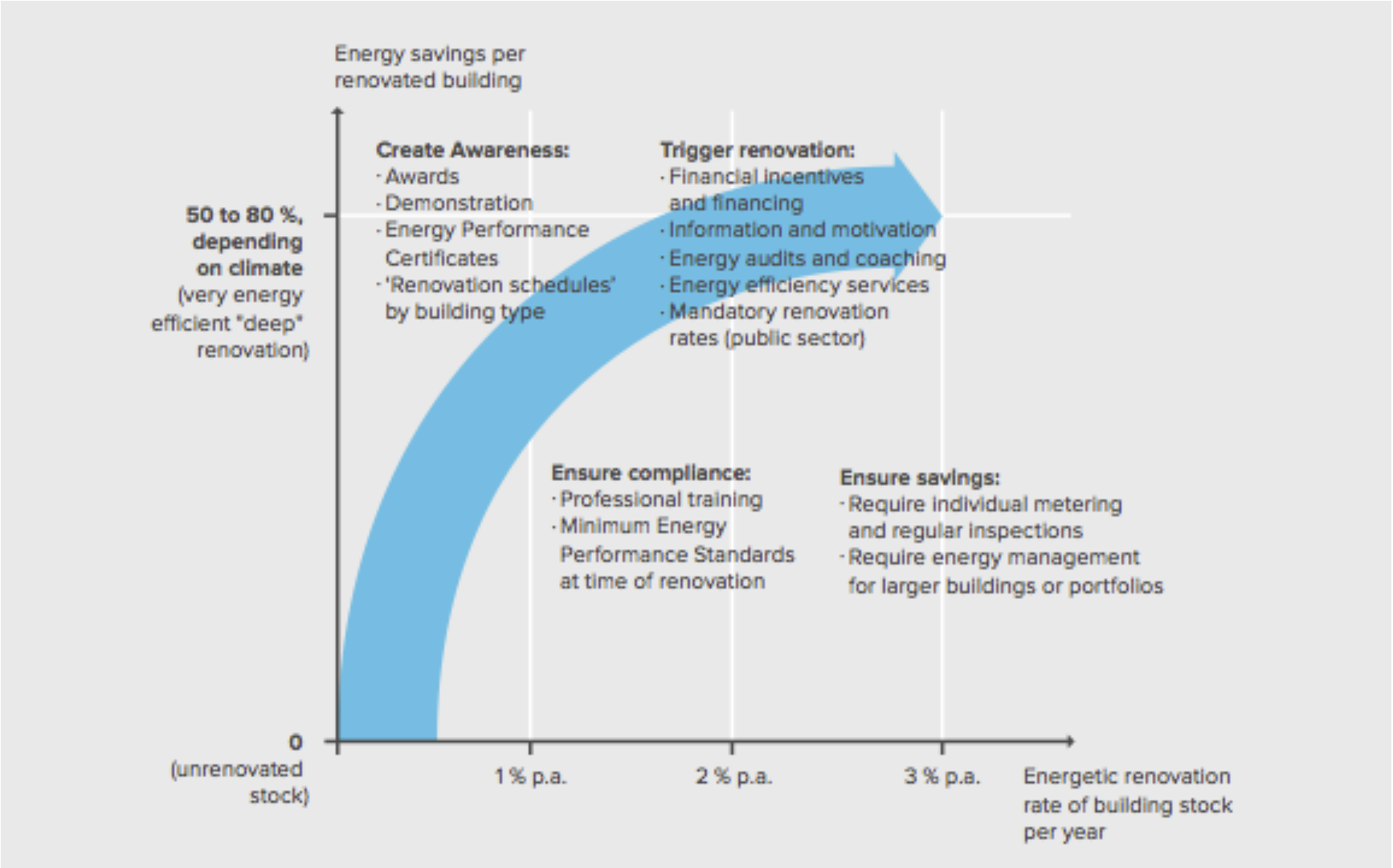
To overcome the plethora of barriers

- Energy efficiency = many small to medium technical improvements
  - lack of oversight (where to start?),
  - lack of information (both consumers and technology providers!),
  - sometimes small financial gains from an improvement

- => lack of priority
- sometimes lack of funds
- Energy prices too low (subsidies?) => Energy cost savings too low
- split incentives between investors and users or between technology/ building providers and buyers

- => make energy efficiency easy, attractive, and eventually the default
- => **policy packages** with more information, practical guidance, regulation, and financing support needed („the sticks, the carrots, and the tambourines“)

The policy package for building renovation and operation and the interaction of policy instruments



EU EE policy targets 2020 and 2030

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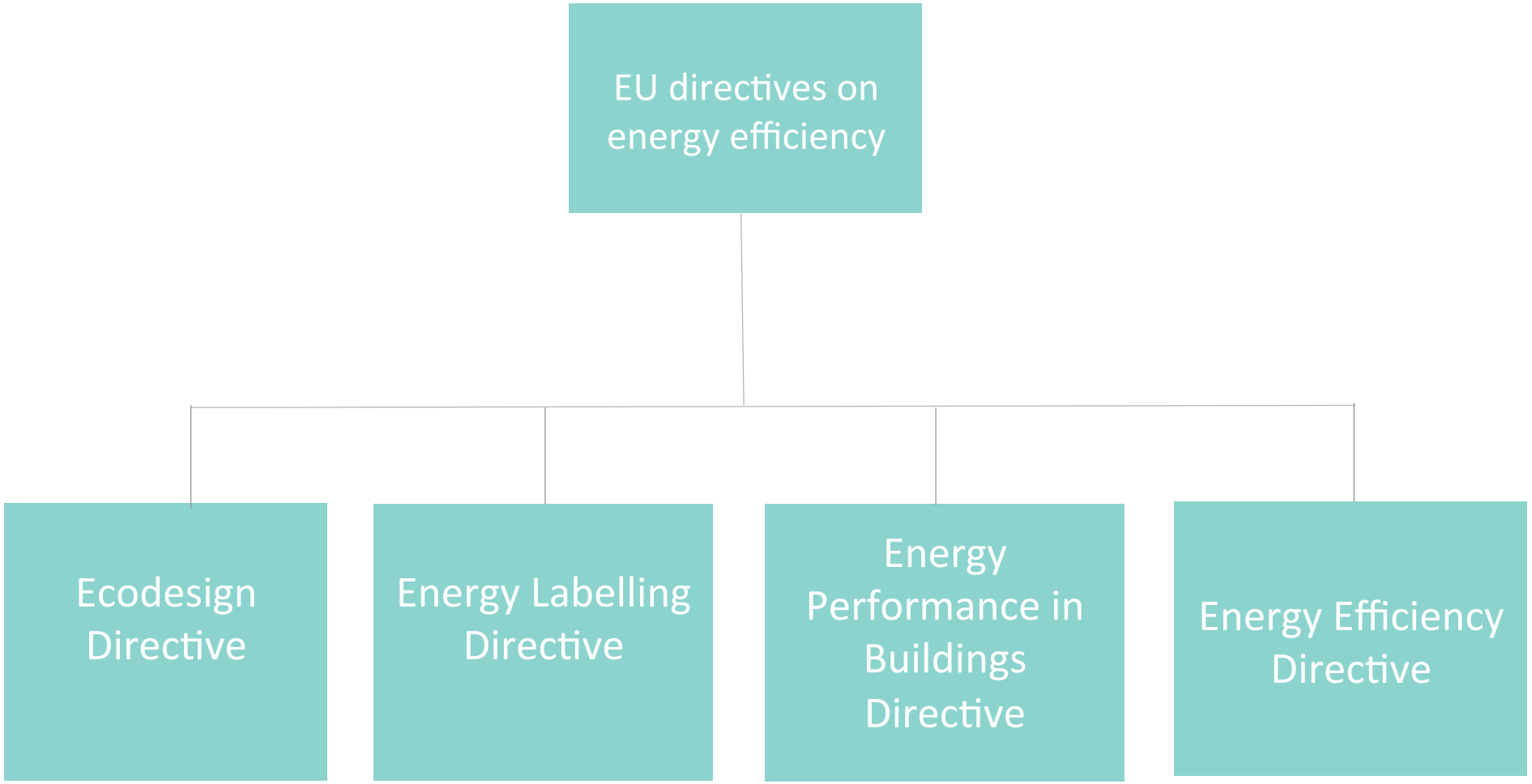
2020:

- Target to improve EE **by 20% by 2020** relative to reference scenario / baseline projections => for primary energy, **370 Mtoe** of savings in 2020
- i.e. for **primary energy** consumption in 2020 to **not exceeding 1483 Mtoe** and final energy consumption not exceeding 1086 Mtoe
- 2014 impact assessment found the community was on course towards a 18.5% improvement, and:
- If current trends continue by 2020, roughly 1/3 of reduction in energy consumption compared to the projection will stem from lower growth than anticipated, but about 2/3 from increasing energy efficiency improvements

2030:

- In 2014, the **European Council** agreed on an increase in energy efficiency by **2030 of at least 27%**, to be reviewed by 2020 having in mind 30%. **European Commission now proposed 30% binding** at EU level.
- In 2015, the **European Parliament** called for a **binding 40% target**
- However, the EU energy system **projections indicate** that the current national and European energy efficiency framework would lead to only approximately **23.9% of primary energy** reduction in 2030

Policy - The four principal EE Directives



Energy Efficiency Directive - 2012/27/EU

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Framework EE Directive, includes:

- **NEEAPS** (National Energy Efficiency Action Plans)
- **National targets** towards the EU's 20% target for 2020 – Article 3
- Energy efficiency obligations and **1.5 % per year policy targets** – Article 7
- Building renovation roadmaps and public sector buildings – Articles 4, 5
- **Energy audits** and SMEs – Article 8
- Public procurement – Article 6
- Metering/Billing and information – Articles 9 to 11
- Heating and cooling (DHC, CHP/cogeneration, microgeneration)
- Energy services
- Transformation, transmission and distribution
- Training, accreditation, certification – Article 16
- **Funding** and financing – Article 20

- Impact Assessment: **savings of 85 Mtoe/yr** expected by 2020

EED article 7 on EEOS

- In its Article 7, The EED provides a powerful overarching policy instrument which obliges Member States to achieve average annual energy savings - nominally of 1.5% and, including exceptions, of at least 1.125% - on energy sales by obliging utilities to implement energy efficiency measures among final users, or through alternative measures with the same effect.
- At present, sixteen Member States have chosen an energy efficiency obligation scheme, twelve in combination with other measures. Four Member States have opted solely for an energy efficiency obligation scheme and twelve intend to achieve their energy efficiency savings targets only with the alternative measures. It is considered that this policy instrument will serve as a strong driver of energy efficiency in the EU over the coming years, although it remains to be seen how well Member States will fare in terms of implementation.

What has been done via Ecodesign regulations thus far?

- 31 Ecodesign regulations now issued
- Addresses products covering over **48% of all EU energy use**
- They aim to attain energy savings by ensuring no regulated product can be sold that consumes more than the average least life cycle cost (e.g. minimum total cost of ownership) for end-users
- Thus far they have applied mostly to:

➢ packaged products where all components and sub-assemblies are sold within the products packaged boundary

➢ to product energy performance

Projected Ecodesign impacts by 2020

- ~1930 TWh (**162 Mtoe**) primary energy savings, i.e. a saving of 19% for the average product
- 320 Mt CO_2 equivalent (**7% of 2010 EU-total**) reduction in greenhouse gas emissions
- 336 million m^3 of drinking water savings and 0.4 Mt printer paper saving; 214 kt less NOx emissions
- **€110 bn net saving** on consumer expenditure (ca. € 170 bn gross saving, € 60 bn extra acquisition)
- €54 bn extra revenue for industry, wholesale and retail sector
- **0.8 million extra direct jobs** for industry, wholesale and retail sector

What is the extra potential from optimising systems (=> via EED and EPBD)?

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- A crude synthesis of recent studies indicates there is a potential to save at least an ***additional* 16%** of total EU energy consumption from the optimisation of how products are designed, installed and operated as systems in Europe's buildings and industry
- 3375 TWh of primary energy savings (compared to ~3123 from existing Ecodesign measures in 2030)
- 541 Mt CO2 equivalent (**12% of 2010 EU-total**) reduction in greenhouse gas emissions
- €192 bn net saving on consumer expenditure (ca. €297 bn gross saving, €105 bn extra acquisition costs)*
- €94 bn extra revenue for industry, wholesale and retail sector*
- 1.4 million extra direct jobs for industry, wholesale and retail sector*

***Based on an assumption of linear scaling from the impacts estimated in the 2013 VHK Ecodesign Directive impact assessment**

EPBD – main measures

- Buildings account for **40% of EU energy use** – huge savings potential
- MS to use a **whole building energy performance** calculation method supported by EU standards
- **Minimum energy performance requirements** set of new build and major renovations via building codes used a cost-optimal methodology designed to minimise the life cycle cost for the end-user
- **Energy performance certificates** issued every time building changes ownership or occupation
- Targets set for 2019/21 for new build only **nearly zero net energy buildings**
- Minimum requirements to be set for **technical building systems** (heating, cooling and ventilation)
- Energy efficient renovations to at least 3% of buildings owned and occupied by **central governments** per year (currently in EED)
- Measures to support **financing** of efficient buildings and **inspection** of heating and cooling systems

Findings from draft review of EPBD (2016)

- Evidence of around **48.9Mtoe additional final energy savings in 2014** compared to the 2007 baseline of the EPBD. These savings occurred mainly within the scope of the EPBD – space heating, cooling and domestic hot water – and a significant part can be attributed to factors influenced by policy interventions.
- The figure of 48.9Mtoe in 2014 seems therefore in line with the 2008 Impact Assessment supporting the EPBD which estimated that the EPBD would deliver **60 to 80Mtoe per year of final energy savings by 2020**
- The overall architecture of the Directive, combining minimum requirements and certification, is working, in particular for new buildings. The choice of the cost-optimal methodology to steer existing national energy performance requirements towards cost-efficient levels has proved to be an effective approach. Targets for all new buildings to be of nearly zero-energy consumption by 2020 have set a 'future-proof' vision for the sector and stakeholders have mobilised accordingly

Transport – (not included in EE targets)

- EU Regulation No 443/2009 sets an **average CO2 emissions target** for new **passenger cars** of 130 grams per kilometre.
- The target was gradually phased in between 2012 and 2015. A target of 95 grams per kilometre will apply from 2021
- New test standard to be introduced to make values stated by car manufacturers more realisitic
- These compare to an average of 160 g/km in 2007 (i.e. a 41% reduction by 2021)
- Regulation 510/2011 for **light commercial vehicles** sets an emissions target of 175 g/km from 2017, and 147 g/km from 2020
- These compare to an average of 203 g/km in 2007 (i.e. a 27.5% reduction by 2020)
- **Also**: ETS has been extended to aviation; tyre labelling regulation; alternative fuel infrastructure directive

Transport - impact

- The analysis suggests that the car CO2 Regulation is likely to have had a positive impact in terms of contributing to the CO2 emission reductions achieved following the introduction of the Regulation, accounting for between 65-85% of the reductions seen in tailpipe emissions.
- Furthermore, the analysis indicates that the Regulations have been more successful in reducing CO2 emissions compared to voluntary agreements from industry, which achieved an estimated rate of annual improvement in CO2 of 1.1 to 1.9 gCO2/km compared to the rate achieved by the Regulations of 3.4 to 4.8 gCO2/km. In addition, the targets required under the Regulations have been met two years early, whereas the targets under the voluntary agreement were missed. Similarly for LCVs, monitoring data shows that the fleet wide average emissions have already exceeded the required target for 2017, and place manufacturers in a strong position to meet their 2020 targets.

Impact of EU EE policies on energy
Impact assessments by the Commission (2020)

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- Impact assessments for the four major EE Directives:
  - EED: 85 Mtoe/year by 2020
  - EPBD: 60 to 80 Mtoe/year by 2020
  - Ecodesign and labelling 162 Mtoe/year by 2020
- Total 300 to 320 Mtoe, plus transport: ?
- Should be enough to achieve target (370 Mtoe/year by 2020) – if well implemented
- Energy Efficiency Watch analysis (2016): EED and EPBD implementation increased number of EE policies by Member States, however:
- Need more staff and budget to fully implement

Impact of EU EE policies on emissions
Impact assessments by the Commission (2030)

- Impact assessment towards **2030** for EED revision (‚leaked' draft):

- Strong EE policies can enable stronger EU GHG emissions reduction target

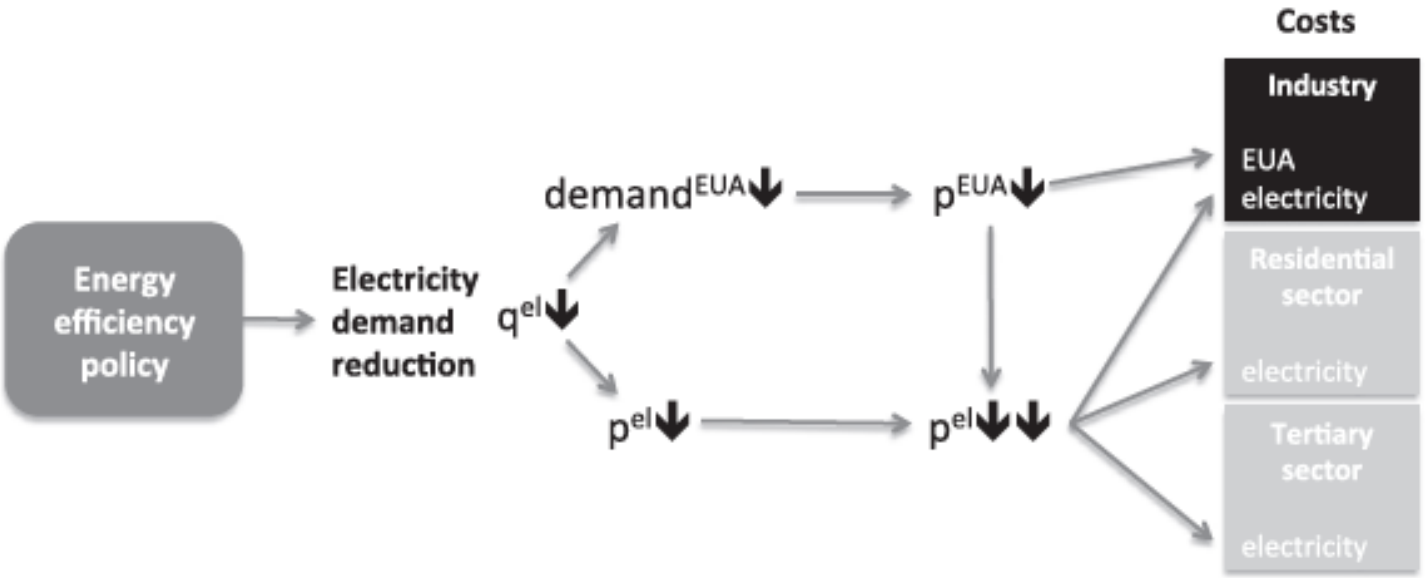
Table 13: Total GHG emissions

Emissions (2030)	Ref2016[107]	EUCO27	EUCO30	EUCO+33	EUCO+35	EUCO+40
Total GHG emissions (% to 1990)	-35.2	-40.7	-40.8	-42.2	-43.6	-47.1
ETS (% to 2005)	-37.6	-43.1	-43.1	-43.8	-45.4	-50.8
ESD (% to 2005)	-23.7	-30.2	-30.3	-32.4	-33.9	-36.3

Source: PRIMES, GAINS

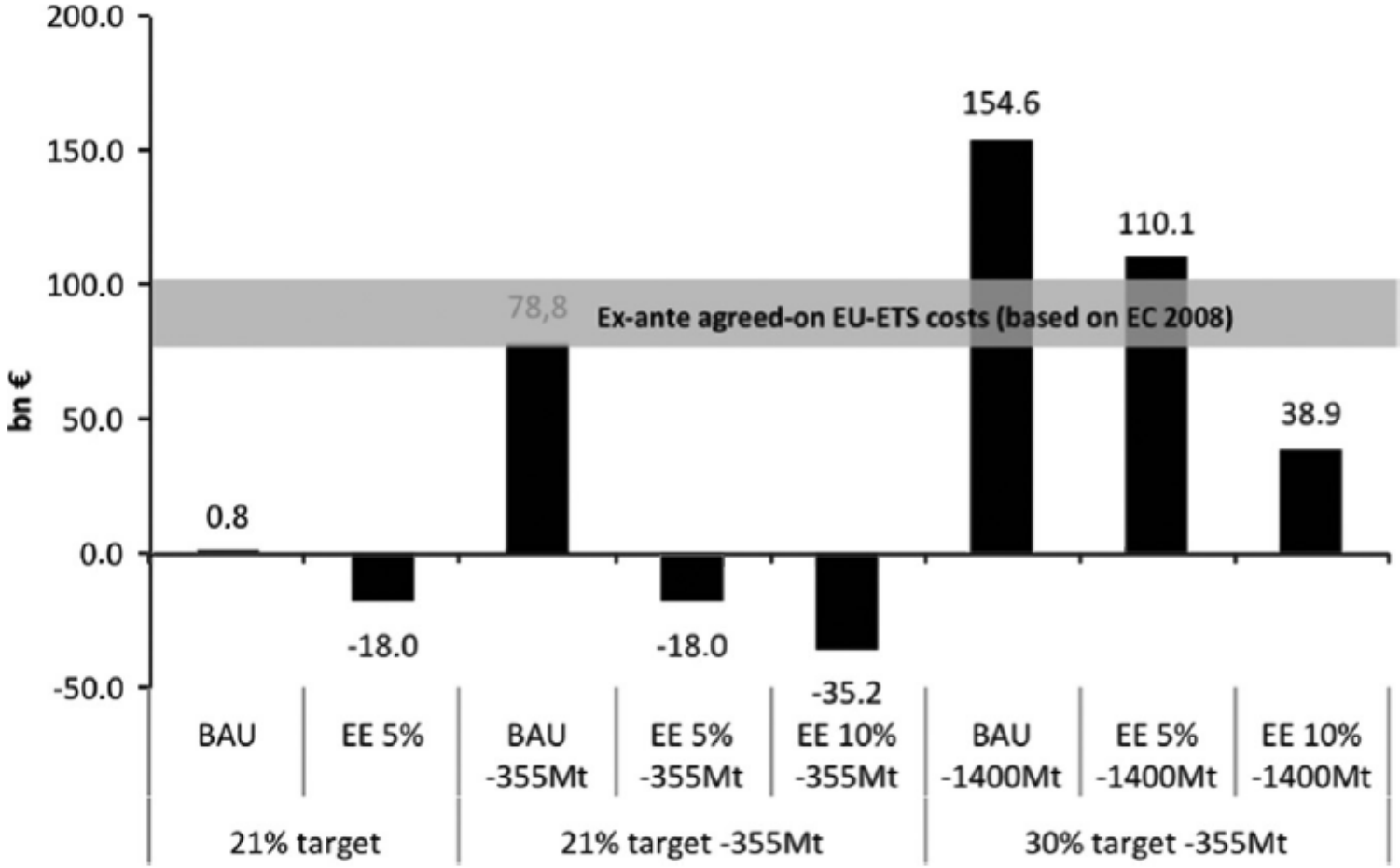
Impact of electricity EE policies on emissions
Paper by Thema et al. (2013): approach/methods

- objective: analyse impact of EE policy on EU industry and competitiveness
  - Method: simulation of EU electricity market using detailed generation asset model



Impact of electricity EE policies on emissions
Paper by Thema et al. (2013): results (1)

- impact on industry costs vs. situation without ETS and EE policy, BAU = current EU-ETS to 2020; -355 MT = example for a set-aside:



Impact of electricity EE policies on emissions
Paper by Thema et al. (2013): results (2)

- impact on industry electricity costs: