



Boosting the market for energy efficiency in buildings. Insights and recommendations

A ZEBRA2020 workshop



AGENDA

- orange square 9.30 Introduction *Serban Danciu* (BPIE Country Manager Romania)
- orange square 9.35 The revision of the European Performance of Buildings Directive. Updates and implications for Romania
Tudor Constantinescu, European Commission
- orange square 09.55 Energy efficiency in buildings as part of the Romanian Energy Strategy for 2016-2030 with a view on 2050
Romanian Ministry of Energy
- orange square 10.15 Methods and instruments to track the market transition to nearly Zero-Energy Buildings. Insights and recommendations from the ZEBRA2020 project
Maarten De Groot, BPIE
- orange square 10.45 The Portuguese approach to implementing the ESCO method. Lessons learned and recommendations
Dinis Rodrigues, ADENE (Portuguese Energy Agency)
- orange square 11.00 New subsidy scheme for the energy efficiency renovation of Single Family Homes in Slovakia
Kateřina Věntusová, Buildings for the future
- orange square 11.20 Discussion with representatives from the European Commission, Ministry of Energy, ADENE, Buildings for the future, BPIE
- orange square 12.00 Closing





Energy Efficiency in the European Union

Bucharest, 30 September 2016

Tudor Constantinescu, PhD
Principal Adviser
DG ENER, European Commission³



Major energy challenges in Europe

- Import Dependency
- Energy Prices
- Decarbonisation
- Technology mix

EE and RES at the core of solutions for 2020-2050



The way towards: The Energy Union

Where we want to go:

A secure, sustainable, competitive, affordable energy for every European

What this means:

Energy security, solidarity and trust

A fully integrated internal energy market

"Energy efficiency first" (including the transport sector)

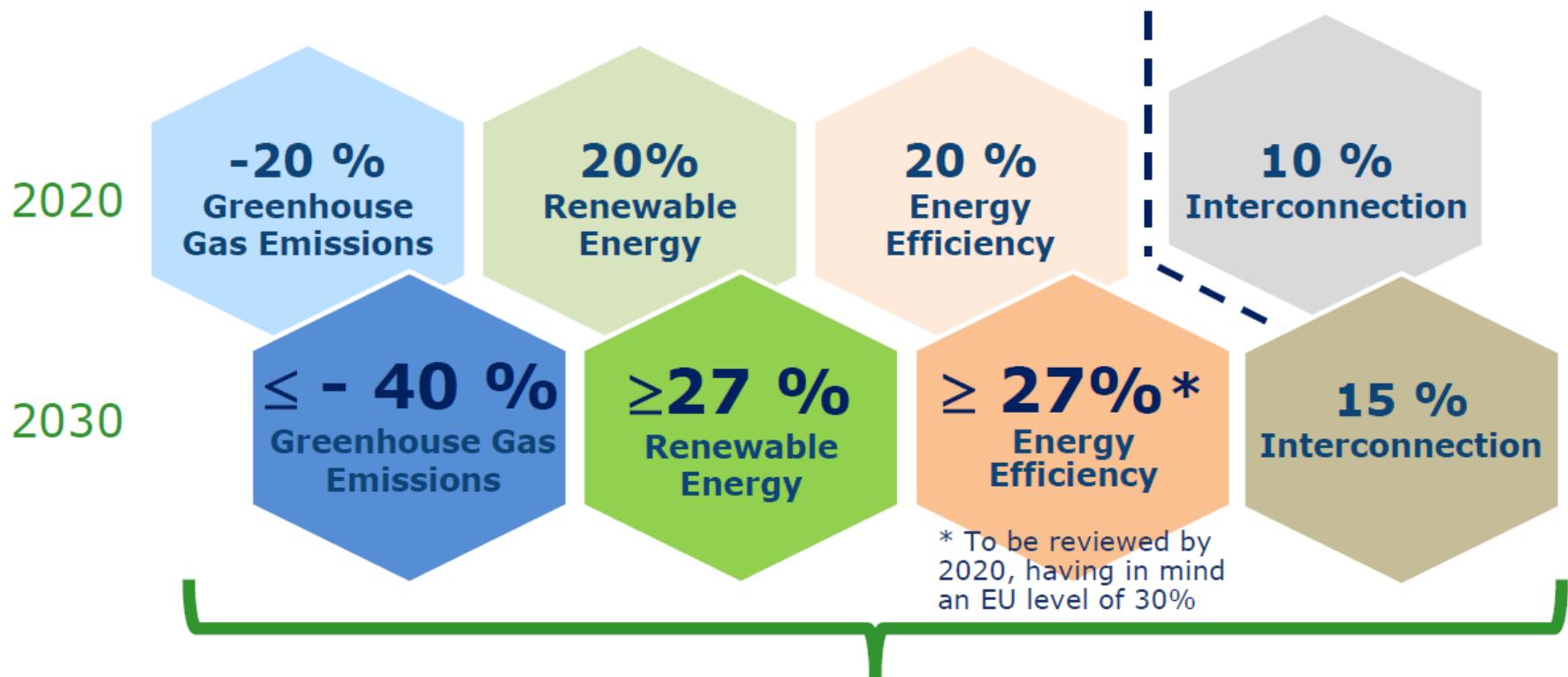
Transition to a long-lasting low-carbon society

An Energy Union for Research, Innovation and Competitiveness

How we want to reach it:



2030 framework for climate and energy policies



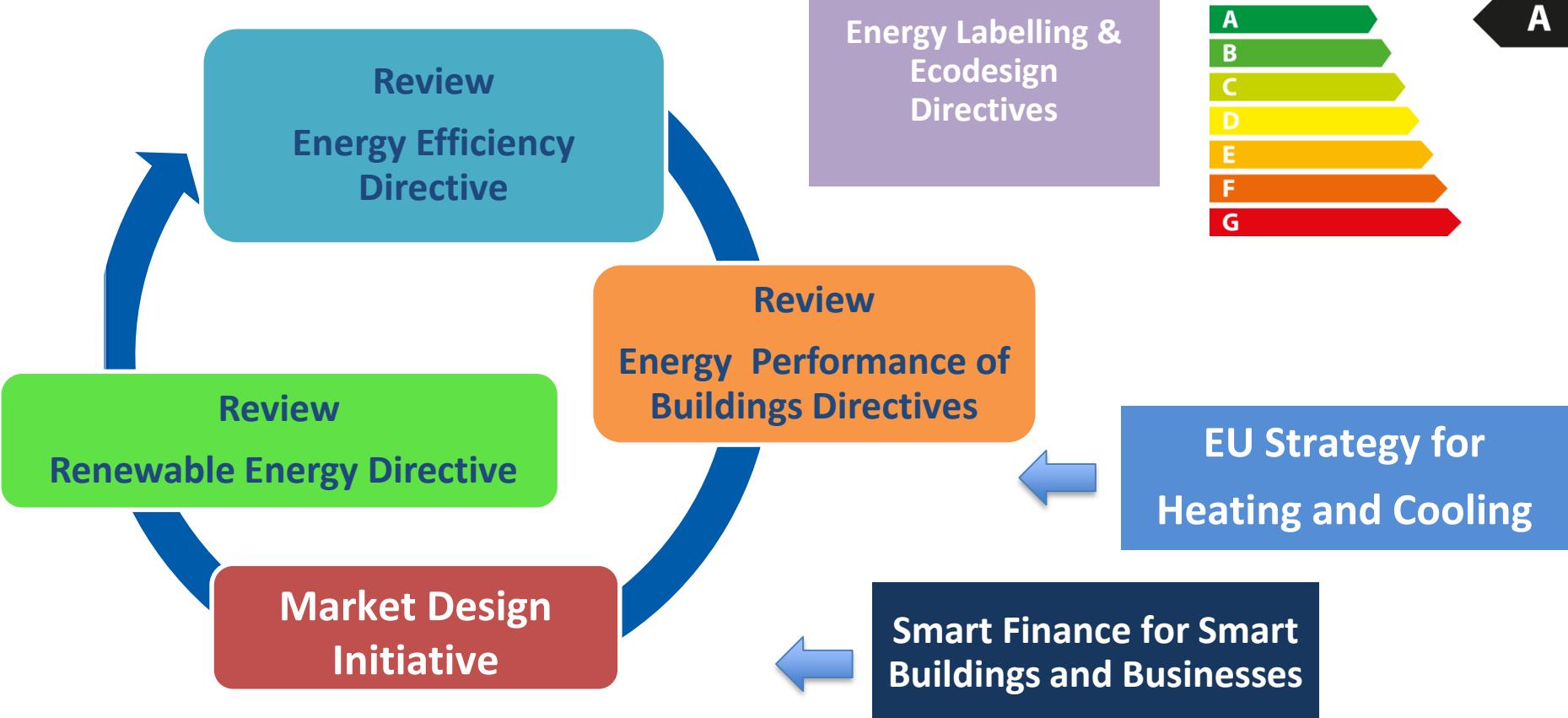
New governance system + indicators

Legislation review & revision in 2016

Rational : meet COP21 commitments and pave the way towards 2050



A





2016 EE Reviews

Review of the Energy Efficiency Directive (EED) and Energy Performance of Buildings Directive (EPBD)

- To adapt to 2030 perspective
- To check effectiveness and further improve where needed
- Ongoing evaluations and impact Assessments
- Adoption foreseen for October 2016

‘Smart Financing for Smart Buildings’-initiative to make existing buildings more energy-efficient, facilitating access to existing funding instruments.



Objectives of the EED Review 2016

To respond to:

- ❖ The European Council of October 2014 on an EU-level energy efficiency target of at least 27% by 2030 to be reviewed by 2020 having in mind an EU level of 30%
- ❖ The EP vote of December 2015 for a 40% binding target.
- ❖ The legal obligations of the EED to assess the effectiveness of Article 6 and the implementation of Article 7 in line with Article 24(8) and (9).

The image shows the front cover of the Official Journal of the European Union. The title 'Official Journal of the European Union' is at the top, followed by 'L 315' and 'Volume 55, 14 November 2012'. Below the title is a small EU flag icon. The word 'Legislation' is centered on the cover. A red oval highlights the first item in the 'DIRECTIVES' section of the table of contents, which is 'Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC (1)'.

CONTENTS
I Legislative acts
DIRECTIVES
* Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC (1)
* Directive 2012/29/EU of the European Parliament and of the Council of 25 October 2012 establishing minimum standards on the rights, support and protection of victims of crime, and replacing Council Framework Decision 2001/230/JHA
* Directive 2012/30/EU of the European Parliament and of the Council of 25 October 2012 on coordination of safeguards which, for the protection of the interests of members and others,



Specific objectives of the EED Review 2016

1. Assessing (and confirming) the optimal energy efficiency target for 2030 (27%, 30%, 33%, 35 and 40%).
2. Reviewing **specific aspects** of the EED to reflect the **2030 perspective**:
 - **Articles 1 and 3** (2030 target).
 - **Article 7** (energy efficiency obligations and alternatives).
 - **Articles 9-11** (metering and billing) and **15(8)** (demand response).
 - **Article 24** (reporting).



EED Review 2016: Process

- ❑ **Public consultation** until 29 January 2016.
 - ❑ **Evaluation** of certain Articles of the EED to contribute to the Impact Assessment process.
 - ❑ **Stakeholder event** on the Energy Efficiency package: 14 March 2016.
 - ❑ **Impact assessment** finalised early May 2016.
 - ❑ **Legislative proposal** to be adopted in October 2016.
-
- ❖ **Coordination of different initiatives** (RES, Market Design, non-ETS, etc.).
 - ❖ **Consistent PRIMES modelling.**



EPBD: What is the challenge?

An European building stock that is old and inefficient.

Around 40% of primary energy is consumed in Europe's buildings, which use approximately 60% of all gas imports for heating and cooling.

More than two thirds of buildings standing today are expected to remain in use in 2050.





Objective of the EPBD Review

Make sure that the Directive remains fit for purpose, including with a 2030 perspective

Main targeted improvements:

- Modernise the Directive to adapt to technical progress on smart technologies, including electro-mobility
- Revise and reinforce provisions on financial support to facilitate investment into the sector
- Decarbonising buildings up to a nearly zero-energy standard by 2050
- Improved certification schemes

Objective of the EPBD Review

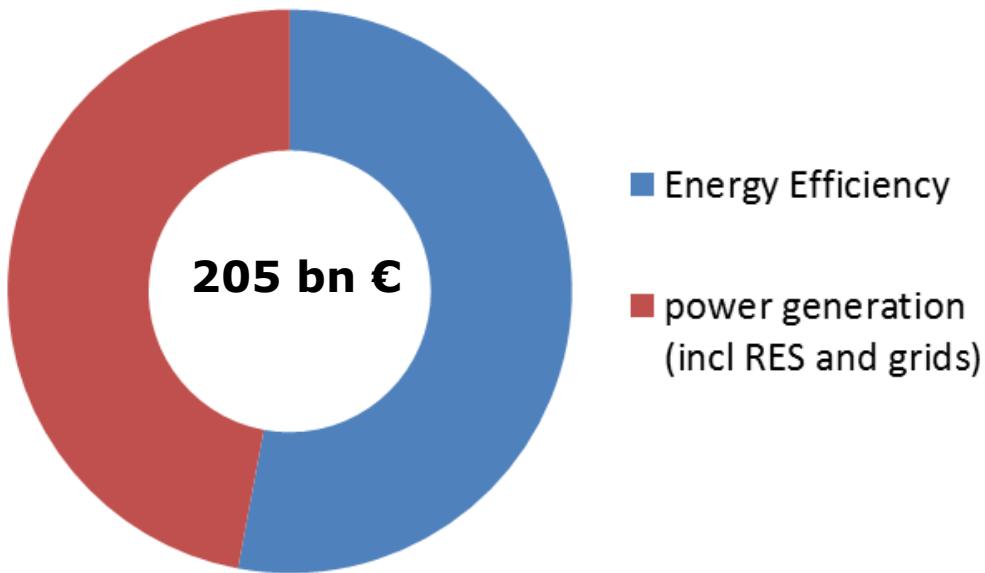
Main targeted improvements:

- Extension of the scope for **minimum performance requirements** for buildings and building elements.
- Enhance **renovation rate** to achieve decarbonising buildings by 2050.
- '**Future proof**' in a technology neutral way, *i.e.* smart buildings.
- **Simplified** operation.

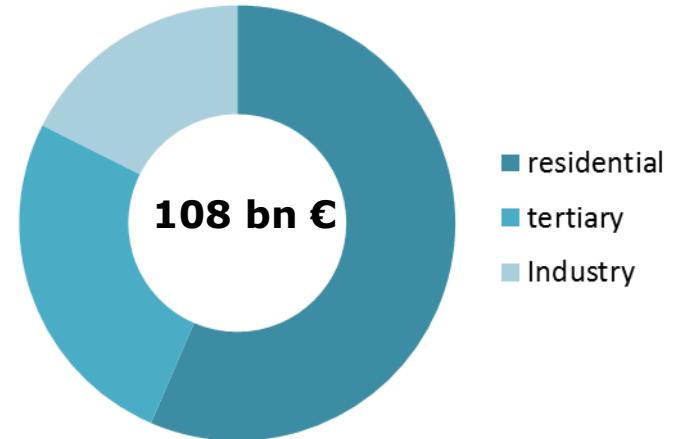


Investment needs in the energy system

Annual investments until 2030



Annual EE investments until 2030



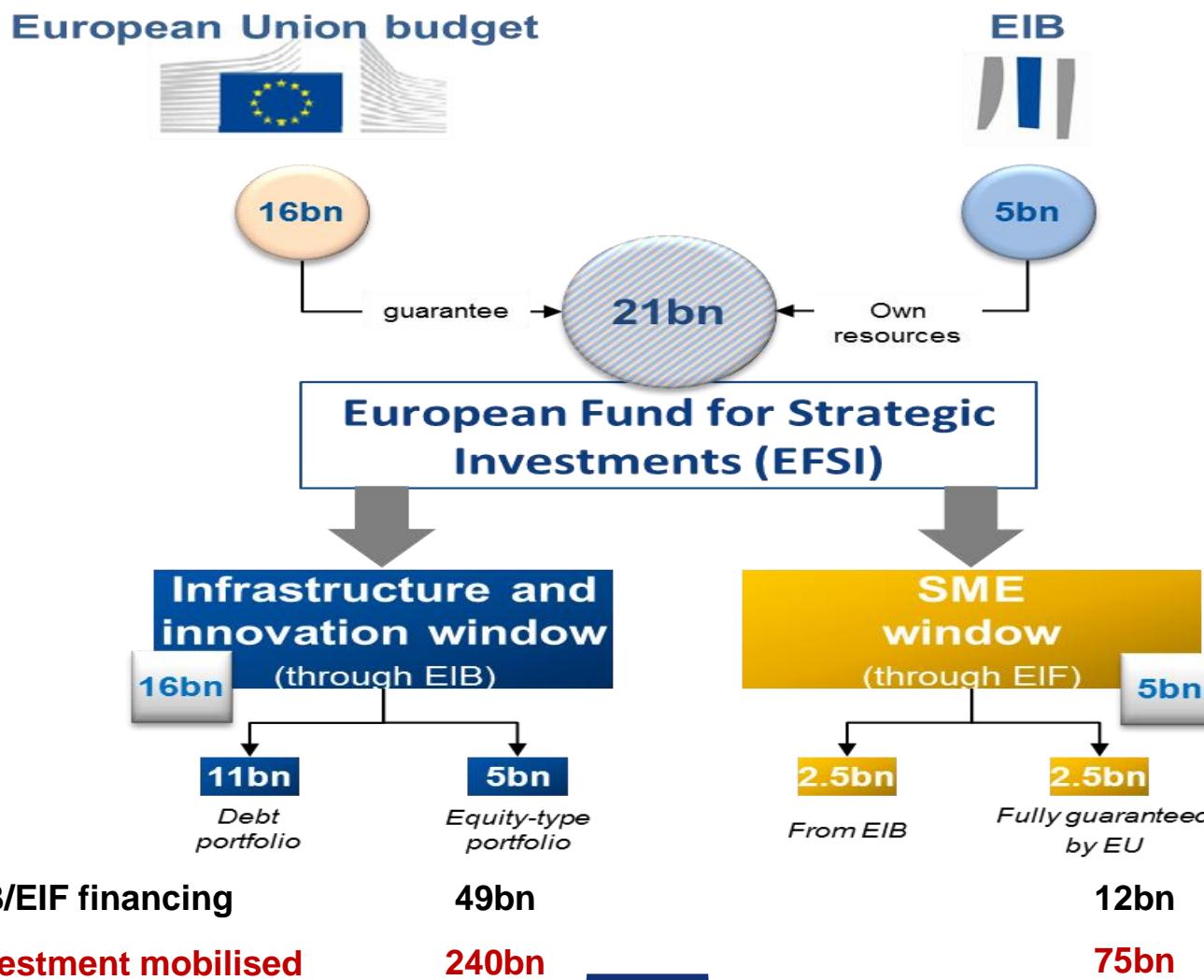
Source: SPECIAL TASK FORCE (MEMBER STATES, COMMISSION, EIB) ON INVESTMENT IN THE EU



EU Funding for Sustainable Energy – MFF 2014-2020

- **Cohesion Policy** to allocate some € 45 billion to investments in energy efficiency, renewable energy, smart grids and urban mobility, including research and innovation in those areas in complementarity with Horizon 2020
- **Horizon 2020**: some € 5.4 billion to be allocated to research and innovation in "Secure, clean and efficient energy"
- **Connecting Europe Facility**: some € 5 billion to be allocated to investments in TEN-E infrastructure of highest European added value
- **European Fund for Strategic Investments (EFSI)**-"**The Juncker Plan**"
 - To mobilise at least € 315 billion in additional investment
- **European Structural and Investment (ESI) Funds**
- **LIFE+, COSME and EEEF**
- **EIB**
- **Project Development Assistance (ELENA and PDA EASME)**
- **Aid to developing countries (Energy – 350 mill in 2014) and fight against energy poverty € 4 billion 2014-2020.**

EFSI - structure and investment target





EFSI features

- EFSI is not a financial instrument (as per CPR or FR)
- EFSI support takes the form of FI products (not grants)
- EFSI has its own governance: **Steering Board** (3 EC + 1 EIB) and **Investment Committee** (independent entity granting the EU guarantee)
- EFSI will offer advice to project promoters through a dedicated **advisory hub (EIAH)**
- EFSI has no geographical or sectorial allocations
- EFSI, through EIB, will support **high risk profile projects** or projects bringing **additionality**



ESIF-EFSI complementarities

- Legal bases of both ESIF and EFSI allow for contributions to support each other's objectives (**complementarity element**)
- Their **combination** is also possible: at **project level**, **financial instrument** level and through **investment platforms**
- Implementation process has to respect applicable rules (**CPR v EFSI Regulation**)
- **State aid rules** apply on a case-by-case basis



Conclusion

- EFSI initiative builds on EU experience **built up over previous and current programming periods** with financial instruments.
- Given private sector focus, **the energy sector is well suited** to application of financial instruments.
- EFSI is “up and running”. 42 projects approved, which would leverage a total of 25bn; one half in energy projects. **Significant share of energy in overall EFSI expected.**
- Given differences in market environments, different types of risk-sharing mechanisms/products likely to be applied across the different energy sub-sectors (EE, RES and grids).
- **It is time for implementation:** from now, project promoters should approach EIB with their project(s). The Commission, the EIB and the Advisory Hub can assist in making contacts with the relevant people

Principles on financial instruments

Types of financial instruments

- Loans
- Guarantees
- Equity

Addressing lack of available financing
Providing financing at favourable conditions

Advantages of financial instruments

- Leverage effect
- Revolving nature
- Better quality of projects

Increasing efficiency and effectiveness of EU funding

Ways to implement financial instruments

- Tailor made
- 'Off-the shelf'
- EU level

Implementation options allowing for standardisation and customising



Benefits of an Energy Performance Contract



Cohesion Policy and Romania

2014-2020

Total allocations (ERDF+CP)	Low carbon economy (TO4)	EE -2014-2020
22.54 bn	3.9 bn	1 309 million

2007-2013

Total allocations (ERDF+CP)		EE – 2007-2013
15,37 bn		198,057,771



Financing Energy Efficiency: European Structural and Investment Funds (ESIF): 2014-2020

Over 2014-2020, EU Cohesion Policy will invest around EUR 1 309 million in energy efficiency improvements in public and residential buildings, as well as in high-efficiency cogeneration and district heating in Romania.

Public Buildings	Residential Buildings	Co-generation & District Heating
688,370,706	562,799,507	57,446,808



Thank You for Your Attention!

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http://ec.europa.eu/energy/index_en.htm



ZEBRA2020



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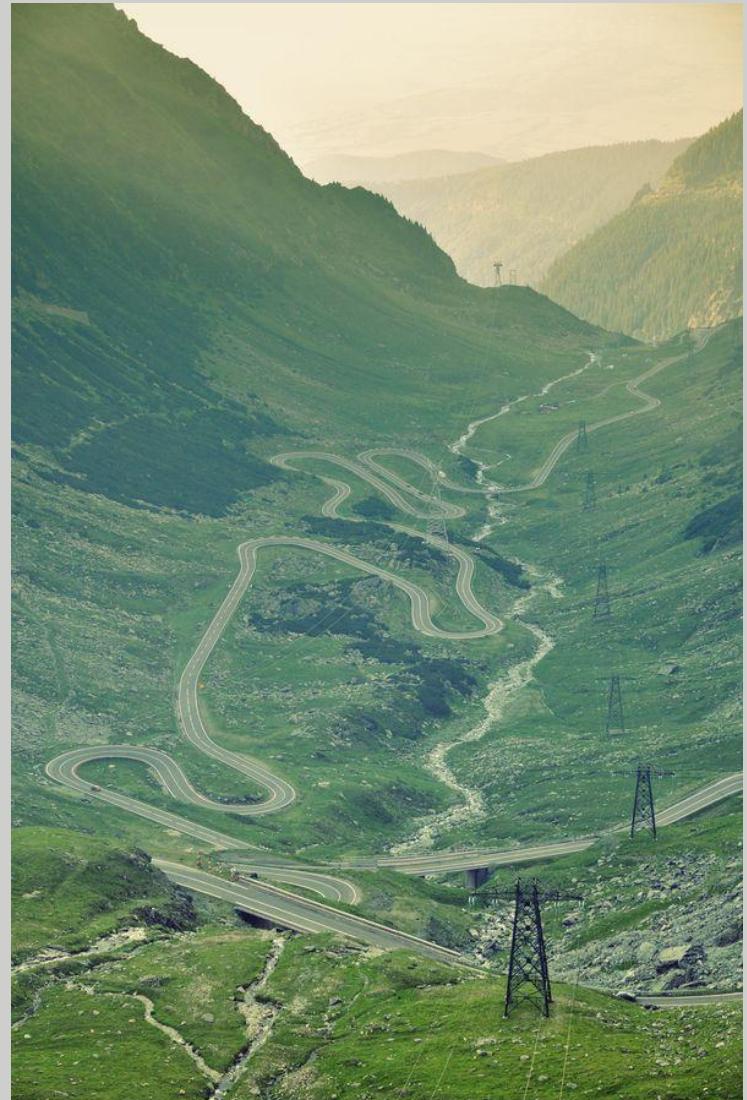
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Methods & instruments to track the market transition to nZEB

Maarten De Groote

Buildings Performance Institute Europe

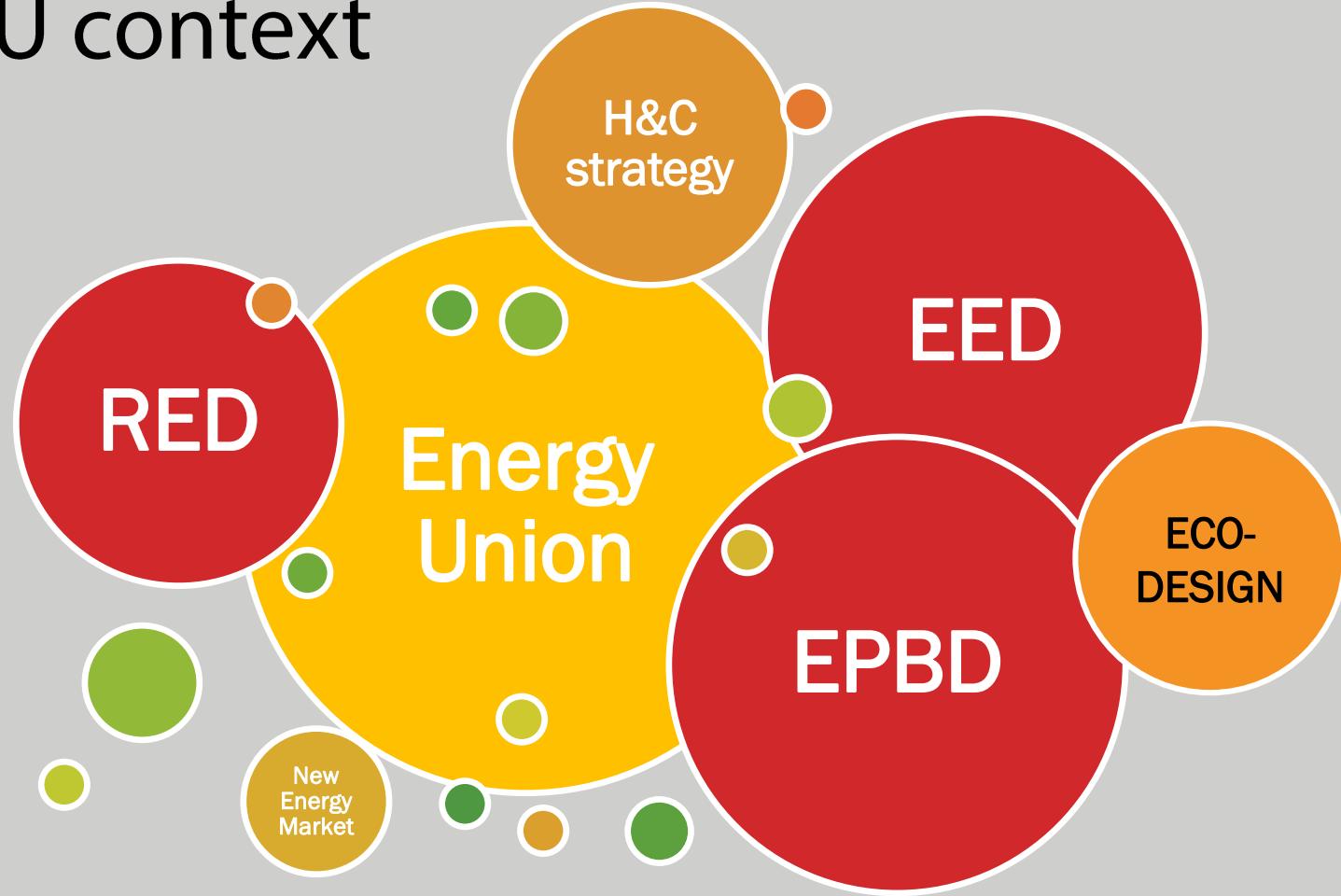
September 2016



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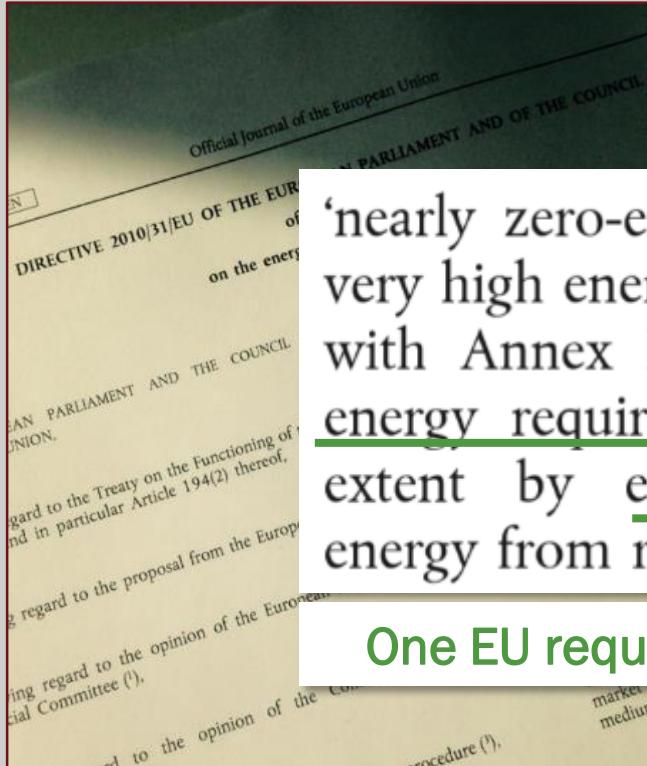
EU context



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Defining nearly Zero-Energy Building



'nearly zero-energy building' means a building that has a very high energy performance, as determined in accordance with Annex I. The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby;

One EU requirement → 28 national implementation rules !

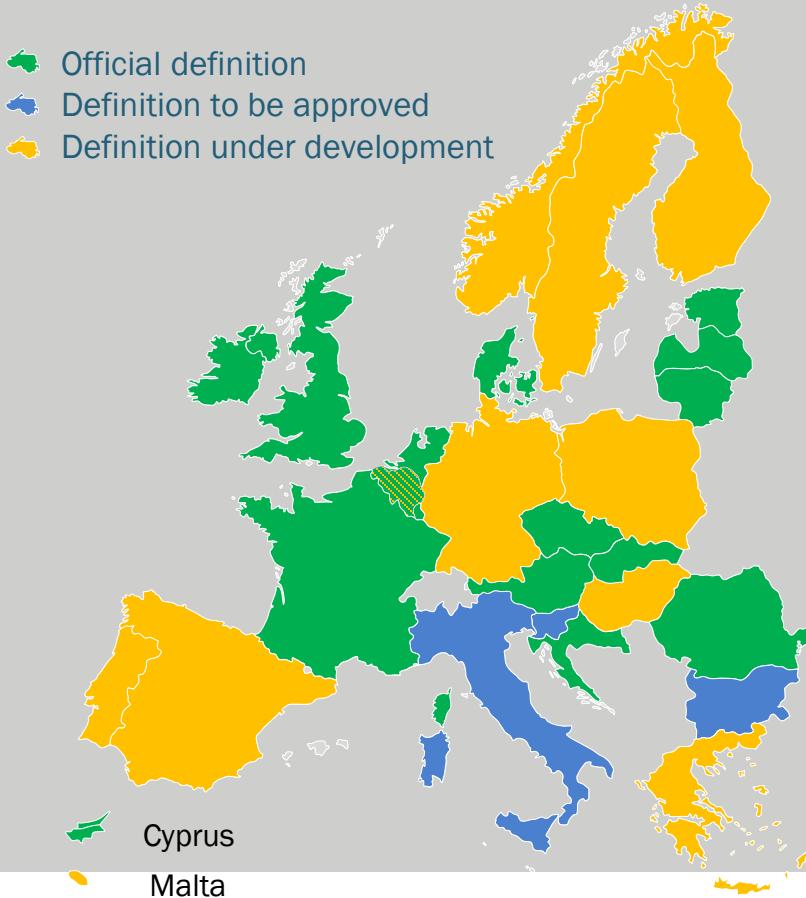


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nZEB definition across the EU

- Official definition
- Definition to be approved
- Definition under development



Large variations on NZEB definitions

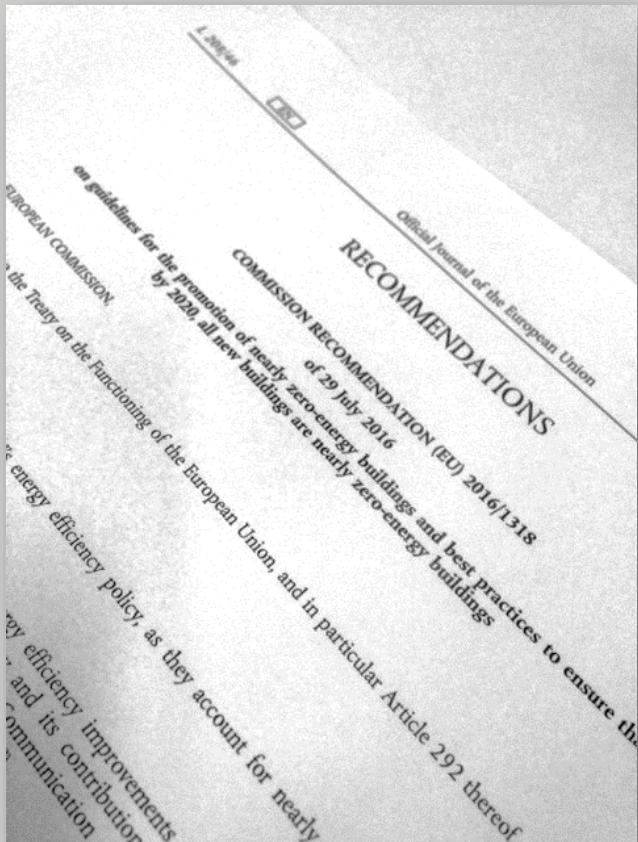
- 16 MS definition for new buildings
- 8 MS definition for existing buildings
- 8 MS share of RES explicitly stated
- Large range maximum primary energy (20-170kwh/m²)
- Some MSs: additional requirements



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Commission Recommendation



Commission Recommendation 2016/1318 of 29 July 2016

- Guidelines for the promotion of nZEB and best practices to ensure that, by 2020, all new buildings are nZEB
- Member States should follow the guidelines
- In line with ZEBRA recommendations: not reaching designed E-performance, gap existing buildings (Art.4), multiple benefits, sanction mechanisms, reliable data, etc.



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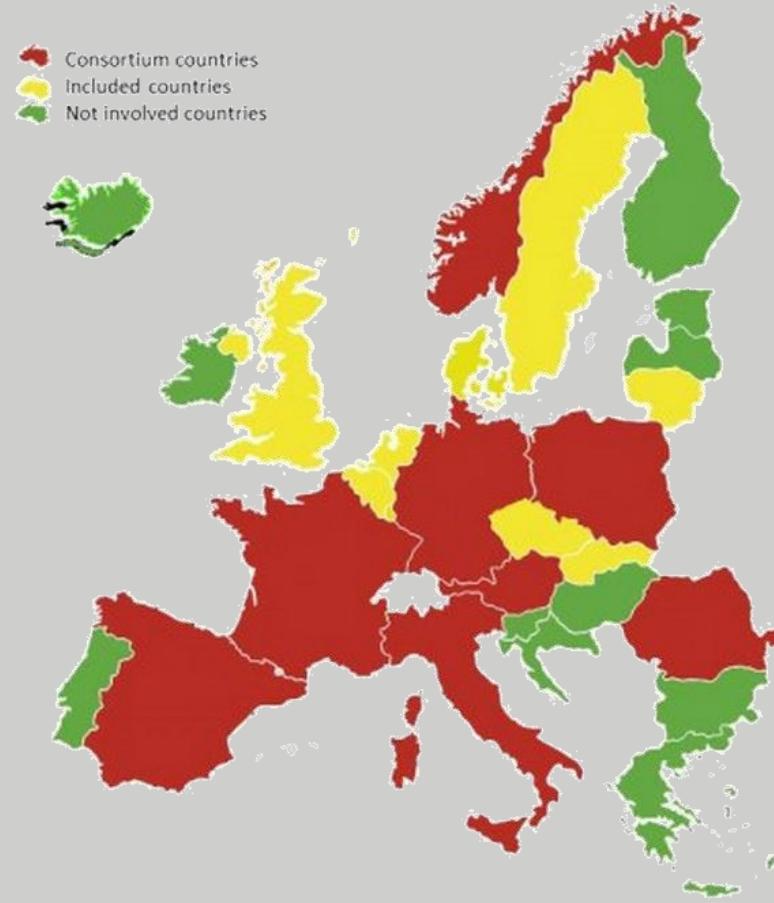


ZEBRA2020 Summary

ZEBRA2020 covered **17 European countries** and about **89% of the European building stock**

Key objectives

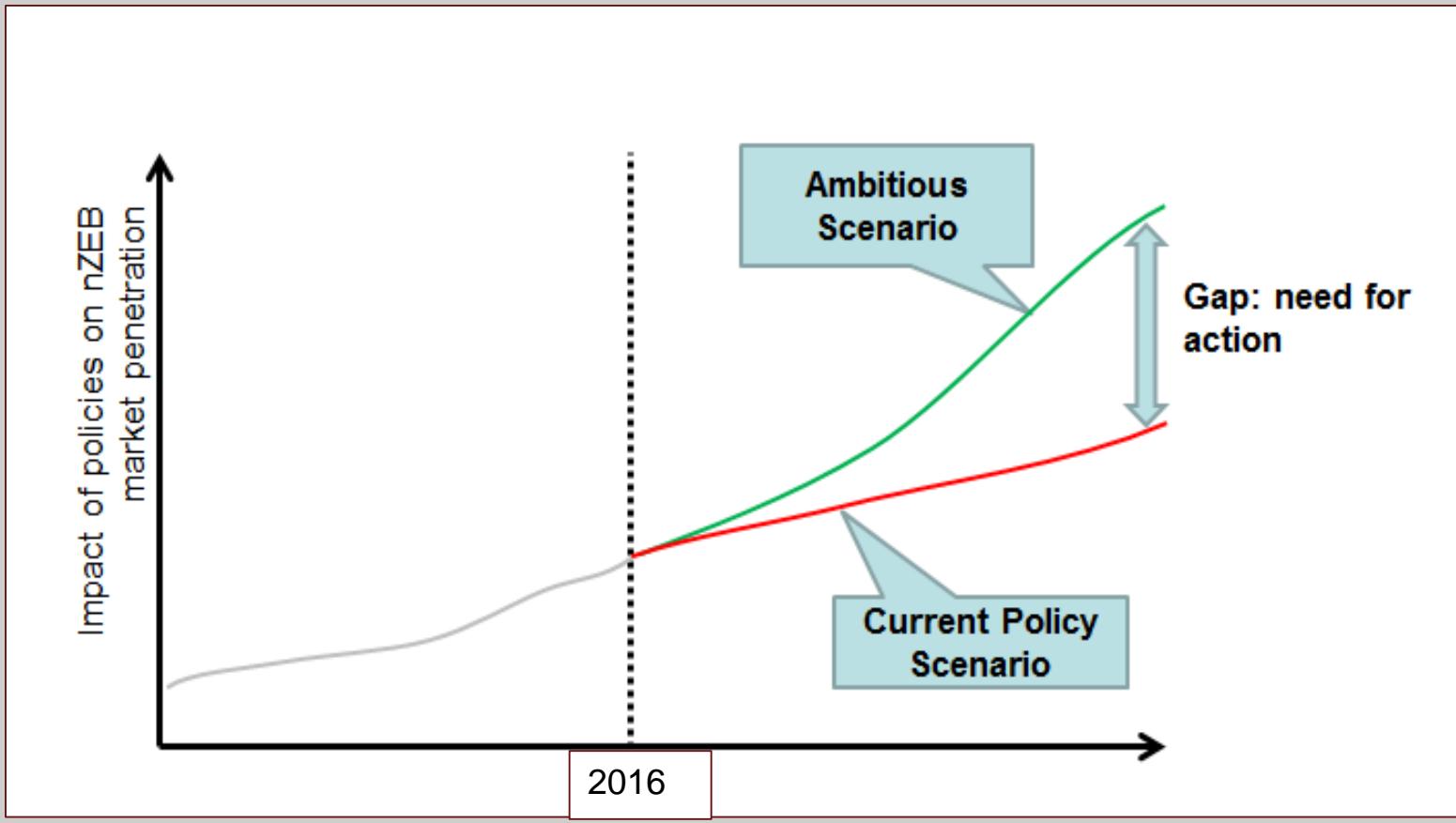
- **Monitor** the market uptake of nZEBs across Europe
- Provide **data**
- Provide **recommendations** on how to achieve nZEB transition



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Scenarios to show the need and scope of policy action



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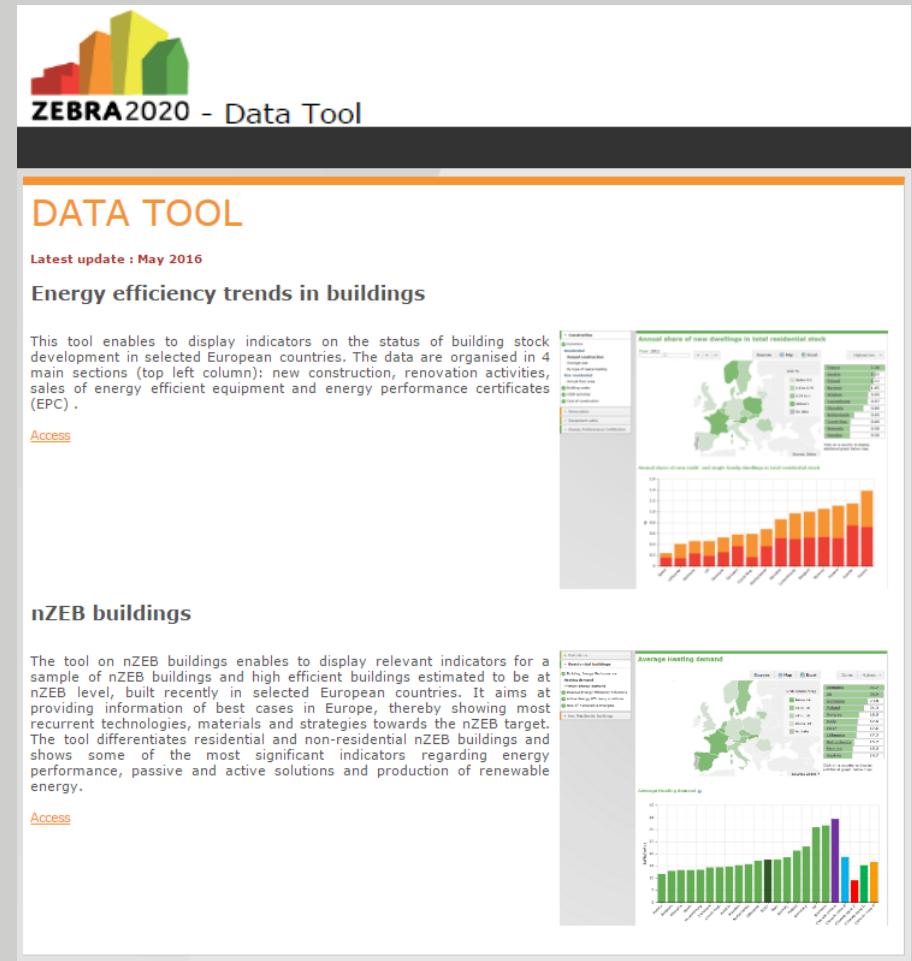


Presentation of the Zebra data tools

Two data tools presenting data and indicators related to:

- **Energy efficiency trends in buildings** (tool 1): overview of current building stock activity, including renovation and construction
- **nZEB buildings** (tool 2): relevant data and indicators of best cases (panel of 410 nZEB buildings).

<http://zebra2020.eu/tools/>



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Tool 1 - Indicators on the status of building stock development

4 sections covering both residential and non-residential buildings

1. Construction
 - ✓ dynamics (by type, size, heating energy)
 - ✓ minimum standards set by Building Codes
 - ✓ nZEB activity ([nZEB radar](#))
 - ✓ average cost of construction
2. Renovation: annual stock renovated (by level + [equivalent major renovation](#)) & annual investment costs
3. Equipment sales: thermal insulation, glazing, heating solution, renewables, etc.
4. Energy Performance Certificates: new buildings, building stock registered, distribution of EPC by label



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Indicators on the status of building stock development

Navigation menu:

- Construction
- Renovation
- Equipment sales
- Energy Performance Certificates**
 - New buildings
 - Residential**
 - Non-residential
 - Building stock registered
 - Distribution of EPC labels

Selection of indicators

Map with values of the indicator by country + access to detailed data by country

Share of new dwellings with EPCs

Year: Last year available. **Last year** Sources Map Excel Highest

Unit: %

Country	Share (%)
Lithuania	80
Portugal	76
Slovakia	64
France	55
Denmark	32
Belgium	24
Norway	22
Poland	18
Spain	7
Romania	0.06

Click on a country to display additional graph below map.

National EPC classification

A bar chart providing additional details for the indicator

Distribution of EPCs in new dwellings (residential) Graph

Country	Label A	Label B	Label C	Label D	Label E
Lithuania	50	50	0	0	0
UK*	80	20	0	0	0
Czech Rep.	40	40	20	0	0
Slovakia	10	70	20	0	0
Belgium	60	20	20	0	0
Spain	10	30	50	10	0
Italy	20	60	20	0	0
Romania	30	50	20	0	0
Netherlands	35	60	5	0	0
Portugal*	40	50	10	0	0
France*	40	50	10	0	0
Denmark	100	0	0	0	0

* Data collected from national sources.

Legend: Label A (dark green), Label B (medium green), Label C (light green), Label D (orange), Label E (red)

ZEBRA2020

A table showing the country ranking

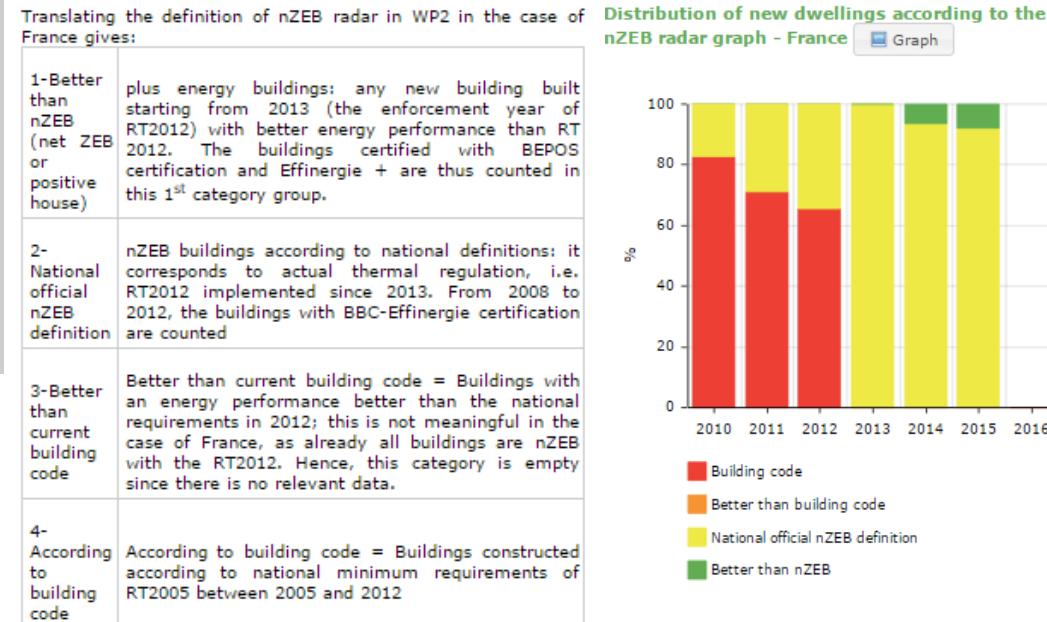
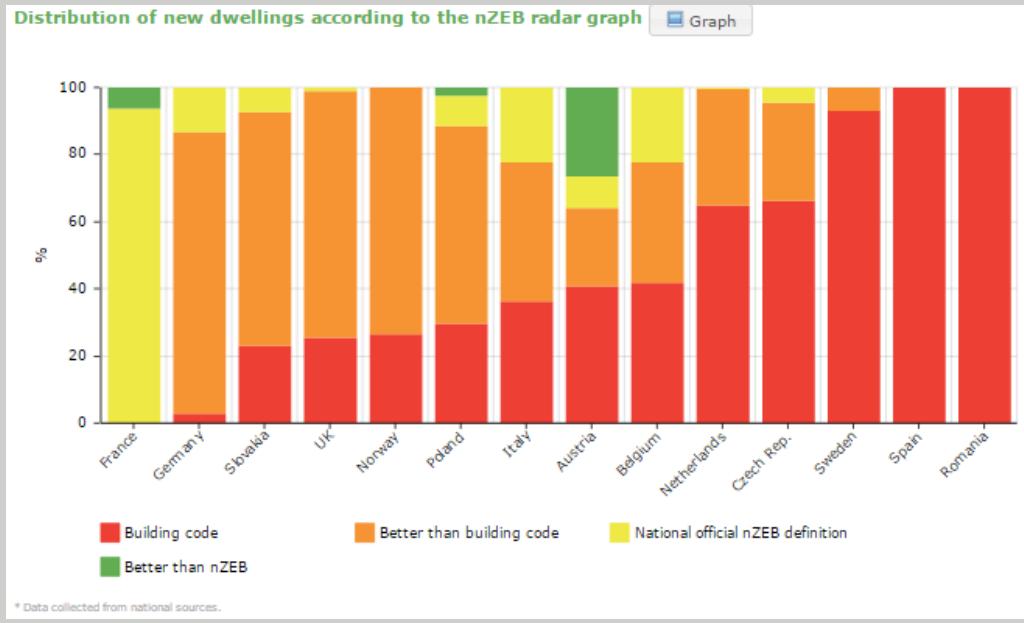
Policy link with selected indicator

Focus on nZEB radar

Member States define their nZEB standard in a very flexible way → nZEB definitions differ significantly from country to country

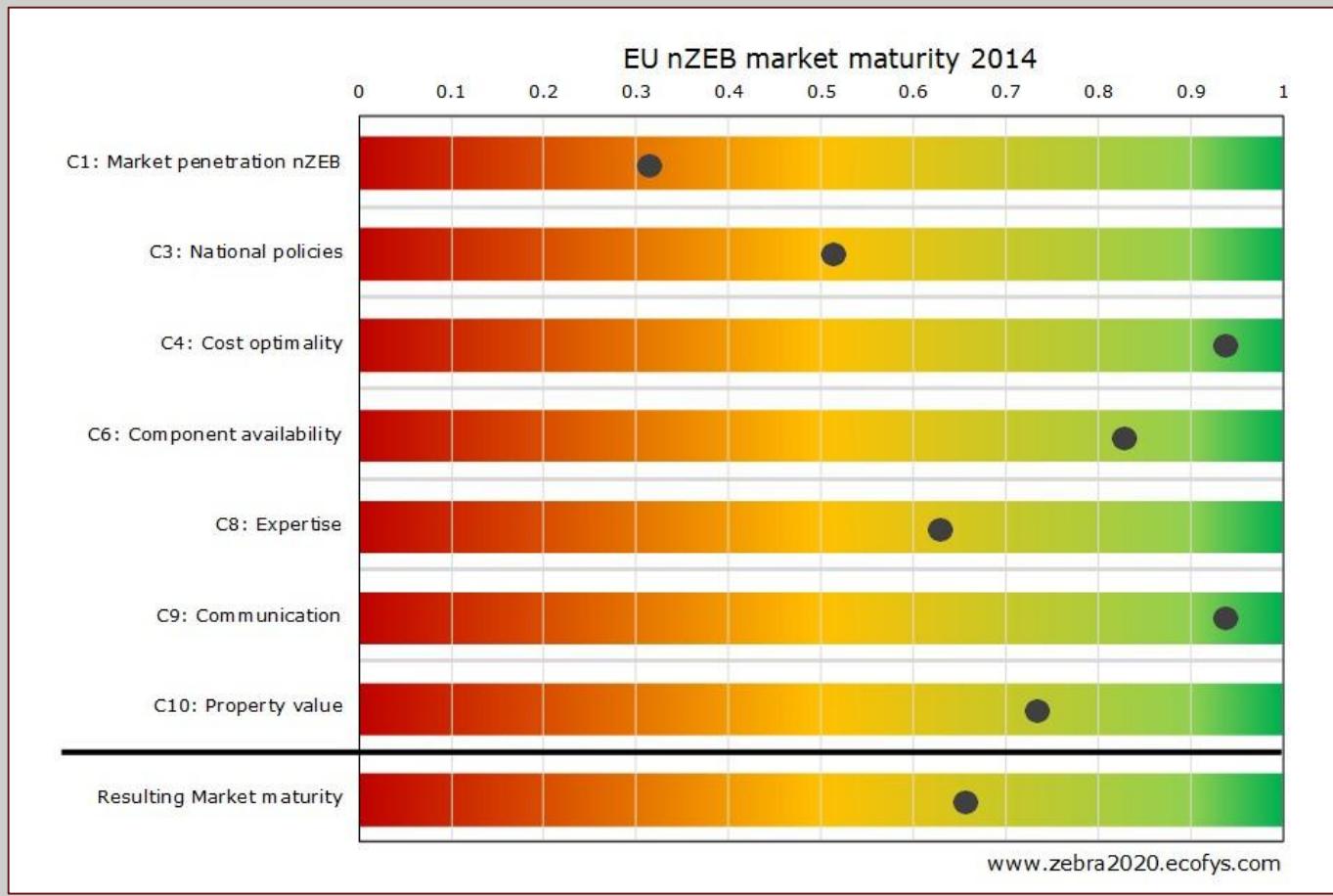
nZEB radar clusters buildings in 4 different categories at national level

- Net-zero or plus energy buildings
- nZEBs according national definition
- Energy performance better than the national requirements
- Constructed according national minimum requirements



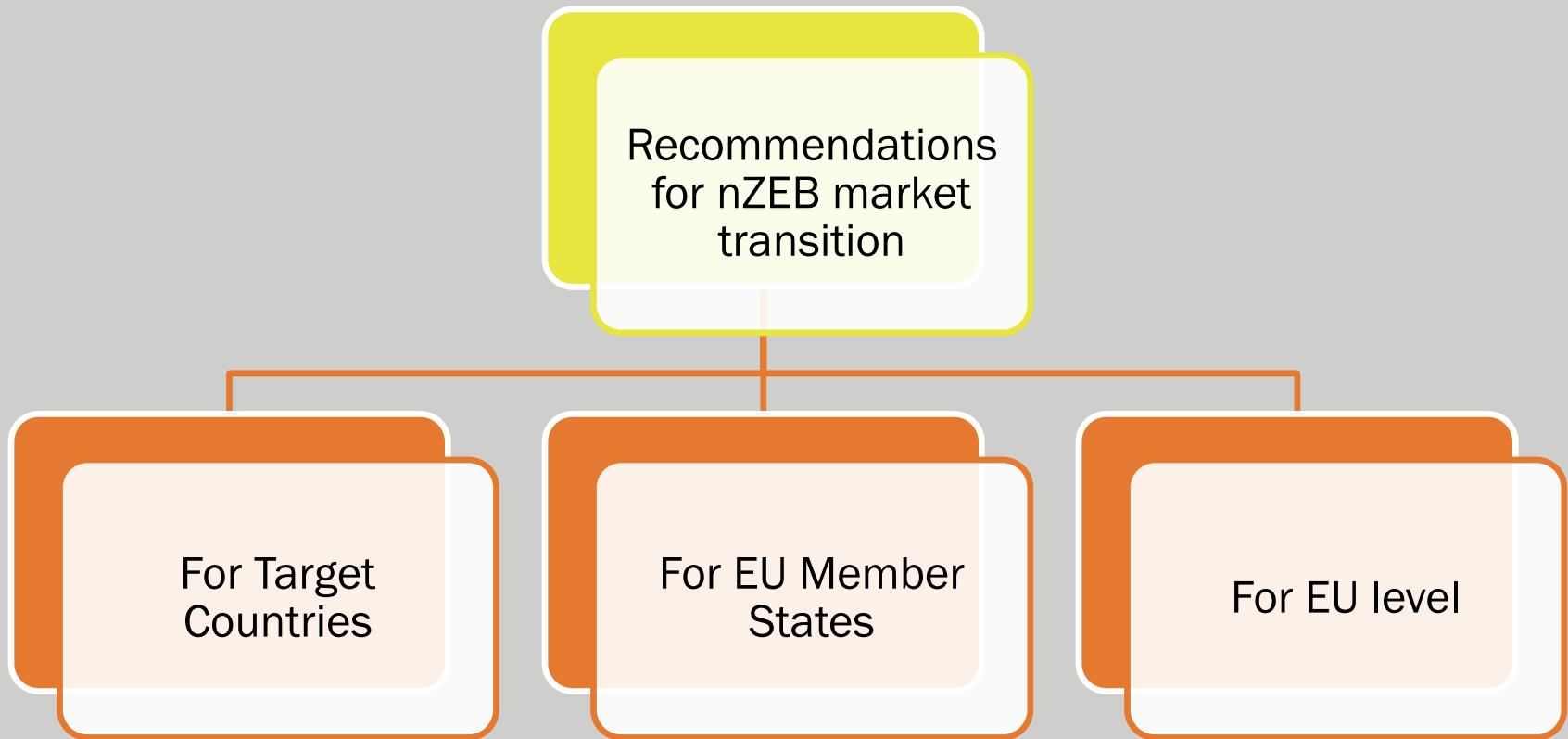
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Maturity of the EU nZEB market for 2014



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OVERARCHING CONDITIONS

Stakeholder involvement

Long-term strategy with intermediate targets

Continuous MRV and improvement

Incentivise frontrunners and empower the local level



RECOMMENDATIONS

LEGISLATIVE &
REGULATORY
INSTRUMENTS

ECONOMICS

COMMUNICATION

QUALITY
FRAMEWORK

NEW BUSINESS
MODELS &
INNOVATION

SOCIAL ASPECTS



NZEB MARKET TRANSITION



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Long list of recommendations...

- A1 - Regulate building performance minimum standards through the building code
- A2 - Improve the usage of Energy Performance Certificate, including a robust compliance system
- A3 - Define a long term vision to guide the transformation of buildings as integrated parts of the society and the wider energy system
- A4 - Provide building owners and investors with tailored advice according to specific renovation roadmaps
- A5 - Encourage nZEB with public procurement processes
- A6 - Implement standard methodologies for secure data gathering and assessment
- A7 - Set up a detailed data collection of training programmes and cross-learning initiatives
- A8 - Monitor and evaluate the impact of the policy measures
- B1 - Increase the energy efficiency of buildings in the public sector
- B2 - Stimulate the private sector to invest in energy efficiency
- B3 - Financial support for (holistic or step-by-step) renovation according long-term benchmarks
- B4 - Adapting new financing products that look long term and entitle nZEB investors with preferential mortgages
- B5 - Clever legislation can mitigate the problem of split-incentives
- C1 - Brand nZEB buildings as part of a positive sustainability narrative
- C2 - Promote demonstration projects to exemplify the benefits and viability of highly performing buildings
- C3 - Promote market uptake of nZEB buildings with information campaigns and easy-grasping guidelines
- C4 - Facilitate effective knowledge sharing via adequate communication tools
- D1 - Develop and consolidate quality frameworks for nZEB techniques and

- technologies
- D2 - Training building professionals with "nZEB and beyond" qualifications preparing them to build and upgrade the building stock for the future
- D3 - Set up a detailed data collection of training programmes and cross-learning initiatives
- D4 - Enhance the proficiency of certifiers in order to increase the reliability of Energy Performance Certifications
- D5 - New technologies (IoT) allow us to collect and analyse performance data in a more effective way that was not possible some years ago

Selection of recommendations targeted for Romanian nZEB market transition

- E1 - Enable the market to embrace the new features of buildings as micro-energy hubs (nZEB2.0)
- E4 - Incentivize the frontrunner entrepreneurs exploring new business models
- E5 - Involve and empower local authorities in pilot projects
- F1 - Explicitly define energy poverty and set up monitoring mechanisms
- F2 - Include the benefits of alleviating (energy) poverty in nZEB decisions
- F3 - Specify and increase support measures for vulnerable target groups customized to their profile
- F4 - Move from fuel subsidies to energy efficiency measures
- F5 - Improve all social housing to nZEB standards, in order to provide comfortable and affordable housing
- F6 - Fighting air pollution to be an integrated part in nZEB



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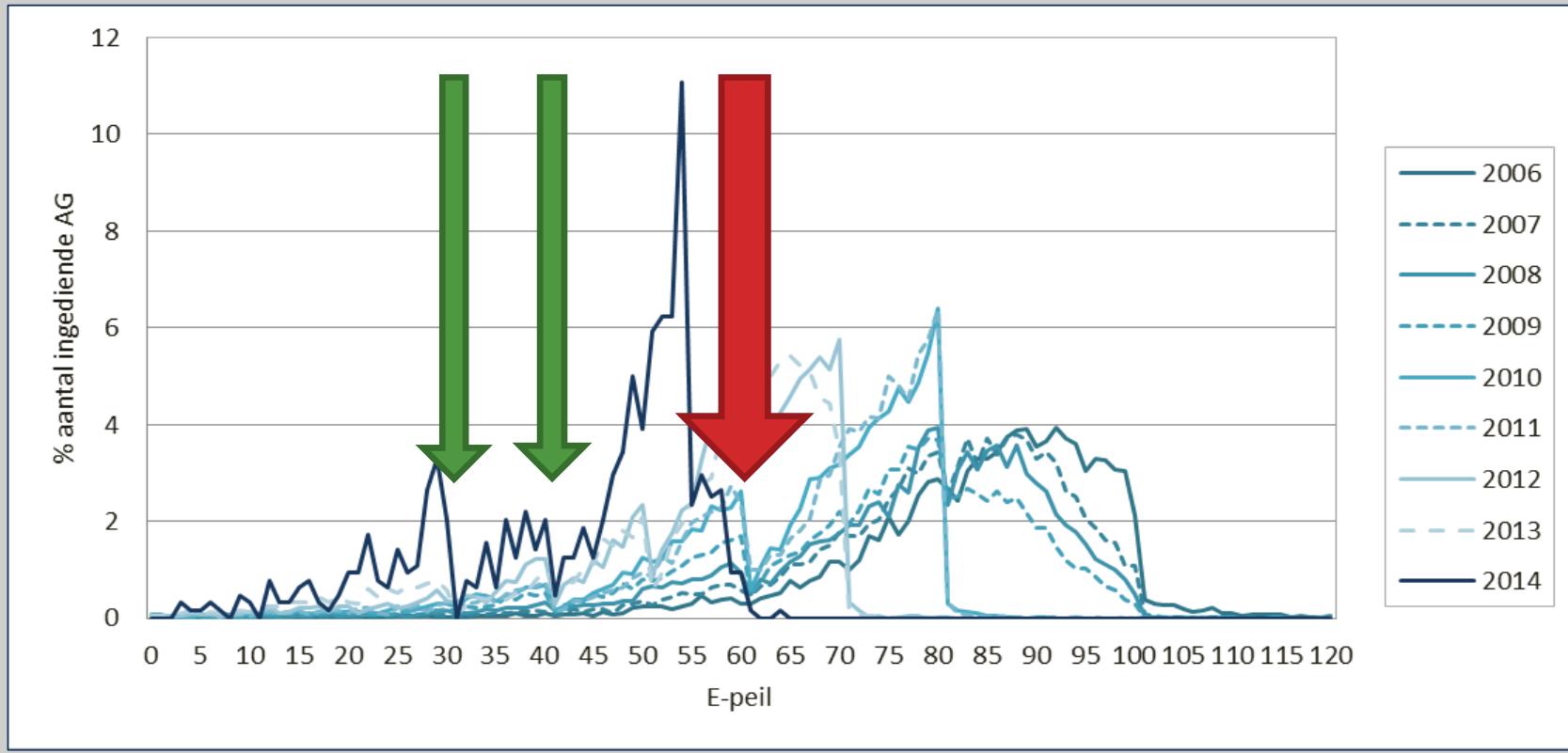
Implement a long-term nZEB regulatory framework

- Regulatory framework predictability on medium and longer terms
- Periodically evaluation based on correct data
- Engage stakeholder in the process
- Existing buildings: National Renovation Strategy



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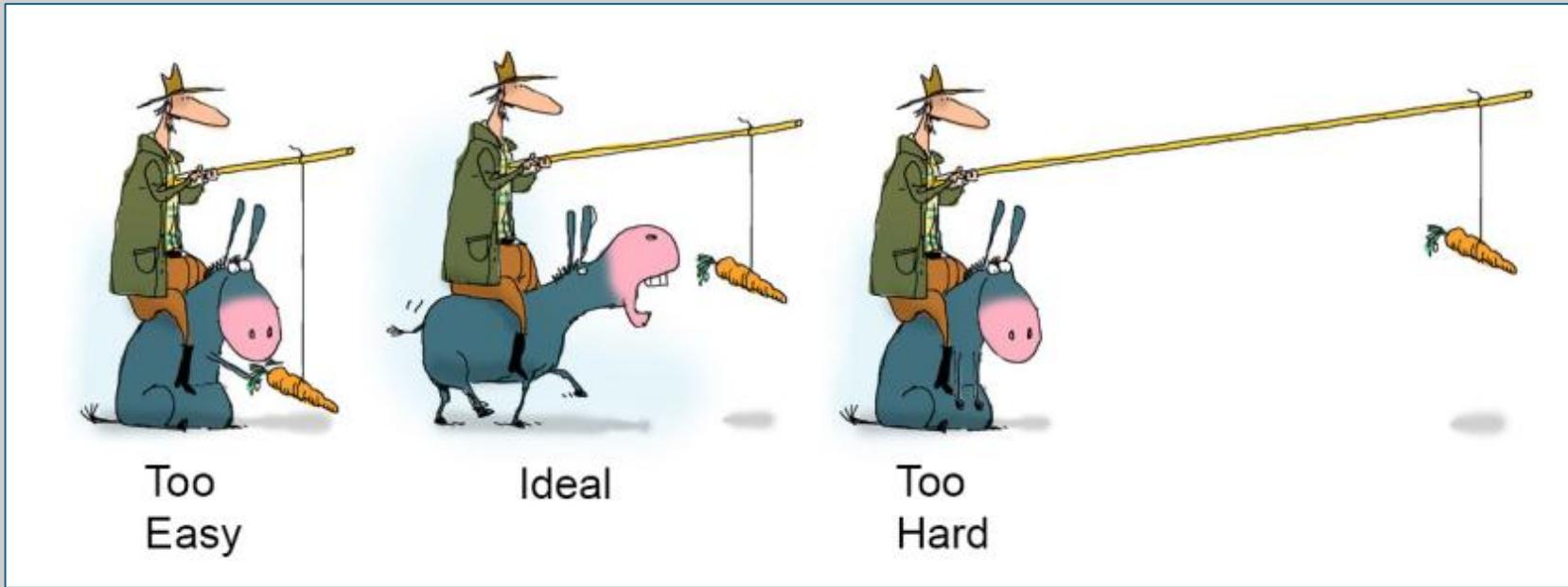
Maximise the predictability of financial programmes



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Maximise the predictability of financial programmes



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Increase information availability



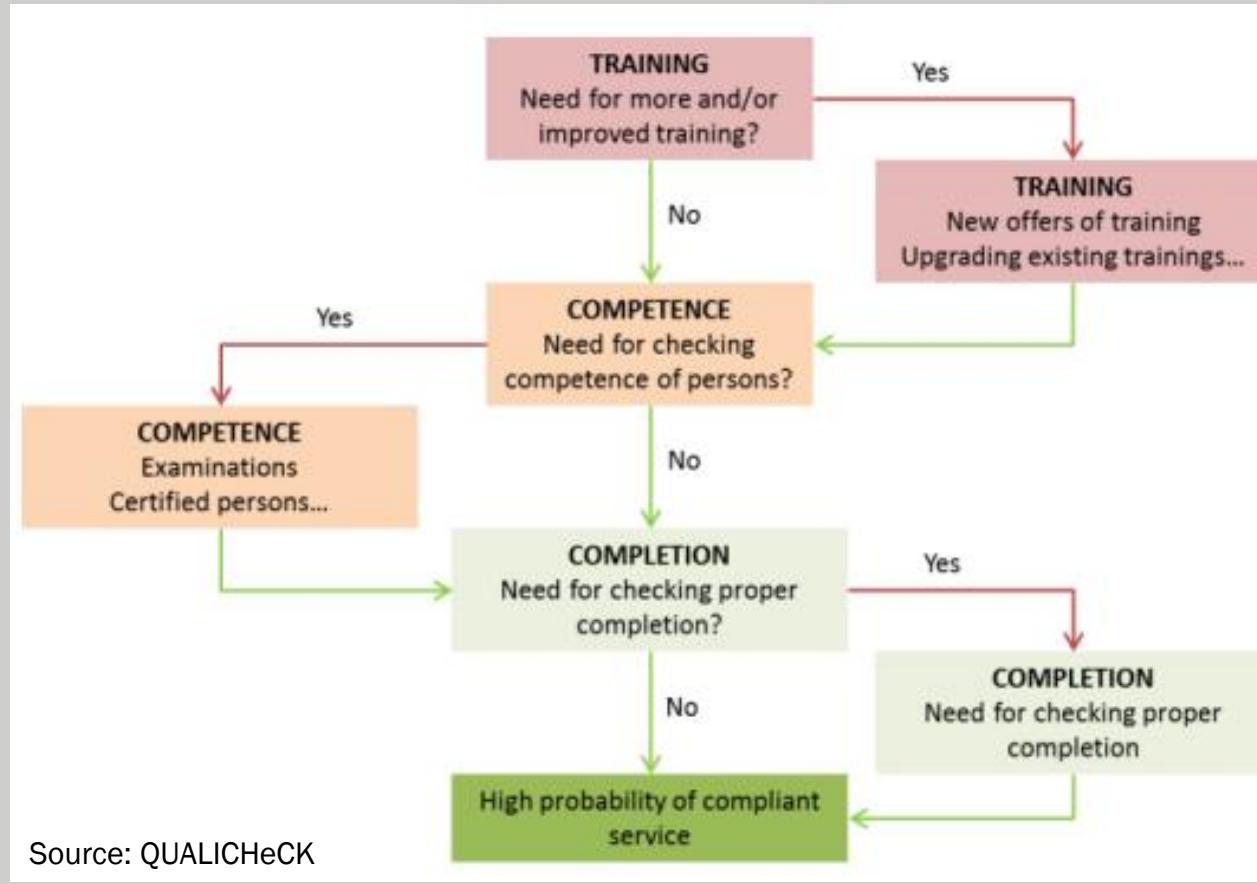
- Effective information campaigns to create awareness
- Target different actors with targeted communication: house owners, financial institutes, building professionals, technical staff of public administrations
- Use information on EPC's to create transparency



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Enhance the proficiency of certifiers

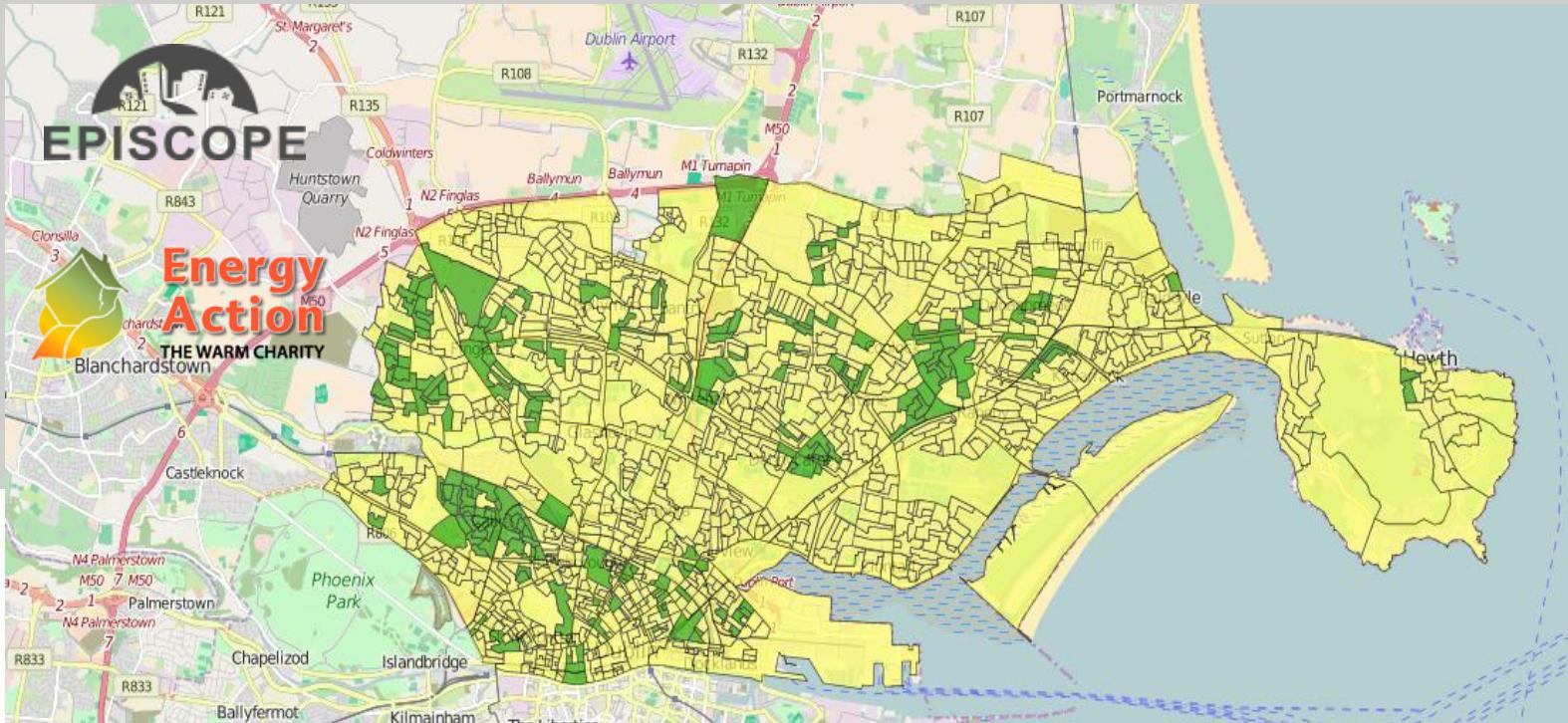


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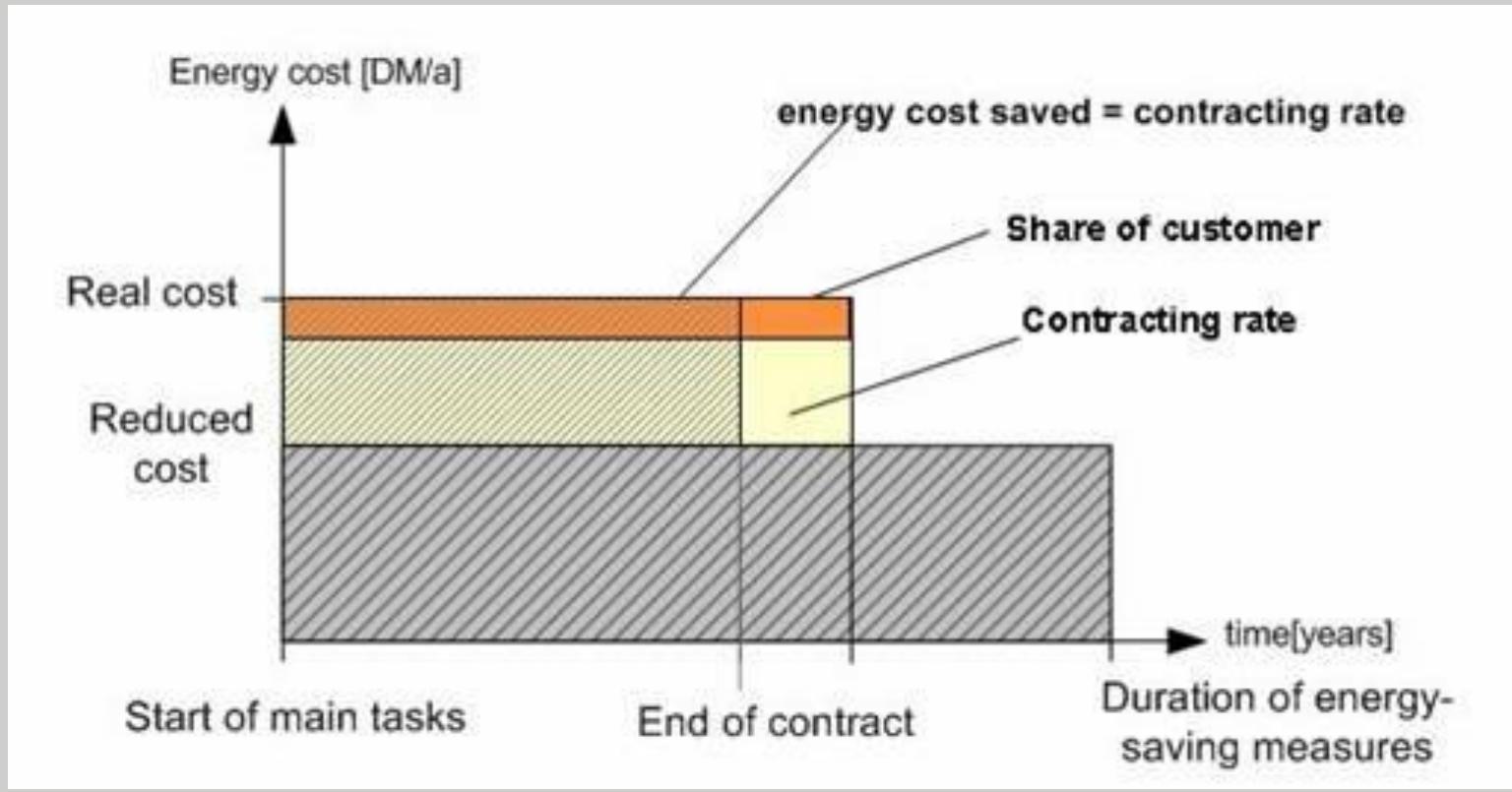


Define energy poverty and set up monitoring mechanisms

- Only 4 countries (FR, IE, SK, UK) have an official definition for energy poverty
- Major problem for Europe: between 50 and 125 million people are affected
- Maximise use of existing data, e.g. central EPC database, online dynamic energy poverty map Dublin (Ireland)



Stimulate the market uptake of Energy Saving Companies



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ZEBRA recommendations for Romania

- Implement a long-term nZEB regulatory framework
- Maximise the predictability of financial programmes
- Increase information availability
- Enhance the proficiency of certifiers
- Stimulate the market uptake of ESCOs
- Define energy poverty and set up monitoring mechanisms



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Thank you!

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Portuguese ESCO Market

Lessons learned and
recommendations

Bucharest
30th September 2016

Introduction

Back to 2010...

Was decided to create a program to promote energy efficiency in the Central Government (Eco.AP), which included Energy Performance Contracts as way to promote energy efficiency in Public Sector;

The development of Energy Performance Contracts was not impossible regarding the existing Public Procurement Rules, but was complex;

On that way, it was decided that the best option was the development of a specific legal framework for EPCs and also the development of a tender specification model to be used by the public sector...



Eco.AP Program

Description

Eco.AP Program

Objectives:

- Promote the efficient use of energy in Central Government;
- Promote the development of the ESCO market in Portugal, both on the public and private sector;
- Contribute to achieve the goals established in NEEAP to reduce energy consumption in Public Administration Sector in 30% until 2020.

Main Measures :

- Existence of an Energy Manager in all Central Government Bodies;
- Development of the Barometer Eco.AP in order to evaluate the energy efficiency of the Central Government Sector
- **Development of Energy Performance Contracts** in the buildings/equipments with an higher energy consumption (or inefficiency);
- Development of Energy Efficiency Action Plans for the remaining buildings or equipment.



Eco.AP Program

Energy Performance Contracting

Legal Framework

RCM n.º 2/2011, from January 12th

- Creates the Eco.AP program

Decree-Law 29/2011, from February 28th

- Develops the legal framework for energy performance contracts in the public sector, in coordination with the remaining procedures for public contracting

Normative Order nº 15/2012, from July 3rd

- Creates a ESCO pre-qualification system

RCM n.º 67/2012, from August 9th

- Established that all EPC in the Central Government must be coordinated by the Energy Ministry

Ordinance n.º 60/2013, from February 5th

- Publish the tender specification model to be used by the public sector in tender for energy performance contracts development (EED obligation, Article 5)

DL 68-A/2015, from April 30th

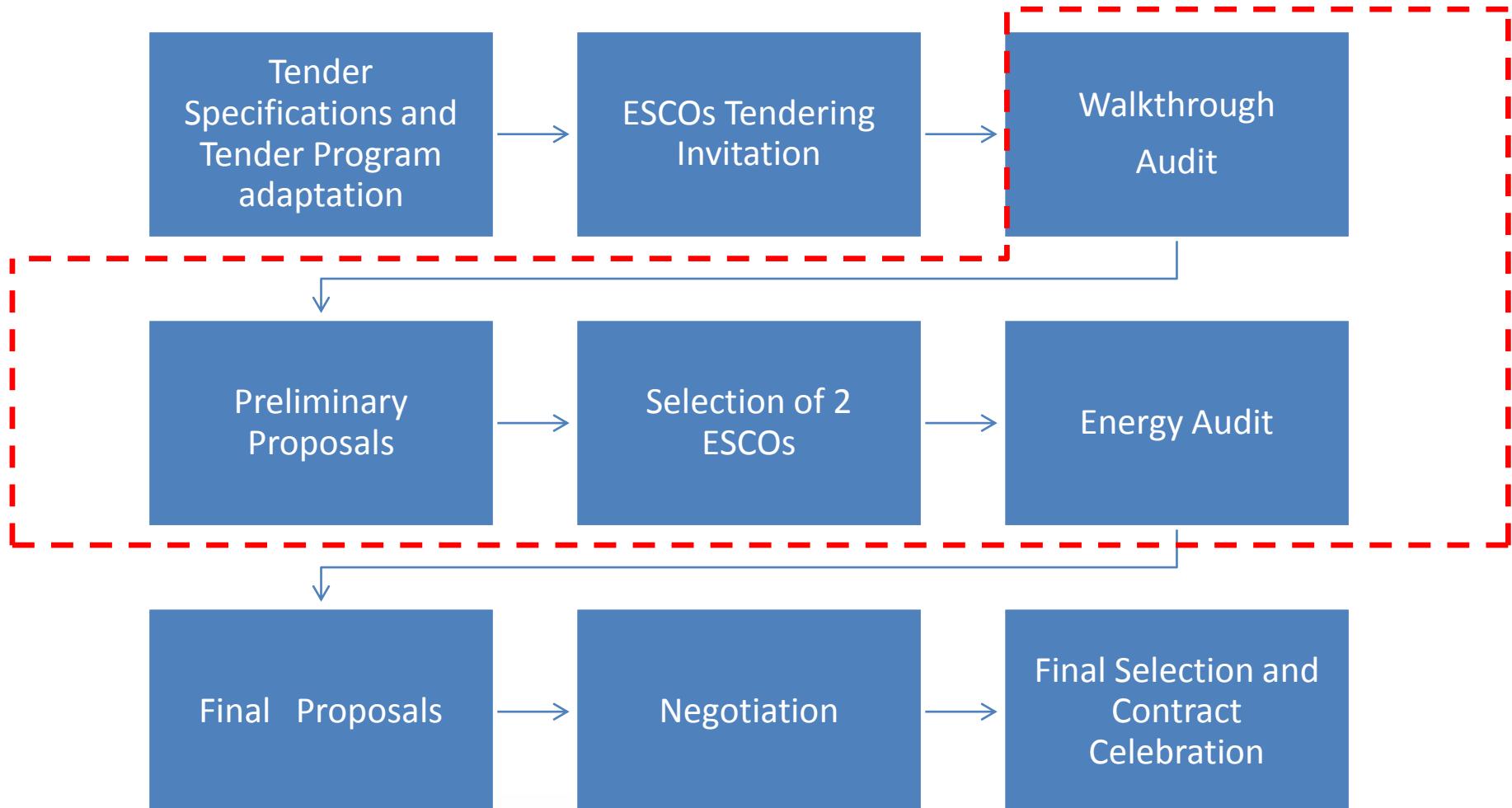
- Extends Eco.AP to regional and local government

ESCO – Pre Qualification System

Driver	Levels	Technical Requirements	Financial Requirements
Complexity of buildings / Equipments	Level 1 $\leq 3000 \text{ GWh}_{\text{eq}}$	<ul style="list-style-type: none"> • 2 Energy Expert (EPBD) • 1 Energy Auditor 	<ul style="list-style-type: none"> • Turnover $\geq 200 \text{ k}\text{\euro}$ • Financial Autonomy $\geq 15\%$
	Level 2 $> 3000 \text{ GWh}_{\text{eq}}$	<ul style="list-style-type: none"> • 2 Energy Expert (EPBD) • 1 Energy Auditor • 1 CMVP • 2 Engineer (SGCIE) 	<ul style="list-style-type: none"> • Turnover $\geq 1 \text{ M}\text{\euro}$ • Financial Autonomy $\geq 15\%$

Was established a pre qualification system that is mandatory for all ESCOs that want to develop EPCs with the public sector. Currently there are approximately 50 ESCOs qualified in Portugal.

Tender Procedures



Economic benefits

The economic benefits are divided between parties, and the ESCO guarantees the contractual savings:

% Guaranteed savings for building owner

Contractual
Savings

% Shared between ESCO and building owner

Non Contractual
Savings

Overall energy reduction [kWh]

(almost) All the risks associated to the ECP development are assumed by the ESCO, which is also responsible for the maintenance of all the equipment's included in the contract (new and existing).

Energy Performance Contracts

Main barriers



REPÚBLICA
PORTUGUESA

ECONOMIA



AGÊNCIA PARA A ENERGIA

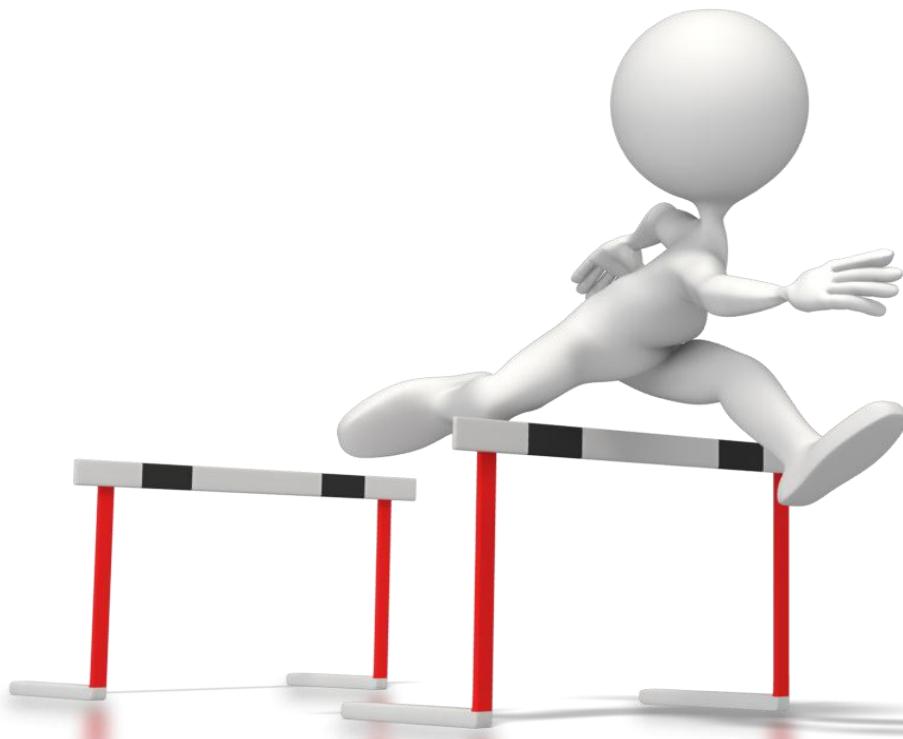


European
Investment
Bank



Supported by
INTELLIGENT ENERGY
EUROPE

Main Barriers



1 – Knowledge:

- a) Buildings/equipment;
- b) Lack of expertise of the staff;
- c) EPC model;

2 – Investment capacity:

- a) Energy audits;
- b) EE investments;

3 – Others



Energy Performance Contracts

Tender Evaluation and project development

Tender evaluation

$$P = \left[\frac{NPV - NPV_{min}}{NPV_{min}} \right] \times 50\% + \left[\frac{16 - n}{16 - 6} \right] \times 50\%$$

- P Overall evaluation;
- NPV Net present value of the energy savings guaranteed to the public body;
- NPVmin Net present value of the minimum energy savings guaranteed to the public body (tender specification model requirements);
- n contract period.

Tender evaluation

$$NPV = \sum_{i=1}^t \left[\frac{PG_t \times Een\ i_t \times Tbl\ i_t}{(1 + 4\%)^t} \right]$$

- PG_t Minimum share of the energy savings that remain with the public body [minimum 10%], in the year t;
- Een i_t Contractual energy savings due to the ESCO activity, by energy source (i), in the year t;
- Tbl i_t Energy cost, by energy source (i), as defined in the tender specification model, in the year t;

Note: Energy cost is annually actualized in accordance with the Consumer Price Index, and not based on real price evolution. Energy acquisition is excluded from the Energy Performance Contract.

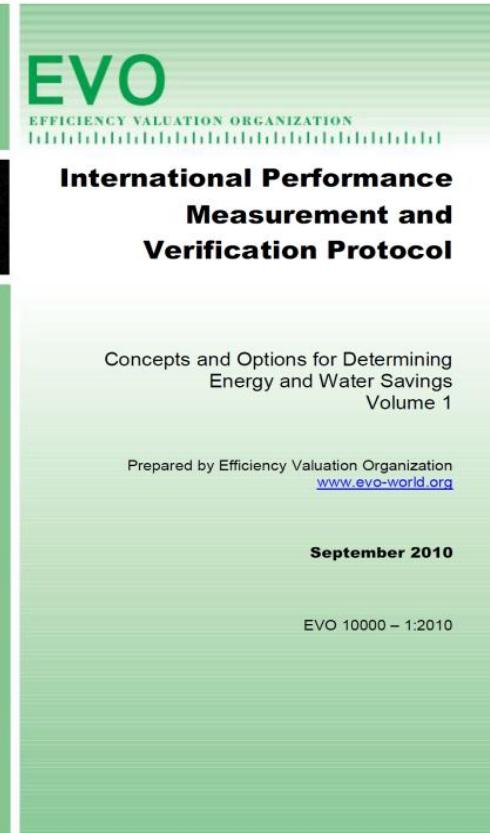
Tender evaluation

$$NPV_{min} = \sum_{i=1}^t \left[\frac{PGmin_t \times Een\ min_t \times Tbl\ i_t}{(1 + 4\%)^t} \right]$$

- PGmin_t Minimum share of the energy savings that remain with the public body [10%];
- Een min_t Minimum energy savings to be achieved by the ESCO, by energy source (i);
- Tbl i_t Energy cost, by energy source, as defined in the tender specification model;

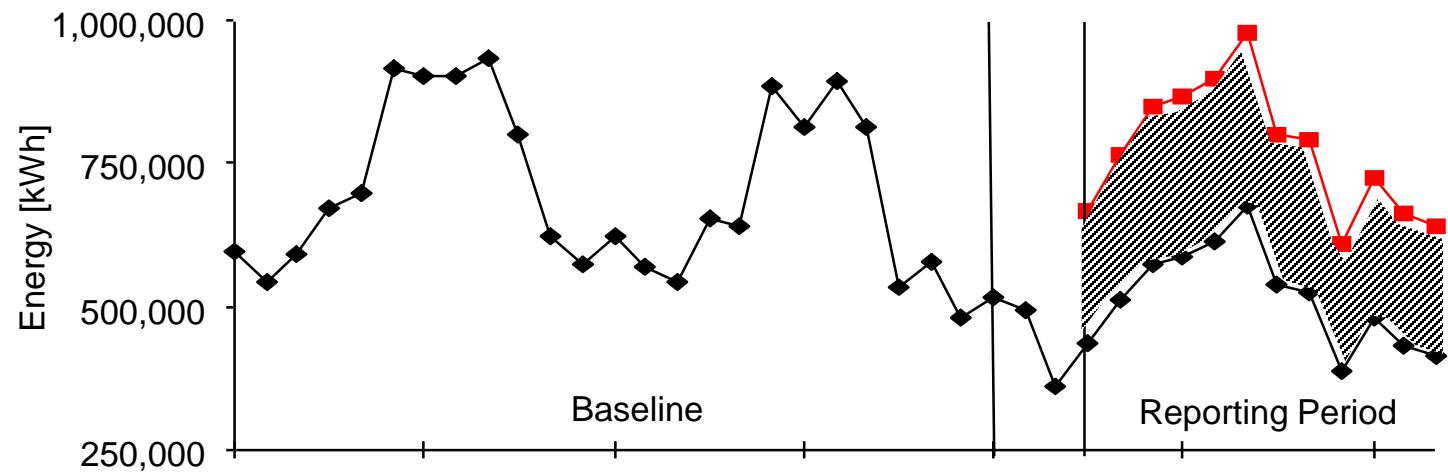
Measurement and Verification (M&V)

- The existence of engineering skills is very important for Energy performance contracts development.
- In Portugal, IPMVP is used as reference for M&V in energy performance contracts development



Baseline and reporting period

The characterization of the baseline is mandatory for a successful energy performance contract. This includes much more than the energy consumption...





Energy Performance Contracts

Technical Assistance

Location	Lisbon Region
Beneficiary	Agencia para Energia (ADENE)
CoM signatory	No
Sector	EE in buildings, street and traffic lighting
Total PDS cost	EUR 721,273.00
Elena contribution	EUR 649,145.70
Project development services (PDS) financed by ELENA	The objective of the ELEnA assistance is to deploy the necessary technical, financial and legal expertise that will allow developing the investment programme involving ESCOs and using EPC between the Portuguese public administration and private ESCOs.

Description of ELENA operation

The TA developed with the Elena funds will support ADENE in the implementation of the Investment Programme that aims at retrofitting public buildings, street and traffic lighting systems located in the Lisbon Region for improvement of the energy efficiency. The public buildings concerned are owned by the Portuguese central government, while the street and traffic lighting systems are owned by the Lisbon Municipality. The implementation of the Investment Programme will help these public sector actors in meeting their EE and CC objectives. The programme will contribute to mobilising relevant stakeholders from the Region: public bodies, banks, investors and businesses in a broader use of ESCOs to improve EE.

Timeframe

2013- 2016

Basis for investment identification

ADENE has already performed some preparatory works, including preliminary assessment and selection of some 50 buildings as well as lighting systems to be retrofitted under the project.

Investment programme description

The Investment Programme aims at implementing energy efficiency and renewable energy (PV, solar thermal) measures in public buildings, street and traffic lighting systems. Third party financing (TPF) is the approach adopted for the implementation of the Investment Programme. It will be based on the EPCs between the building and lighting systems owners and ESCOs companies.

Investment to be mobilized

EUR 36 million

Expected results

The implementation of the Investment Programme will result in final energy savings of 88.7 GW/a. In relative terms the potential energy savings (in final energy) are estimated foreseeing a 20% consumption energy reduction in buildings, 55% in traffic lights and 15% in street lighting system. In addition, the Investment Programme will contribute to producing about 4.0 GWh/a of renewable energy. Consequently the project will result in emission reduction of 38,810 t CO₂e/a.

Leverage factor (Minimum 20)

56

Market replication potential

The project will contribute to launching the programme through implementation of first projects. Once proven viable, the programme will be scaled-up and replicated in other Portuguese regions. The project will significantly contribute to the development of ESCO market in Portugal.



Eco.AP Program

Other Initiatives

National Funds

National Energy Efficiency Fund

- Tender 5 – Energy audits in public buildings/equipment, to support tender procedures for EPCs (250.000 €)

Innovation Support Fund

- Tender 1 – EPCs in private sector: offices, hotels and hospitals (1.050.000 €)

Structural Funds 2014-2020

Cohesion Funds

- IP.4.3 – Energy efficiency in central government:

European Regional Development Fund

- IP.4.2 – Energy efficiency in private sector (non-residential)
- IP.4.3 – Energy efficiency in regional and local government



Program Eco.AP

Current Status



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ECONOMIA



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EPCs implemented

Traffic lighting system in Lisbon Municipality, replacing approximately 20.000 incandescent lamps by LEDs;

	GALP/VIVAPower	MANVIA
Proposed energy reduction	94,36 %	94,10 %
Energy savings	6 502 934,73 €	6 485 256,73 €
Municipality savings	26,40 %	23,00 %
Contract lifetime	2 years	2,5 years
NPV	420 939,97 €	451 923,34 €
NPVmin	304 165,35 €	375 848,36 €
Overall classification	69%	54%

EPCs implemented



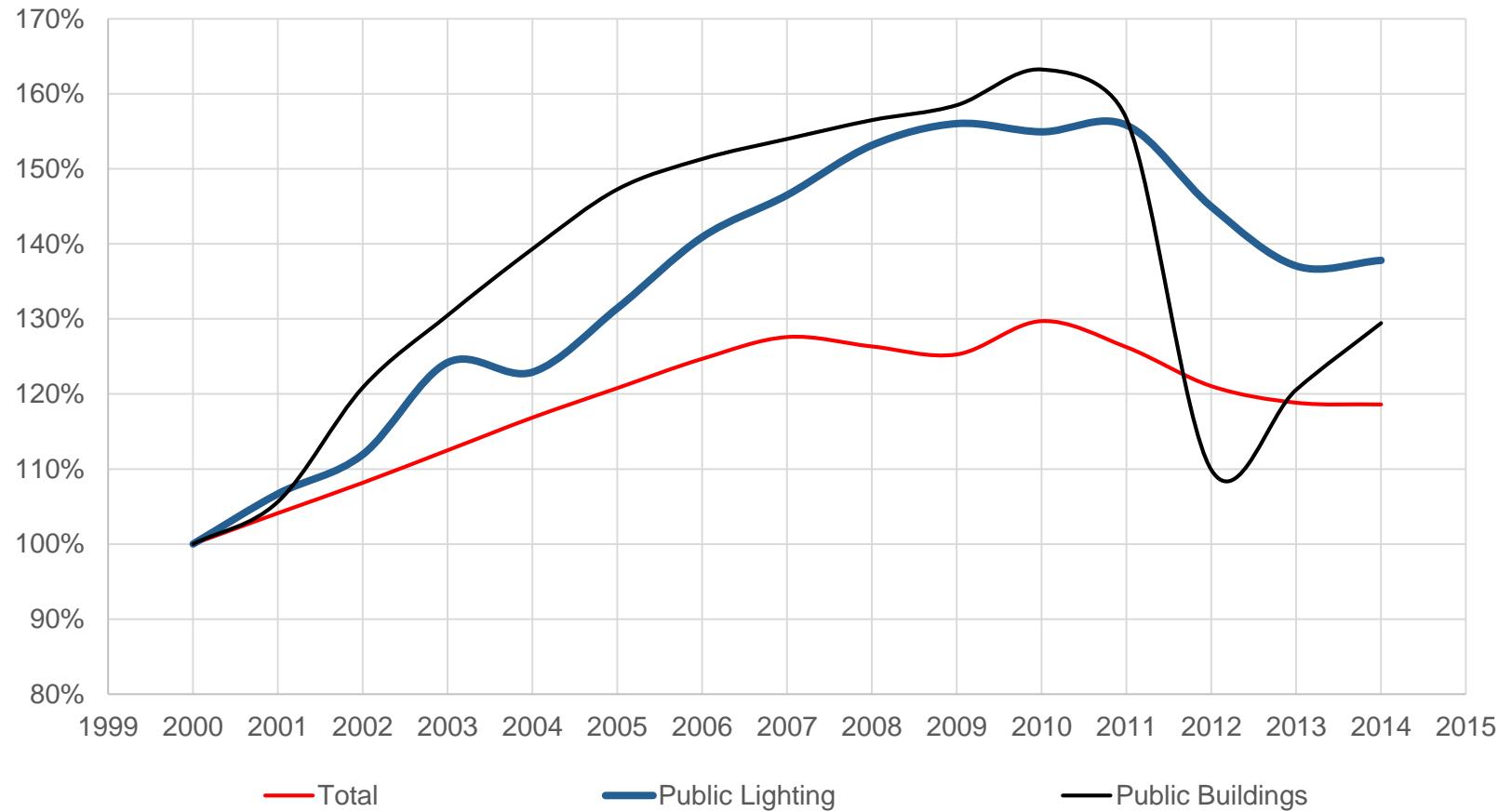
Current Status – EPC

- Tender processes concluded: Public lighting systems at the Municipality of Peniche (6.000 lighting points);
- Tender processes on course for public lighting:
 - Gaia Municipality (1.000 lighting points);
 - Paços de Ferreira Municipality (12.000 lighting points);
 - Vouzela Municipality (7.000 lightning points)
 - Valongo Municipality (16.000 lighting points);
- Tender processes waiting for final approval:
 - Regimento de Transportes (Portuguese Army Barracks, located in Lisbon);
 - Santa Maria Hospital (Lisbon Central Hospital);
 - Cova da Beira Hospital;
 - Médio Tejo Hospital;
 - Penafiel Hospital ;

Energy Performance Contracts

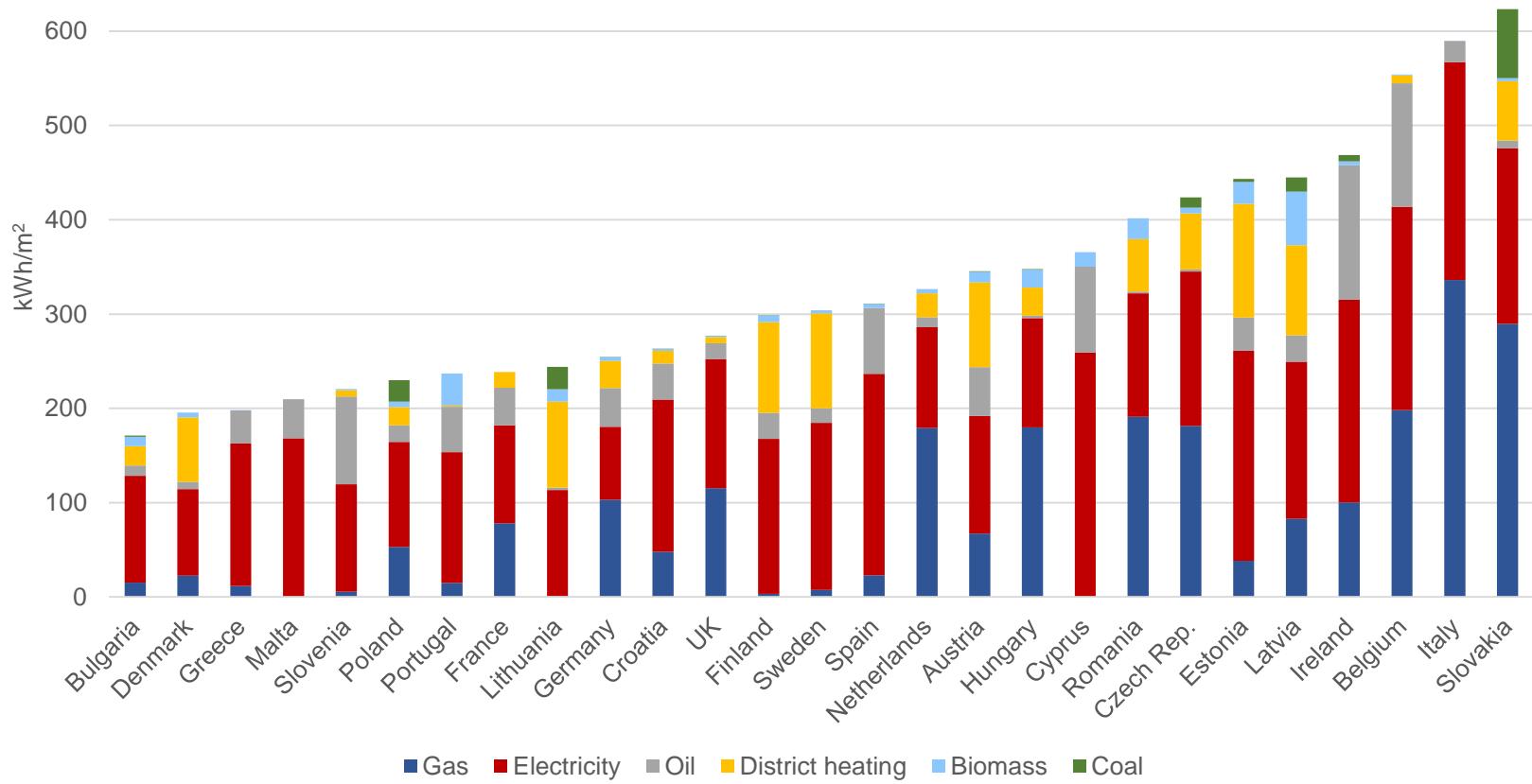
Conclusions

Portugal's Electricity Consumption: 2000-2014



Total unit consumption per m² in non-residential

(at normal climate)



Fonte: <http://www.entrance.enerdata.eu/total-unit-consumption-per-m2-in-non-residential-at-normal-climate.html#/total-unit-consumption-per-m2-in-non-residential-at-normal-climate.html>

Conclusions

- The existence of a facilitator (national and/or local energy agency) to support the public administration in the development of the energy performance contracts may help the implementation of the process;
- The existence of a clear legal framework can be very important to provide confidence to the several market actors;
- A stepwise approach may help to achieve success, starting with more simple infrastructures (street and public lighting) and evolving to more complex ones (buildings);
- Definition of the impact of EPCs on Government accounts, clarifying if it should be considered for public debt calculations (Eurostat Guidance Note);
- Is impossible to be 100% precise in the energy savings auditing! On this way try to reduce the project precision to a value that can be acceptable, making the contract more easy to manage and to control;
- High level involvement is mandatory;
- Infrastructures with low energy consumption are not suitable for EPCs.

Eco.AP Program

Thank you for your attention

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BUILDINGS
FOR THE FUTURE

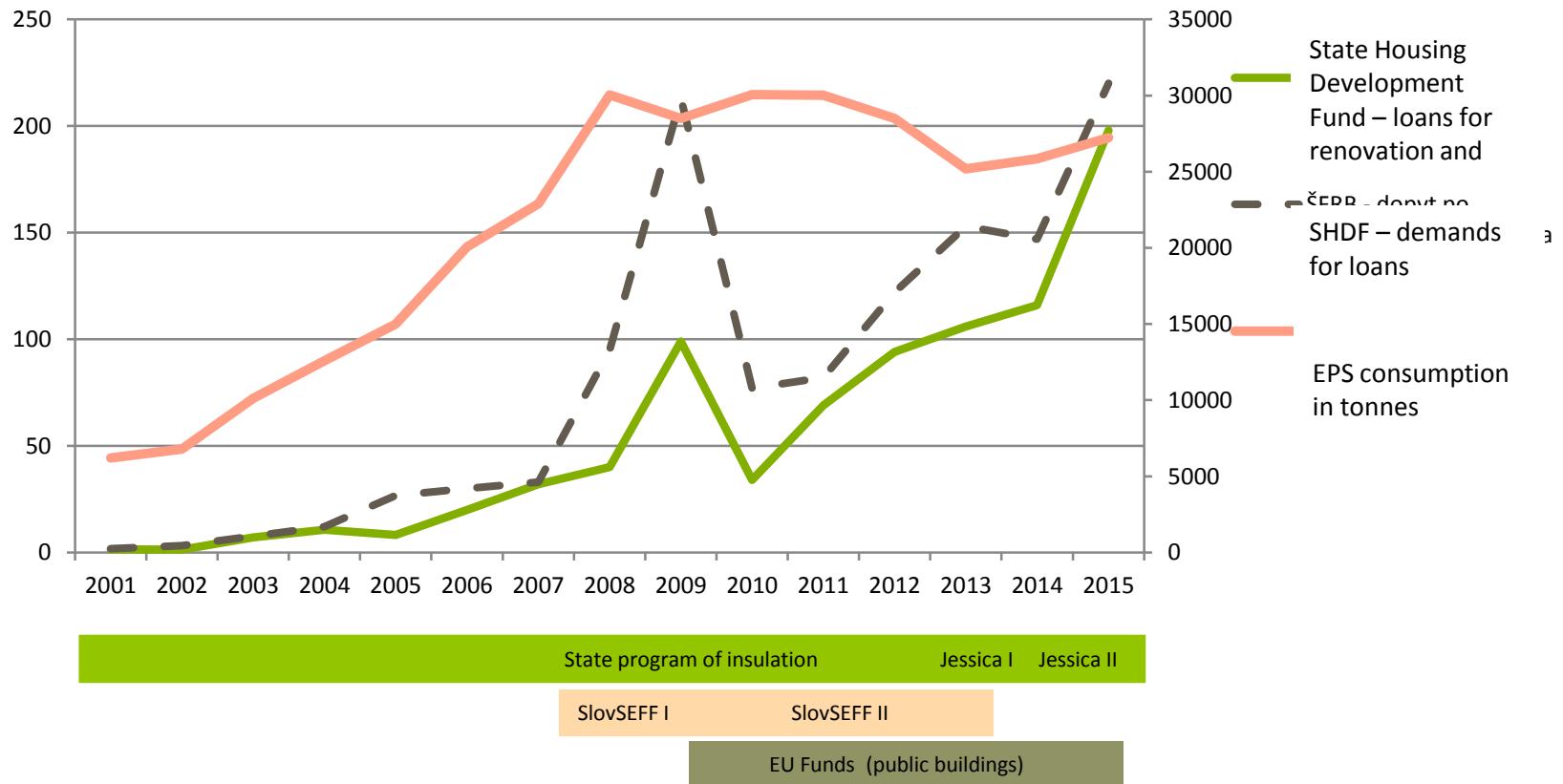


GREENPEACE

New subsidy scheme for energy efficient renovation of single-family homes in Slovakia



what really matters?



Residential building stock

renovated – but how?



SFH

- 815 000 buildings
- 1920 – 1990
- 33 % renovated
- 2,6 % per year
- floor area of SFHs - 77 mil. m² (~ 90 m² / flat in SFH)



MFD

880 000 flats

- 1960 – 1990
- 50 % renovated
- 3,3 % per year

65 000 buildings



PB

- 15 500 buildings
- 1960 – 1990
- 18 % renovated
- 1 % per year

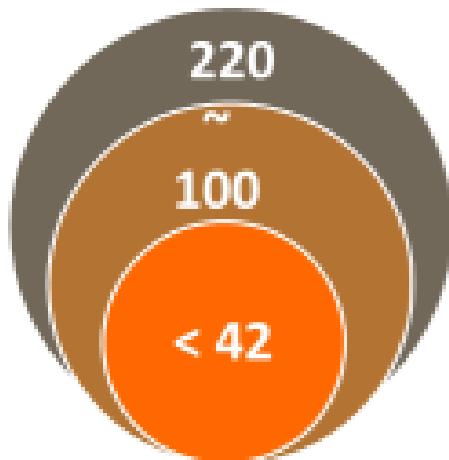
energy consumption for heating

Energy efficiency requirements to be met during renovation are defined by the technical norms

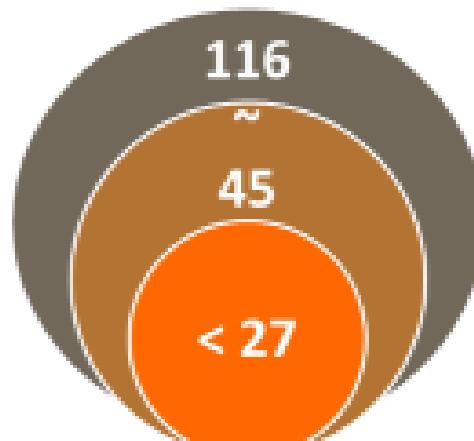
single-family homes

multi-family dwellings

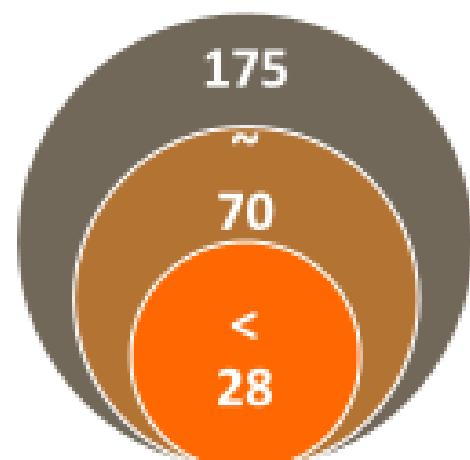
public buildings



kWh / (m².a)



kWh / (m².a)



kWh / (m².a)

potential

Rate

- ~ 22 000 flats / a
- To be increased substantially (31 000/a)

Quality

- (Often) below expectation
- Non-compliant with standards

Main financing

- Own capital or commercial loans
- No effective financial instrument

Challenges

- Increase rate of renovation
- Improve quality

Opportunity

- Establish subsidy scheme – political ownership

where to start?



arguments – look though their eyes

Renovation
= employment
(4 000 jobs)

SFH
= half of Slovak
families, across all
regions, country-side

Insufficient EE of SFH
= people pay too
much for heating

Leveraging private
investment
= net zero impact on
public budget

In line with
government agenda
(e.g. Housing Policy)

Currently in grey
economy
= fight tax fraud

subsidy scheme



programme design

Support intensity

- maximum 30 % of eligible and paid costs
- max. 5 000 € depending on heat transfer coefficient of building structures (U)

Depending upon the thermal capabilities of the various structures that are external walls, external filling openings (windows, doors), roof and internal structures between heating and unheated spaces

Basic condition: meet requirements of thermal performance of building structures by demonstrating the value of HTC of building structures according to Slovak technical standards

- max. 1 000 € depending on the demands for heating
- *Required maximum energy need for heating in compliance of regulations*
- 500 € per project, energy assessment and certificate (not limited to 30%)

6,500 €



30 mil. €

level of subsidy depending on the energy performance achieved

Payment upon reached values of heat energy demand equal to or less than the normalized value of heat demand for heating depending on the form factor of the family house by Slovak technical standards applicable from January 1, 2016	Payment upon reached values of heat energy demand equal to or less than the normalized value of heat demand for heating depending on the form factor of the family house by Slovak technical standards valid until December 31, 2015	Payment upon reached values of heat energy demand higher than the normalized value of heat demand for heating depending on the form factor of the family house by Slovak technical standards valid until December 31, 2015
€ 1,000	€ 500	€ 0

programme design

Eligibility

- Slovak Republic resident and the owner of the house
- SFH older than 10 years
- total floor area of less than
 - $\leq 150 \text{ m}^2$ one – storey SFH
 - $\leq 250 \text{ m}^2$ multi-storey SFH
- insulation and windows

Application process

- e –form & print documents mailed
- List of documents before insulation
- List of documents after insulation
- calls for application

calls

- 1th call

16.3. – 12.4.2016

Nr. of
applications
accepted

1000

e-forms

900

mailed

230

- 2nd call

9.6. – 6.7.2016

Nr. of
applications
accepted

500

e-forms

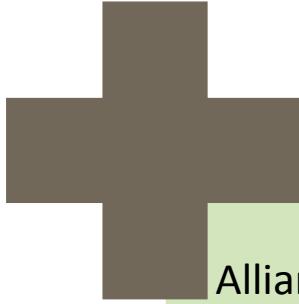
295

mailed

95

- Change of legislation

what have we learned?



Alliance

Long-term messaging

Right timing

Right arguments

Focus on programme design earlier,
engage future managers

Continuous application / no calls?

Simplify the process / cut number of
documents?

Heating systems, etc. / not just
insulation?

€ 6 000 enough for true deep
renovation?

Extend to NZEB new-build?

thank you for your attention



**BUILDINGS
FOR THE FUTURE**

Thank you!
Va multumim!



Project consortium



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