

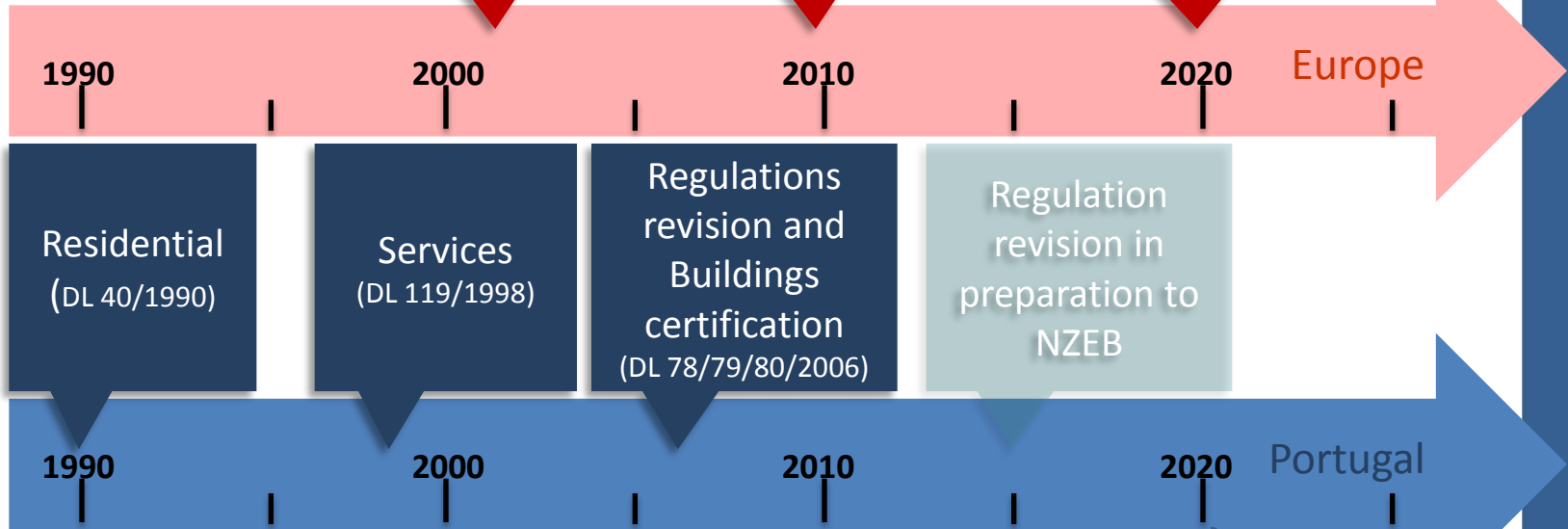
EE_ALTO MINHO 2014-2020
AGÊNCIA REGIONAL DE ENERGIA E AMBIENTE
PONTE DE LIMA 15 DE JULHO DE 2014

BUILD UP SKILLS PORTUGAL
Teresa Ponce de Leão

EPBD
2002/91/EC

EPBD
2010/31/UE

Nearly Zero Energy Buildings (NZEB)



A collage of images related to energy efficiency and building technology. It includes:

- A cross-section of a window frame showing insulation and glazing.
- A white wall-mounted air conditioning unit.
- A solar water heater on a roof.
- A small house with a green roof and solar panels, connected to a power outlet.
- A circular graphic showing a color-coded energy label scale from red (low efficiency) to green (high efficiency).
- A 3D model of a building with a globe overlaying it.

2020



The EPBD Recast, Directive 2010/31/EU, sets that each European Member State should regulate in order to achieve, for new buildings in 2020, **nearly Zero Energy Buildings** (NZEB).

EFFICIENCY

In 2008, the Portuguese government approved the **National Action Plan for Energy Efficiency** (PNAEE). It concerns, for Residential and Services buildings, the Home Renewal Program, Energy Efficiency System in Buildings and Renewable at the Time Program.



RENEWABLE

The Decree-Law No. 29/2010 approved the latest **National Energy Strategy** (NES 2020), which is structured around five main axes, one of which is entirely dedicated to **renewable energies**, establishing targets and strategies to develop and promote the various technologies that are part of the mix of renewable energies by 2020.



SKILLS

There is in place a mechanism to certificate **solar thermal installers**. The certification of professionals to install **other renewable energy systems** will be implemented in the near future.



GREEN SKILLS are NEEDED.



Unidade de
Energia e
Ambiente
Construído

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em direcção à energia **zero** energy towards **zero** energy



Edifício com necessidades quase nulas de energia é um edifício com um desempenho energético muito elevado (...).

As necessidades de energia quase nulas ou muito pequenas deverão ser cobertas em grande medida por energia proveniente de fontes renováveis, incluindo energia proveniente de fontes renováveis produzida no local ou nas proximidades. (Artigo 9º, n.º 2, Directiva 2010/31/UE)

Nearly zero-energy building means a building that has a very high energy performance (...).

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. (Article 9, n. 2, Directive 2010/31/UE)



Os Edifícios em Portugal representam:

30 % dos consumos energéticos

60 % do consumo eléctrico

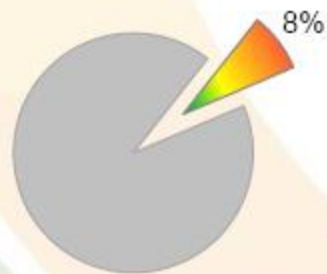
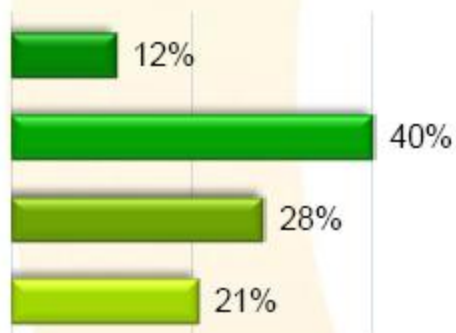
2º sector em termos de emissões de CO₂

Energy Performance Certification System

How efficient are our buildings?

New buildings

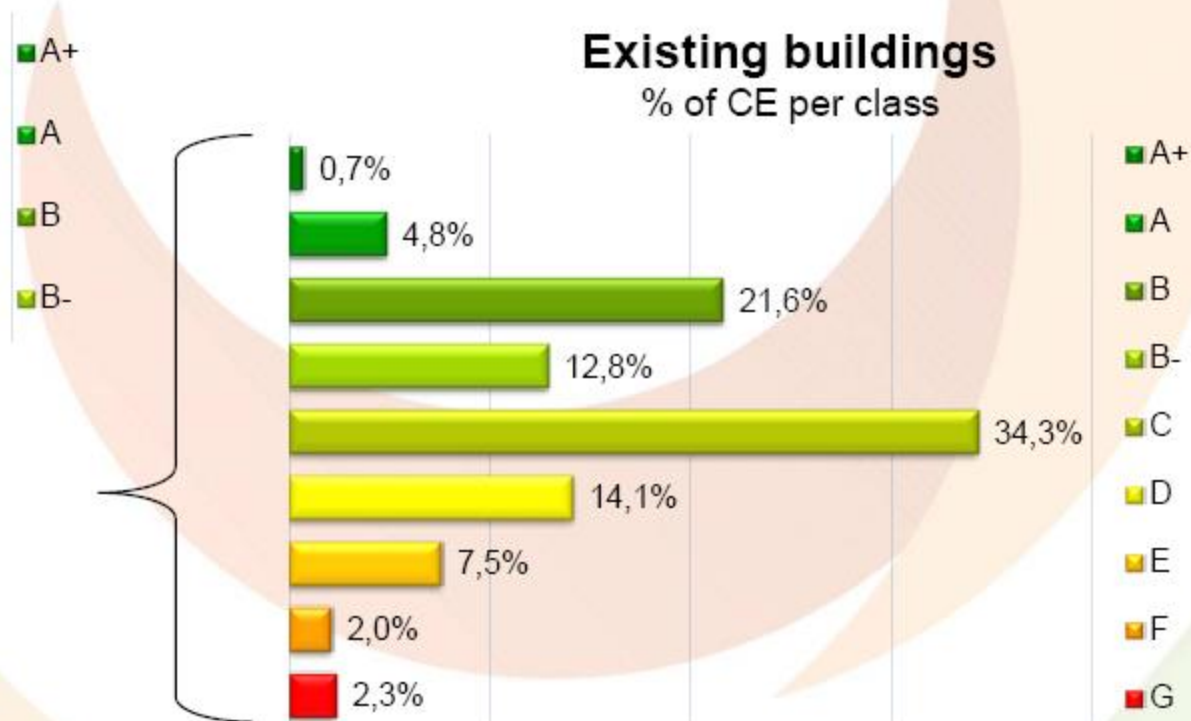
% of DCR per class



Certified houses

Existing buildings

% of CE per class



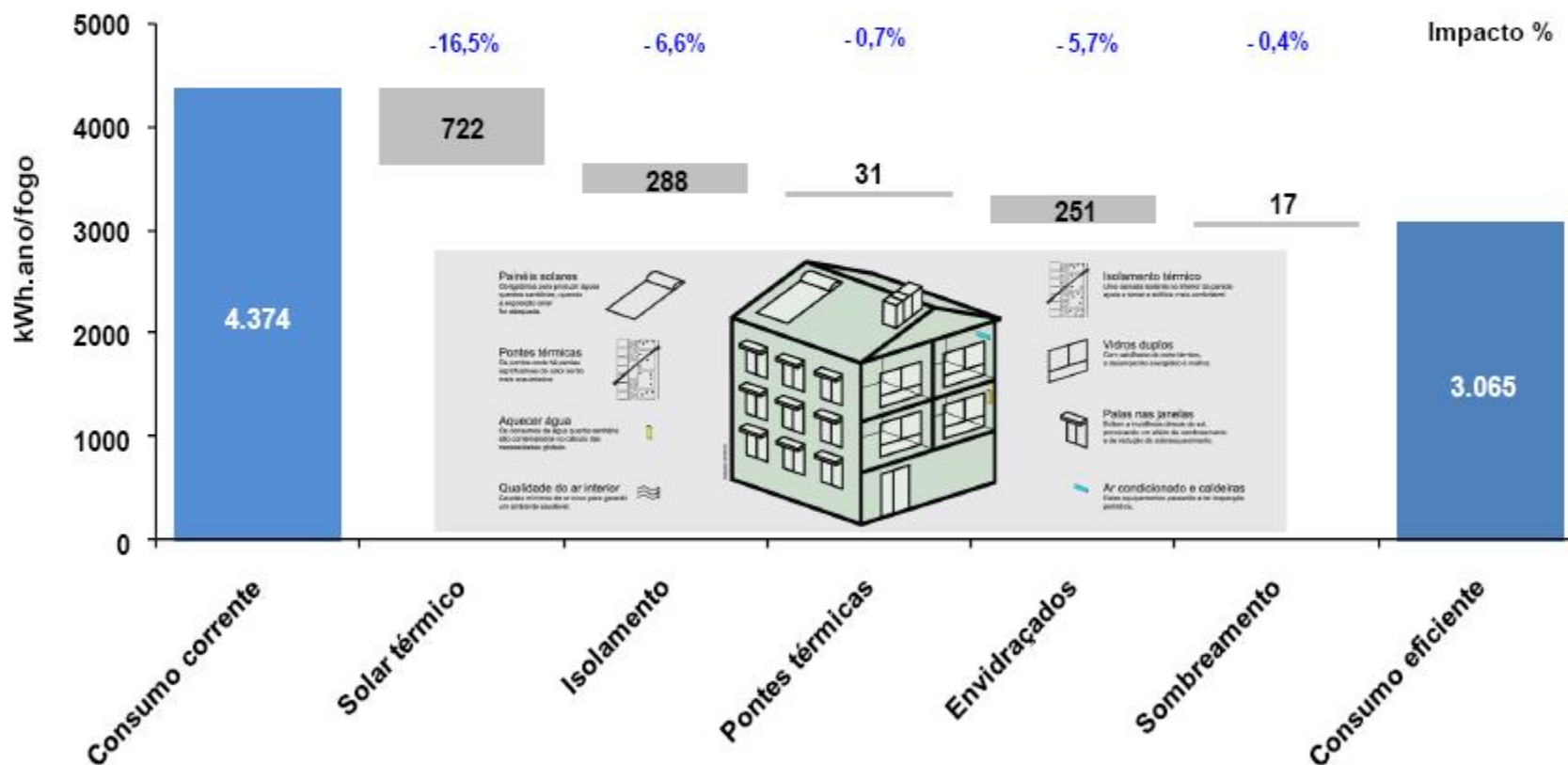
Residential sector

Requisitos da Certificação e impacto energético em edifícios residenciais

Impacto da Certificação

(Média por habitação)

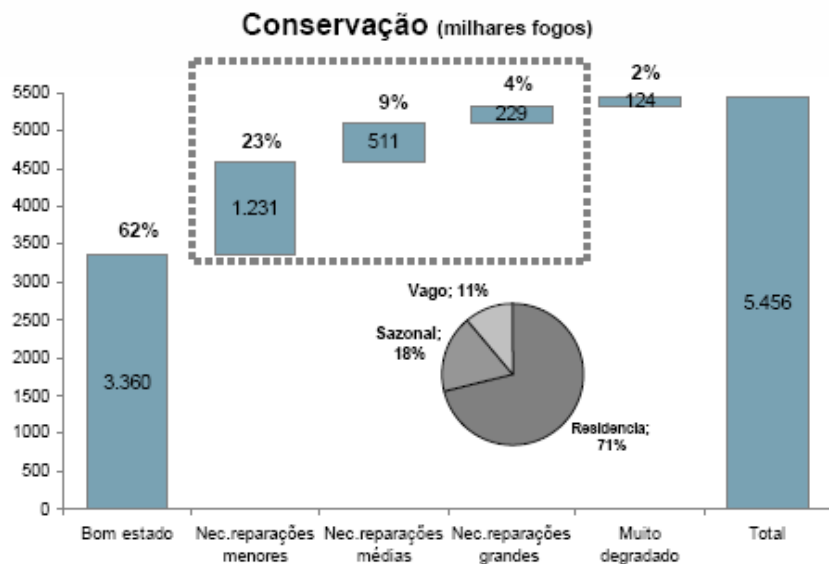
Energia final



Potencial para dinamizar a reabilitação urbana

Parque residencial de 5,5 milhões de fogos, dos quais menos de 2/3 estão em bom estado de conservação

Fonte: SCE- ADENE



- 62% dos fogos em bom estado de conservação
- 1,2 milhões a necessitar de pequenas reparações
- Quase 800 mil a necessitarem de médias ou grandes reparações
- Parque sazonal representa quase 1/5 do total

• Medida *Janela Eficiente*

- Incentivo à substituição de superfícies vidradas não eficientes
- Envolvendo a reabilitação de cerca de 200 mil fogos até 2015



• Medida *Isolamento Térmico*

- Incentivo ao isolamento térmico
- 100 mil fogos reabilitados até 2015



• Medida *Calor Verde*

- Programa de instalação de 200 mil sistemas de aquecimento de ambiente eficientes
 - recuperadores de calor a biomassa
 - bombas de calor COP maior ou igual a 4



Objetivo - aumentar até 2020 o número de **profissionais qualificados** para otimizar o **aproveitamento de ER's** e **melhorar a eficiência energética** nos edifícios no **sector da construção**.

LNEG coordena

GOALS

BRINGING TOGETHER the Portuguese stakeholders related to **craftsmen** working on the building sector and **installers** of energy systems including renewables.

ESTABLISHING a national **platform** of engagement.

SETTING UP a national **roadmap** driving the training process until 2020 and beyond.

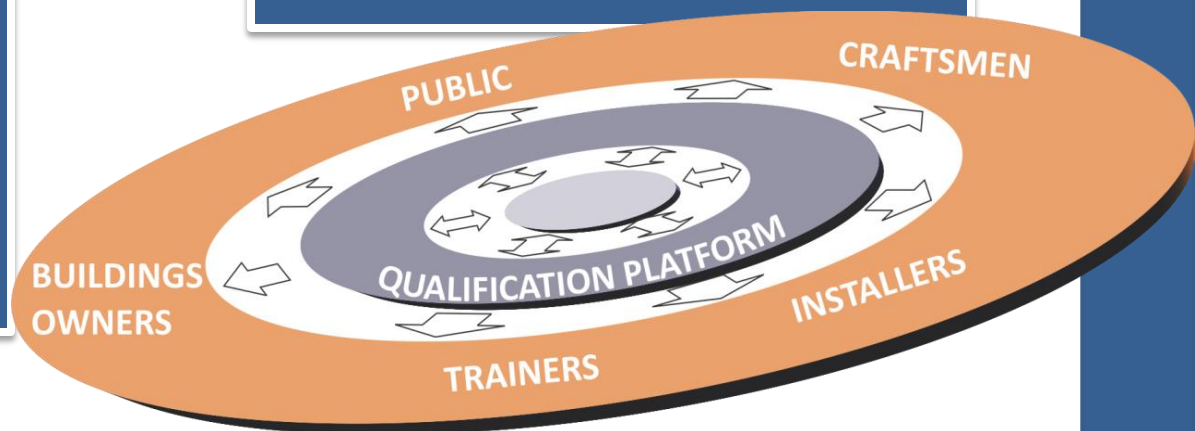
OUTPUTS

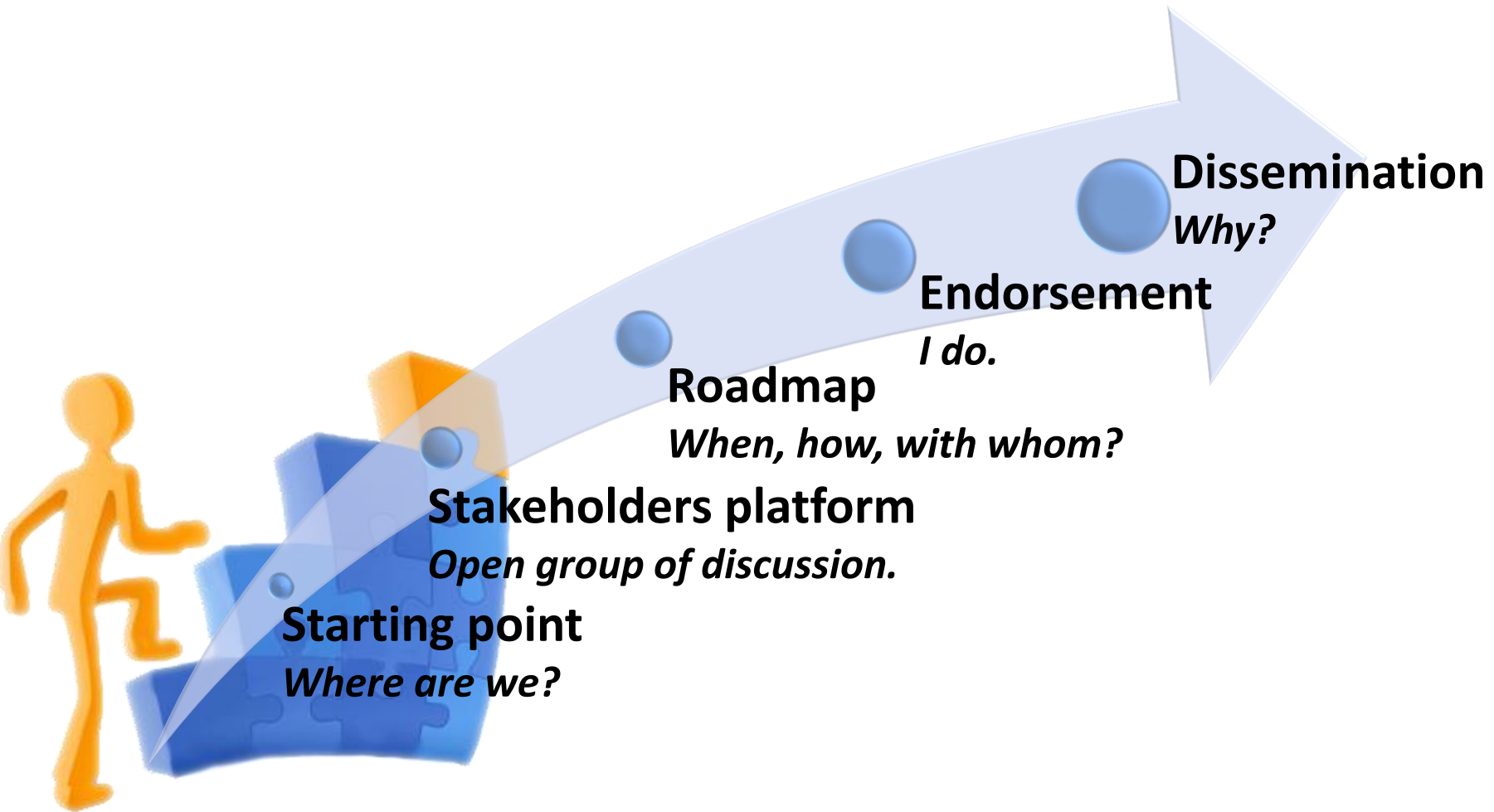
ROADMAP

National **action plan** for improving energy efficiency and renewable energy **skills** of craftsmen in building sector.

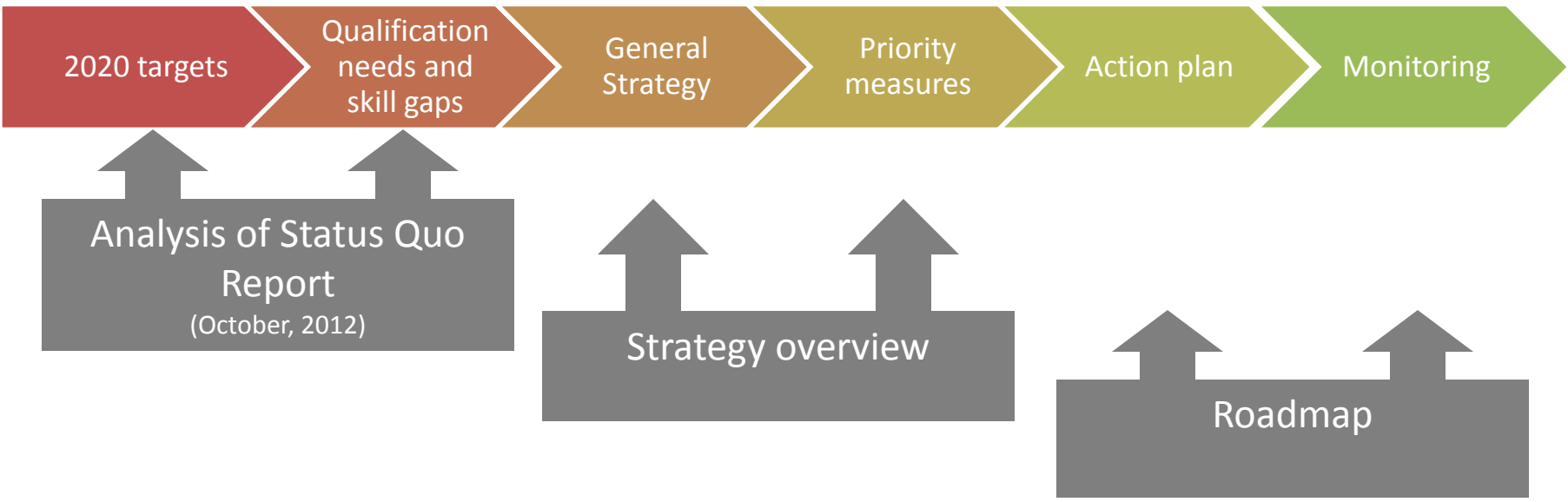
QUALIFICATION PLATFORM

Consolidation of a stakeholders group able to drive the **roadmap implementation**, forming as a group of discussion and **engagement**.





THE ROADMAP





- The number of current workforce in the building sector, in 2009, working in occupations that have a potential contribution for energy efficiency and renewable energies is 100,850 workers.

Number and percentage of employed persons in the building sector, by economic activity, in 2009

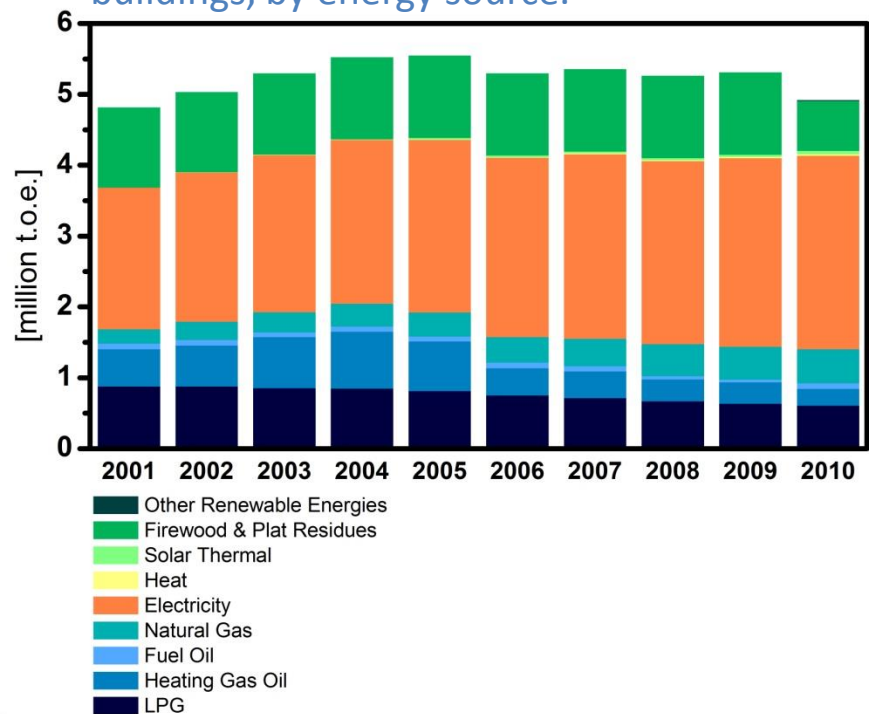
CAE	TOTAL	
	[NO.]	[%]
41200 - Construction of residential and non-residential buildings	68 644	68%
43210 - Electrical installation	5 440	5%
43221 - Plumbing installation	4 055	4%
43222 - Air conditioning installation	1 921	2%
43290 - Other construction installation	3 448	3%
43310 - Plastering	1 974	2%
43320 - Joinery installation	3 251	3%
43330 - Floor and wall covering	2 479	2%
43340 - Painting and glazing	3 915	4%
43390 - Other building completion and finishing	1 596	2%
43910 - Roofing activities	120	0.1%
43992 - Other miscellaneous specialized construction activities	4 007	4%
TOTAL	100 850	100%





- The total energy consumption in Portugal is 22.9 Mtoe and, in the building sector, is 4.9 Mtoe, figures from 2010. On site generation of RES in the building sector is of about 0.8 Mtoe.

Evolution of end-use energy consumption in buildings, by energy source.



2020 targets

Qualification
needs and
skill gaps

General
Strategy

Priority
measures

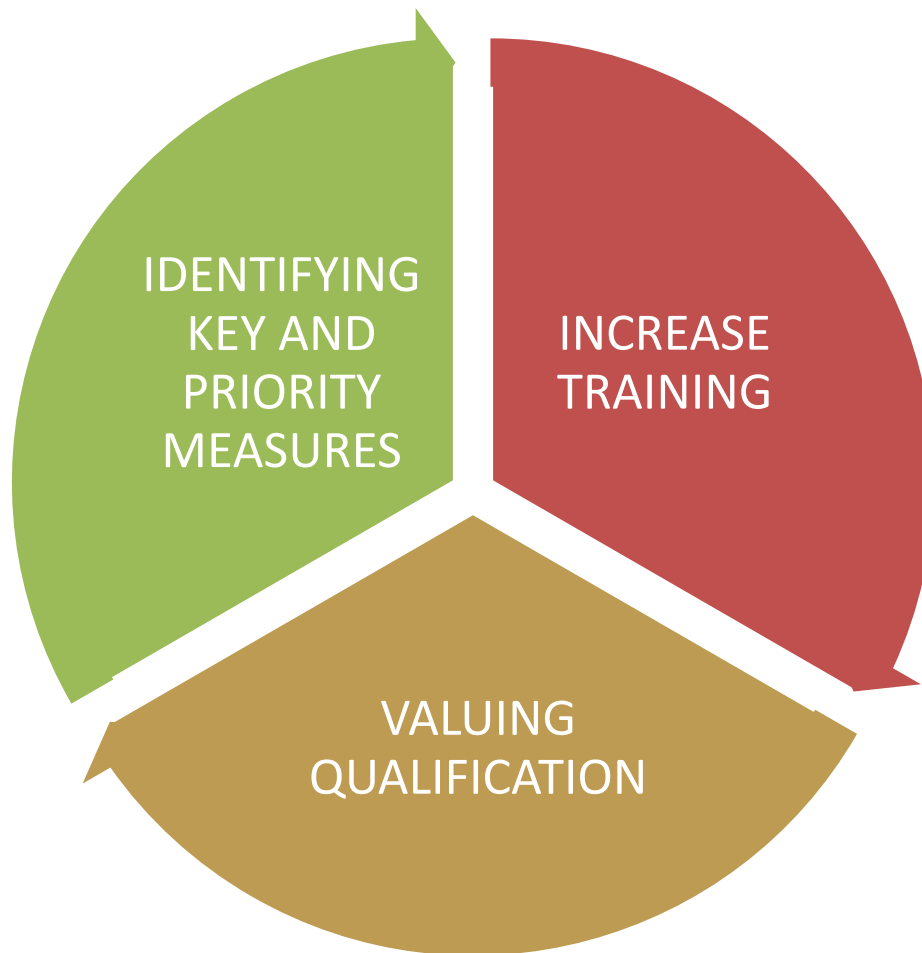
Action plan

Monitoring

- There are **regional asymmetries** in the offer of training, as regards both qualifications and the modalities of education and training;
- Higher investment has been made in training associated with renewable energies, as regards both the initial qualification of **young people and adult qualification** (particularly in connection with the installation of solar equipment, either photovoltaic or thermal);
- Sharp drop of adult training in 2011 as regards the **EFA education** and training modality, in the framework of qualifications associated with the building and energy sector.



NATIONAL ROADMAP STRATEGY OVERVIEW



NATIONAL ROADMAP STRATEGY OVERVIEW

- **General revision of courses and modular training and reinforcement of practical training** to reflect EE and RES requirements;
- inclusion of **EE and RES in the training schemes as transversal areas**, similarly to “safety at work” area;
- creating modular and specialized training, based on **credits acquisition**, for building sector workforce, preferably in the form of workplace practical training, complemented by e-learning.
- creating specific courses for **buildings rehabilitation**;
- reflecting about the adequacy of the 12 years of compulsory education to the existing vocational training;
- **valuing companies** by the use of qualified professionals;
- **harmonizing** with other member states (**MS**) by the establishment of common basic competences.

2020 targets

Qualification
needs and
skill gaps

General
Strategy

Priority
measures

Action plan

Monitoring

- Building workers specialized on:
 - Windows installation
 - Thermal insulation
 - Buildings rehabilitation
 - Solar collectors, both thermal and photovoltaic
 - Bioenergy systems
 - Ventilation ducts
 - Heat recovery systems
 - HVAC installation
 - Lightings systems
 - Gas installation
 - Electrical installation
 - Maintenance of energy systems
 - Management of energy systems



Flexibility: modular training courses, credit accumulation and e-learning;
Companies involvement: within the companies improving the practical component and reducing costs;
Cross-cutting training for energy efficiency: the concept of energy efficiency in buildings becoming a cross-cutting issue in all building workers qualifications;
 Priority measures
 Action plan
Requalification: specific programmes, targeted at unemployed workers, promoting the inclusion in and to EE and ER for building stock energy mainly rehabilitation.

- **Reinforce the flexibility of the training** upgrading of adult professionals skills, independently from age and employment state. Create optional short duration training units (UFCD). These optional training units can be used in initial VET programmes or trough continuing vocational training. Consider also e-learning without, practical component.
- **Programmes of requalification to emerging skills**, focus on main areas according to the background - electricity or hydraulic - allowing the requalification of the former to photovoltaic or wind installers and the latter to solar collector and bioenergy installers.
- **Upgrade training, transversally to all building sector**, by including cross-cutting UFCD. This upgrade should focus not only on new materials, new techniques and construction methods, new alternative solutions, but also on general knowledge and awareness for energy efficiency. The cross-cutting training units could be used in initial VET programmes (apprenticeship courses and vocational courses), adult courses (EFA) and continuing vocational training (certified modular training).
- **Revise and update training standards** of specific qualifications to include skills other than the currently considered (e.g. bricklayer, trim carpenter).
- **Create new UFCD** for specific areas, both for youngsters (in apprenticeship or vocational courses) and adults (EFA or certified modular training), in order to complement the current qualification offer. The lack of training offer is verified for some of the priority areas (e.g. windows installer, insulation workers).
- **Design/define partial certification of specific skills**, make it modular and enable to build skills through a certified modular training.
- **Revise qualifications offer at level 4**, considering the rising of compulsory education to the secondary education level, that affects mainly young people, in order to include competences in traditional areas such as bricklayer, carpenter or plumber, traditionally associated with level 2, taken into account the learning outcomes required by qualifications at level 4 and the need of these qualifications at the labor market.



- Definition of an **action plan** for the implementation of the identified measures (so far):
 - Professional profile for the energy efficiency of buildings in special facilities;
 - Requalification of electrical technicians for photovoltaic installations
 - Requalification of electrical technicians for lighting systems
 - Double qualification for solar collectors and bioenergy systems
 - Requalification for maintenance/management technicians
 - Electromechanic for renewable systems (Level 2)

- The current workforce which skills are related to EE and RES is estimated to be in the range of **55 to 65 thousand**.
- From those, as well as from others coming from first employment or unemployment, a total of **31.2 to 46.4 thousand** should still be trained.

- This roadmap identified, in order to accomplish the Renewable Energies Directive (2009/28/EC), the need to have specific training in the following technologies:
 - 1) photovoltaic (and micro wind), 2) solar thermal, 3) biomass boilers and stoves, 4) heat pumps and 5) shallow geothermal.
- Regarding building envelope and other energy systems, with the aim of promoting the energy efficiency in buildings energy use, the focus goes to:
 - 6) windows installers, 7) thermal insulation workers (including bricklayers), 8) HVAC and 9) boilers installers, 10) lighting systems electricians, 11) energy management and buildings operation technicians.

ACTION LINE	MEASURES	TARGET	ESTIMATED COST (k€)
Renewables for electricity	PV and wind installers	500-700	400-700
Renewables for heating and cooling	Solar thermal installers	8000-13000	6400-13000
	Installers of biomass boilers and stoves	3000-5000	2400-5000
	Heat pump installers	1000-2000	800-2000
	Shallow geothermal installers	50-100	30-100
Energy systems (other than RES)	HVAC installers	10700-11500	8560-11500
	Lighting	1400-2100	1120-2100
	Boilers installers	3000-5000	2400-5000
	Energy management & buildings operation	1100-2000	880-2000
Building envelope	Windows installers	1000-2000	800-2000
	Bricklayer and insulation workers	1450-3000	1160-3000
TOTAL		31200-46400	25-46 M€

- The action plan for the period between 2014-2020 consists of a set of **structural, operational and supporting measures**.
- The main target of the operational action plan stands on the current workforce relevant for EE and RES (67 percent of the total to be trained). However, requalification programs for unemployed (around 10 percent) are also a leading issue to be considered in the EE and RES training strategy.
- The investment cost for the set of operational measures is in the range of **25-46 million Euros**.




 Dissemination

 **Endorsement**

 Roadmap: strategy and action plan

 National Qualification Platform

 Status-Quo Report




- 16 letters of support (work in progress)
- 3 video testimonials
- Official information to:
 - Ministry of the Economy
 - Ministry of Education

Dissemination

 Endorsement

 Roadmap: strategy and action plan

 National Qualification Platform

 Status-Quo Report

- E-bulletin using the stakeholders mailing list (two pages document)
- 2 workshops: about 50 participants representing stakeholders and others





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GOVERNO DE
PORTUGAL

MINISTÉRIO DO AMBIENTE,
ORDENAMENTO DO TERRITÓRIO E ENERGIA