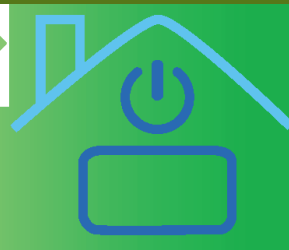




**ENergy Auditors Competencies  
Training and profiles**



# NATIONAL REPORT PORTUGAL

## ***ENACT Project***

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# INDEX

NATIONAL REPORT - PORTUGAL .....	1
Index.....	2
1. INTRODUCTION.....	3
2. INSTITUTIONAL .....	3
2.1. Nacional policies .....	3
2.2. Legislative framework and national qualification framework .....	5
2.2.1. EXPERT ON ENERGY CERTIFICATION OF BUILDINGS .....	6
2.2.2. LOCAL ENERGY MANAGER.....	7
2.2.3. SGCIE AUDITOR.....	7
3. TRAINING OF ENERGY AUDITOR .....	7
4. OTHER TRAINING .....	8
4.1. LOCAL ENERGY MANAGER .....	8
4.2. SGCIE AUDITOR .....	9
5. BEST PRACTICES .....	9
5.1. Implementation of EPBD Directive in Portugal - training and qualification of Energy Auditors for the Energy certification of buildings.....	9
5.2. Training of energy managers of central administration buildings and facilities .....	11
5.3. References, contacts and links .....	14

## 1. INTRODUCTION

This National Report is developed in the framework of ENACT project co-financed by ERASMUS + Programme and aims to present and supply information about the training of energy auditors or energy managers, as well as other professionals categories, including the system for qualification and certification.

The content of the report is structured in 3 main axes - institutional framework, training schemes/systems and best practices – with emphasis in the residential sector, with appropriated and/or if advisable information about other activity sectors.

This National Report, together with other national reports, will permit to have an overview of all involved countries and to identify possible areas for collaboration and/or sharing of expertise/experience regarding training of energy auditors.

## 2. INSTITUTIONAL

### 2.1. NATIONAL POLICIES

The national energy policies for complying with the targets of the EU 2020 strategy included the implementation of national action plans on energy efficiency (PNAEE) and renewable energies (PNAER), respectively for the periods of 2013-2016 and 2013-2020. Reference also should be made to the initiatives in the field of climate change challenges, namely the national climate change programme (PNAC 2020).

PNAEE and PNAER were recently revised and the Portuguese government took the decision to integrate them which will permit to proceed with a concerted action for the accomplishment of national and European targets, as well as to minimize the investment and strengthen the national competitiveness. The integrated revision of PNAEE and PNAER is based on the alignment of respective objectives regarding the primary energy consumption and of the necessary contribution of the energy sector for the reduction of greenhouse gas emissions.

### PNAEE

In this framework, PNAEE aims to boost the energy efficiency, mainly in the public sector, through the structural reduction of public spending and efficient use of resources. The consumption and cost reductions for business and residential sectors will grant additional resources to further domestic demand and new investments.

For the entities and services of the Public Administration, the Portuguese Government launched an initiative targeted to the development of Energy Services Companies (ESCO's) through its Public Sector Energy

Efficiency Program (ECO.AP) and the mandatory commitments of its Industry Intensive Energy Consumption Management System (SGCIE) for all industries with an annual consumption over 500 toe. The ESCO's market estimated stock value has a growing economic potential up to at least 1600 million euros by 2020 supported by the energy consumption profile for commerce, large residential buildings and industrial facilities.

In order to achieve concrete results from the development of these Plans and associated Programmes was created a set of tools and schemes which allow evaluating and monitoring the impact of the measures implemented. One of these tools is a barometer for energy efficiency which is managed by ADENE.

This Barometer, through a mechanism for evaluation and ranking of entities, promotes the competition between public authorities, comparing and disseminating information about the energy performance of services and bodies under direct and indirect administration of the state, through a series of indicators of energy efficiency.

In relation to energy efficiency, the PNAER estimates a global energy saving around 8,2%, which is close to the indicative target defined by the European Union of 9% of energy saving by 2016. The contributions for the energy savings are distributed by the several sectors of activity. The present Plan covers six specific areas:

- Transport
- Residential and Services
- Industry
- Public Administration
- Behaviours
- Agriculture

These areas include a total of 10 programmes, with a wide range of measures for energy efficiency, targeted for the energy demand and to reach the proposed objectives, which also can be quantifiable and monitored.

## PNAER

Based on PNAER assumptions, Portuguese renewable energy target for 2020 is the 5th most ambitious of the European Union, as it aims to reduce external energy dependence and reinforce security of supply, to be positioned in the top rank of climate change initiatives and to promote economic growth.

In 2013, over 57% of electricity consumption was generated through renewable energy sources and the Portuguese government is fully committed to continue its renewable growth. Within the new Renewable

Energy Strategic Plan (PNAER), the defined target is to increase the capacity of renewable energy on around more 5 GW by 2020.

In the other hand, the PNAER forecast that the quota of electricity from renewables will be higher by 2020 compared with the figure by 2010 (60% vs 55%), as well as the global target to reach that will be about 35% (before was 31%). In this frame, PNAER establish the focus in three big sectors:

- Heating and cooling
- Electricity
- Transport

The establishment of this 2020 time frame for the monitoring of the estimated impact on primary energy consumption, allows to forecast, in advance, the accomplishment of the new targets set by the EU of 20% reduction of primary energy consumption by 2020, as well as the overall goal above mentioned of reduction in primary energy consumption by 25% and the specific objective for Public Administration of 30% reduction. In general, it is expected a favourable evolution of the global goal of the contribution of renewables for the horizon 2013 -2020.

## PNAC

The national climate change programme for the period 2013-2020 (PNAC 2020) is an ongoing initiative that should define policies, measures and instruments aiming to respond to the mitigation of greenhouse gas emissions for sectors not covered by the European Union Emission Trade Scheme. In this frame, reference to the Portuguese Carbon Fund created in 2006, which is a Portuguese state financial instrument for acting on the carbon market to ensure compliance with national targets on climate change issues, making use of the flexibility of the Kyoto Protocol and supporting national projects to reduce emissions and contributing to improve energy efficiency.

## 2.2. LEGISLATIVE FRAMEWORK AND NATIONAL QUALIFICATION FRAMEWORK

This section is targeted to the following categories of energy auditors/energy managers:

- expert on energy certification of buildings
- local energy manager
- SGCIE auditor

## 2.2.1. EXPERT ON ENERGY CERTIFICATION OF BUILDINGS

The qualification of expert on energy certification of buildings proceeds from the transposition to the national legislation of Energy Performance Buildings Directive (Directive 2010/31/UE), from which was published the following legislation:

- **Decree-Law n.º 118/2013**, of 20 August, that integrates 3 regulations:
  - **System of energy certification of buildings (SCE)** – defines the management and duties of all agents involved in the application of building legislation.
  - **Regulation of HVAC systems (RECS)**- sets out a series of requirements applicable to services and residential buildings equipped with HVAC systems, which, in addition to defining the quality of the envelope and restricting energy consumption, also regulate the efficiency and maintenance of HVAC systems in buildings and determine that mandatory audits be periodically made to services buildings. This regulation also covers the quality of indoor air, including requirements determining the renewal air rates in indoor areas and the maximum concentration of the main pollutants.
  - **Regulation of thermal behaviour (REH)** - establishes quality requirements applicable to new residential buildings and small services without HVAC systems, namely as regards the characteristics of the envelope (walls, glazing, pavements and roofs), in order to prevent thermal losses and control surplus solar gains. This regulation imposes maximum energy consumption levels for climatization and domestic hot water production, clearly encouraging the use of efficient systems and lower-impact energy sources in terms of primary energy consumption. This regulation also determines the mandatory installation of solar collectors and evaluates the use of other renewable energy sources while rating the energy performance of the building.

The enforcement of these regulations is controlled at different points in time, throughout the lifetime of a building, and such checks are made by experts duly qualified for the purpose. In practice these agents, together with ADENE, make sure that the SCE stays operational. The most visible face of this work is the Energy and Indoor Air Quality Certificate issued by an expert for every building or part of it, which rates them as a function of their performance on a pre-defined scale of nine classes (A+ to G).

The most visible face of this work is the Energy and Indoor Air Quality Certificate issued by an expert for every building or part of it, which rates them as a function of their performance on a pre-defined scale of nine classes (A+ to G). Each certificate is issued by the expert by way of a supporting computer system and a central register of certified buildings has been created for this purpose.

- **Law n.º 58/2013**, of 20 August - regulates the access to the activity of the expert on energy certification of buildings.

- **Ordinance no. 66/2014**, of 12 March - establishes the thematic contents of the exam for the expert on energy certification of buildings.

### 2.2.2. LOCAL ENERGY MANAGER

The legislative framework of this professional expert is the Public Sector Energy Efficiency Program (ECO.AP), as defined by the Resolution of Cabinet Council no. 2/2011, and associated are 2 other legislative documents:

- **Resolution of Cabinet Council no.93/2010** – authorize the start of the works for the development of tools for climate changes politics.
- **Decree-Law no. 29/2011, of 28 February** – establish the legal framework of the energy efficiency management contracts.

### 2.2.3. SGCIE AUDITOR

The SGCIE Auditor profile and competences are defined under the Decree-Law no. 71/2008 and is the technician responsible to monitor and to ensure the accomplishment of mandatory commitments of the facilities and installations with intensive energy consumption (over 500 toe per year).

## 3. TRAINING OF ENERGY AUDITOR

### Structure and methodology

Under the law and ordinance above mentioned, the training of expert on energy certification of buildings is not compulsory. In fact, to be qualified as expert on energy certification of buildings, the candidate should fulfil the following requisites:

- degree on engineering or architecture
- 5 years of professional experience on activities related to buildings construction and/or project
- Approval on an exam provided by ADENE

After the fulfilment of the above requisites, the candidate should present to ADENE a formal request for the recognition as expert on energy certification of buildings. ADENE proceed with the verification of the request and validation, and then issue the professional title. There are two categories of experts:

- Expert for residential sector and small service buildings (PQ-I)



- Expert for commerce and service sectors (PQ-II)

### The type of training

As above mentioned, the training is not compulsory to obtain the qualification as expert on energy certification of buildings, but as one of the requisites is to get approval on an exam, ADENE, since the beginning of 2014, promoted training courses aiming to prepare and transmit the necessary knowledge for that evaluation. In this context, with a national coverage (Lisboa and Porto) and for each category, the training offers include the following courses:

- Certification of REH, with a duration of 7 days (56 hours)
- Course of RECS, with a duration of 4 days (32 hours)

The training is at a classroom, the pedagogic contents are accordingly the legislation above mentioned and the Course on Certification of REH includes an evaluation for those trainees that wish to be certified (in a voluntary basis) as a REH designer by a certifier entity.

As the training for these experts is voluntary, there is no need to request or to develop a process of recognition.

## 4. OTHER TRAINING

### 4.1. LOCAL ENERGY MANAGER

#### Structure and methodology

The training of Local Energy Manager is regulated by the Resolution of Cabinet Council no. 2/2011 which established ADENE as the entity responsible for this activity. The Local Energy Manager is the technician responsible for the energy management of the facilities and buildings of each entity or service of the public administration.

#### The type of training

ADENE, as the management entity appointed by the Portuguese government, from September 2014 to October 2014, developed more than 30 training courses, with a national coverage (North, Centre and South) and with duration of 5 days (40 hours).

The training was mixed, i.e., at a classroom and e-learning, the pedagogic contents are accordingly the legislation above mentioned.

## 4.2. SGCIE AUDITOR

### Structure and methodology

ADENE is the entity responsible for the recognition of SGCIE Auditor which can be a single person or a company. For that purpose, the candidates should present evidences regarding academic qualifications and professionals, as well as adequate experience for the tasks to be developed.

## 5. BEST PRACTICES

### 5.1. IMPLEMENTATION OF EPBD DIRECTIVE IN PORTUGAL - TRAINING AND QUALIFICATION OF ENERGY AUDITORS FOR THE ENERGY CERTIFICATION OF BUILDINGS

#### Framework and legislative background

The Decree Law 78/2006 of 4th April defined the operational rules for the system for energy and indoor air quality certification of buildings, and establishes that only qualified experts (or energy auditors) are allowed to issue certificates and carry out inspections to heating, ventilation and air conditioning systems (HVAC). In order to get such professional licence, experts should meet the minimum professional requirements that were set up on a Protocol dated 21 July 2006 between the Directorate-General of Energy and Geology (DGEG), the Portuguese Environmental Agency (APA), the Counsel of the Public Works and Transports (CSOP), and professional associations of Architects and Engineers.

The Protocol states that the recognition of a qualified expert, which is under the responsibility of the professional association, requires:

1. Full membership of professionals associations of Architects and Engineers.
2. Minimum of five years of professional experience, on the basis of peer-analysis of his/her CV, carried out by elected boards of the professional associations.
3. Attendance of recognized courses and passing a demanding national examination procedure that evaluates their knowledge about the technical issues of the building regulations and the details of the certification system itself.

The training activities were available in the three areas covered by the system and award different qualifications for accredited energy Qualified Experts:

- RCCTE - Regulation on thermal behaviour of buildings (residential and small non-residential)
- RSECE - Regulation on heating, ventilation, air conditioning (HVAC) systems in buildings - energy component (for large non-residential buildings)

- RSECE - Regulation on heating, ventilation, air conditioning (HVAC) systems in buildings – indoor air quality component (for large non-residential buildings)

### Training of trainers and of energy auditors

In Portugal, official training actions began in October 2006. The first courses were organized by ADENE- Portuguese Energy Agency, the SCE managing entity, and targeted to train the trainers of future qualified experts.

After attendance, including examination, the trainees could be qualified as accredited qualified expert (if the other minimum professional requirements were fulfilled) and accredited trainer of qualified experts. About two hundred (200) engineers and architectures have concluded and got one or both qualifications.

### Training of energy auditors

Once concluded the 1<sup>st</sup> phase of training for trainers, started the specific training courses for energy auditors, which were structured in two modules:

- three technical modules (minimum 30h, plus 3h examination), lectured by recognized organisations.
- two Certification modules (30 hours for RCCTE course and 48 hours for RSECE –E and RESECE QAI course, plus 3 days (from 12 to 16 hours for examination), lectured by ADENE.

The technical requirement for specific training courses regarding the technical modules were defined by ADENE and in this framework, has also the responsibility to analyse the applications from universities or accredited training institutions for recognition requests to organize training courses. During this period, universities or accredited training institutions all over the country were accredited to lecture the technical modules. In statistical terms, from September 2007 to December 2012, the main figures are as follows:

### Technical modules

- number of accredited training entities - 77
- number of carried out training courses for technical modules – 450
- number of trainees at the training courses for technical modules - 6350

### Certification modules

- a team of trainers composed by 30 trainers
- number of carried out training courses – 120
- number of trainees at the training courses - 2600

After the conclusion, with approval at all the exams, the candidates should submit their applications, including training certificates and curricula vitae, to the respective professional associations in order to get recognition as qualified experts.

Once approved into the system, experts are introduced as such in the on-line central registry and gain access to issue the certificates, with their own username and password. By the end of 2012, more than 1700 Qualified Experts were available in the market.

It is predicted that the Qualified Experts' professional license is valid for only 5 years, and it is subject to renewal pending proof of continued training and absence of malpractice.

### Training activity results and outputs: negative and positive aspects

The less positive aspects about the qualified experts training is that they cover essentially the regulation's thematics not focusing thoroughly on aspects such as best practices on energy and indoor air quality solutions available in the market.

As positive aspects, it should be highlighted the high level of training demand required to the qualified experts, that will assume the role of building's construction supervisor's in Portugal, assuring better construction in a more energy efficient way. Furthermore, making the training mandatory provided professionals with a more similar level of expertise.

## 5.2. TRAINING OF ENERGY MANAGERS OF CENTRAL ADMINISTRATION BUILDINGS AND FACILITIES

### Framework and legislative background

The National Action Plan for Energy Efficiency encompasses programs and measures considered essential for Portugal to meet the European targets. One of those programs is the Energy Efficiency Program in Public Administration ECO.AP that aims to achieve 30% energy efficiency by 2020, on agencies and departments of Public Administration, as well reduce gas emissions and establish a biggest stimulus into the economy through the creation of a legal framework of energy service companies (ESCOs). This program was launched through the Resolution of the Council of Ministers no. 2/2011.

In the framework of ECO.AP, there was one targeted to training of local energy managers (GLE); these technicians have the responsibility to support the implementation of ECO.AP and were selected by the several central public administration organisations.

### Training of trainers and of energy auditors

The training courses for GLE were managed by ADENE with the financing of POPH, which was the programme which implements the thematic agenda for human potential inscribed in the National Strategic Reference Framework (NSRF), the programmatic framework document for the implementation of the economic and social cohesion community policy in Portugal for the period 2007-2013.

Aiming to provide the trainees with competences and qualifications in the field of energy management of buildings and equipment of the Public Administration, the training had the following structure:

- Geographical coverage – North, Centre, Alentejo and Lisbon regions
- Duration – from September 2013 to July 2014
- Number of training courses – 30, distributed by the regions above mentioned, which was attended by about 600 hundred trainees.
- Programmatic contents and duration of the training – with a duration of 5 days (40 hours), the programme include the following themes:
  - programme ECO.AP
  - energy certification of buildings
  - energy concepts
  - energy characterization of the buildings
  - renewables (solar energy)
  - energy audits
  - energy efficiency plans
  - agreements for the management of energy efficiency and measurement and verification techniques.

## Control and monitoring

The overall control of the training was based in an evaluation mechanism, direct and final, at three different moments: ex-ante, ongoing and ex-post.

### 1. Main outcomes - relevant emerging scenarios resulting from national and EU initiatives

- 1.1. Institutional – based on the information gathered above, ADENE will prepare and/or develop a comparative picture of the status quo in each participant country.

1.2. Training – based on the information gathered above, ADENE will prepare and/or develop a comparative picture of the status quo in each participant country.

## 2. Conclusions: barriers, gaps and general recommendations

In Portugal, as mentioned before, there is a consolidated process for the training and qualification of energy auditor, namely at the building sector (residential and services). This was the result of several initiatives both from European Union and the Portuguese Government that was/is paying special attention to the energy sector, with focus on the energy efficiency and renewables.

Furthermore, it should be highlighted that the range of training was wide, as it covered not only the buildings, but also the industry and commerce, and was targeted to public and private sectors.

At that stage and taking in account the experience acquired and the lessons learnt, it should be noticed that the follow up and continuation of all this process is being made through the launch, in 2014, of a new initiative from the Portuguese Government - Portuguese Coalition towards Green Growth. This initiative aims “to assure simultaneously a long-term trajectory of budgetary responsibility, to fulfil a new agenda on structural reforms, and to provide selective and reproductive investments in areas that constitute the main driving forces of growth – knowledge, green economy and industrial policy”. In this framework, and regarding the energy theme, it should be featured two facts:

- renewable energies – Portuguese target for 2020 aims to reduce external energy dependence and reinforce security of supply, be positioned in the top rank of climate change initiatives and promote economic growth.
- energy efficiency – the new energy efficiency strategic plan has the objective to reduce in 25% the consumption of primary energy by 2020.

In order to accomplish with the targets above mentioned, it is forecasted and mandatory to reinforce the training to improve the competences and qualifications of human resources in all activity sectors, towards to economic green growth and green job creation. This is the main recommendation.

### 5.3. REFERENCES, CONTACTS AND LINKS

- System for the Energy Certification of Buildings - <http://www.adene.pt/sce>
- National Plan for Energy Efficiency <http://www.adene.pt/programa/pnaee-2016-plano-nacional-de-acao-para-eficiencia-energetica-2016>
- Energy Efficiency Program in Public Administration (ECO.AP) - <http://ecoap.adene.pt/>
- Management System of facilities with high energy consumption (SGCIE) - <http://www2.adene.pt/pt-pt/SubPortais/SGCIE/Paginas/Homepage.aspx>
- Portuguese Coalition towards Green Growth - <http://www.adene.pt/iniciativa/compromisso-para-o-crescimento-verde>
- Academia ADENE (training of energy auditors) - <http://www.academiaadene.pt/>
- System for the energy labelling of products - <http://www.seep.pt/pt-PT/Paginas/default.aspx>
- Legislation - <http://www.adene.pt/legislacao>
- Financing instruments - <http://www.adene.pt/financiamento-1>
- Studies and Reports - <http://www.adene.pt/estudos>