Energy Performance Certification in Armenia

BUILDING PARTNERSHIPS FOR ENERGY SECURITY

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The challenge

To combine existing experience in region and in EU

into an efficient EPC system for Armenia

Armenian Experience

Armenia has already started to implement several initiatives.

This includes:

- *Demonstration*
- *Calculation procedures*
- *Existing legal framework for energy efficiency*

These experiences should be basis for the system

And combined with best European experience

Demonstration – UNDP Energy Passport

This project systematically:

- Collected of data

- Worked with the development and design of a certificate

- Data for buildings was collected by the GEF UNDP office

- Evaluated the energy consumption based on current standards

The development was however:

- Strongly adapted to the concrete examples / residential blocks

- An adaptation to a more general standard would require amendments and further development of a methodology / rules.

- Lessons learned from the UNDP project should play a central role in the development of the Armenian EPC system,

Existing Calculation

Calculation procedures:

- Many standards already exist in Armenia.

- Some of the important norms are Construction norms of the Republic of Armenia (RACN) and Construction norms established by the USSR's GosStroy (SniP).

Some Key standards

- RACN II-7.01-96 Construction climatology (under revision);
- CNM II-7.101-98 Construction of settlements, buildings and structures under the climatic conditions of the RA;
- RACN II-7.02-95 Construction thermal physics of envelopes; design norms;
- BCM/CNM II-7.102-98 Construction thermophysics of envelopes (Manual on RACN II-70.2-95 norms/codes);
- RACN II-8.03-96 (MCH 2.04-05-95) Artificial and natural lighting;
- RACN IV-12.02.01-04 Heating, ventilation and air-conditioning
- SNiP 2.03.13-88 Floors;
- SNiP 2.08.01-89 Residential buildings;
- SNiP 2.08.02-89 Public buildings and structures;
- SNiP 2.09.04-87 Administrative and residential buildings; and
- SNiP 3.04.01-87 Insulation and decorative coatings.

Existing legal framework for energy efficiency

Armenia has different elements in place for a legal framework;

- *Energy law of the republic of Armenia:*

  The energy sector in Armenia is regulated by the Energy Law of the Republic of Armenia (adopted in 2001)

- *The law of the Republic of Armenia on Energy Efficiency & Renewable Energy*

  This law on EE and RES (adopted in 2004) sets up principles for Energy Efficiency and use of Renewable Energy

- *Adaptation of National Program on Energy Saving and Renewable Energy*

  A National Program on Energy Saving and Renewable Energy was adopted in 2007.

- *National Energy Efficiency Action Plan.*

  A National Energy Efficiency Action Plan was developed in 2011.

New Legislation

- ***Amendment to the Law on Energy Efficiency and renewable energy***

- Amendments to the law on energy efficiency and renewable energy is currently in the parliament.

- This increase the ability of the authority to set requirements for certification and energy efficiency measures for buildings.

- Can be used to set rules for mandatory EPC certification

- It is assumed that this law will be adapted soon

- This will serve as main basis for the system and the legal framework.

Best practice examples

- Building certification schemes have existed in some European countries for a long time
- All 28 MS have implemented the EPBD's mandatory EPC requirements and hence have large experience set up building energy performance certification (BPIE, 2010).
- Lessons learned and experience gained by these countries can be used as good practice examples.
- Building energy certificates in the EU was developed as a political instrument to assist the building sector and governments to reducing the energy consumption.

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PROGRAMME FUNDED BY THE EU
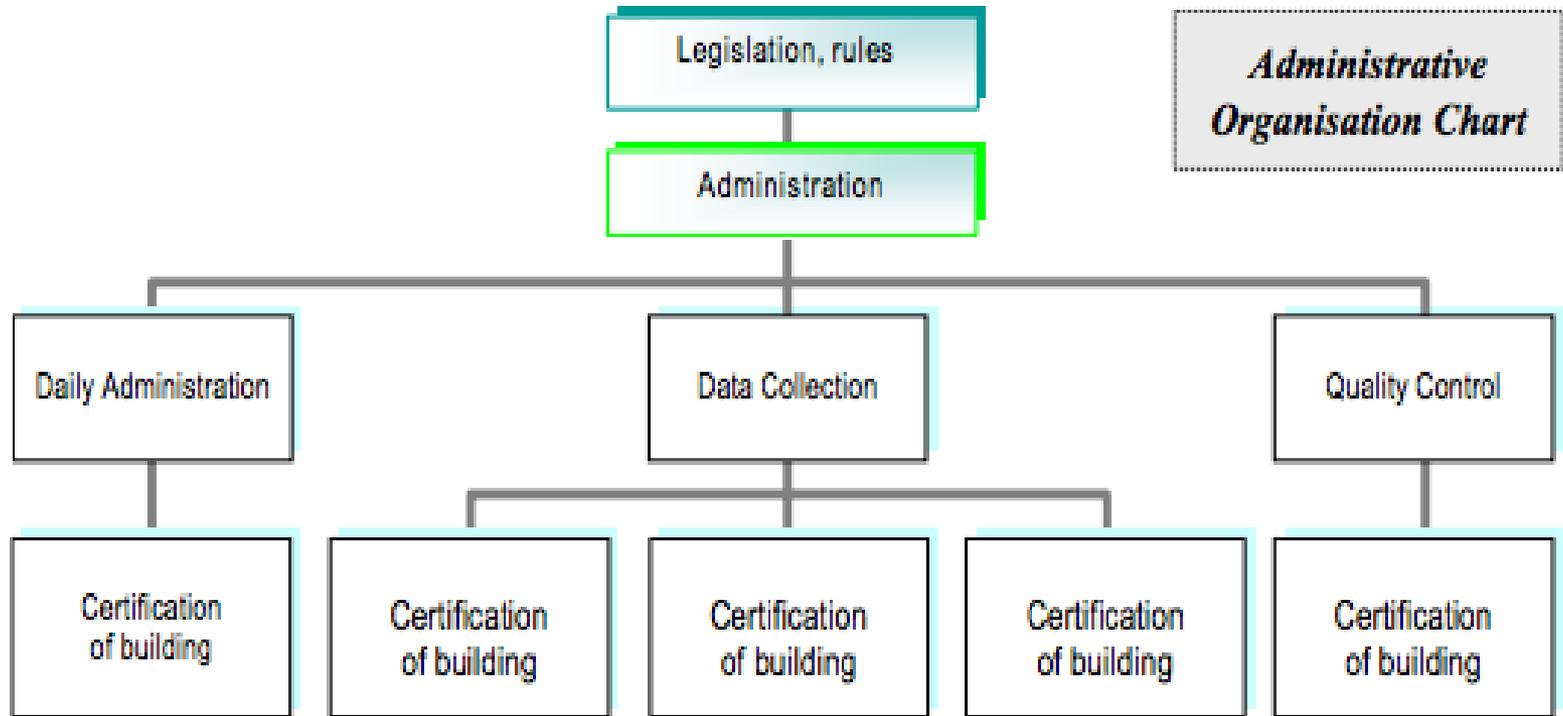
Planning the Certification System

- Successful certification systems need to be based on the anticipated benefits and to be implemented in close connection with key stakeholders.

- Well-functioning management programmes must include good control and monitoring systems.

- EU countries that have successfully implemented EPC schemes followed some basic steps: Plan, Implement, Monitor and Evaluate (IEA Policy Pathway, 2010).

- Many decisions need to be taken in planning phase.

Needed functions

- Necessary Functions of a building energy certification scheme (Source: CA EPBD, 2007)

Careful planning and realistic timescales

Some early steps are a prerequisite for a successful programme.

- **Define the terms of reference**
- **Establish the policy framework and action plan**
- **Secure the necessary resources**
- **Provide for training**
- **Raise awareness early**
- **Collect, review and disseminate data**
- **Assess quality and compliance**
- **Communicate the results**
- **Evaluate the scheme**
- **Adapt the scheme as needed**

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Certifying Building types

- Certification schemes in Europe rate the efficiency of all types of buildings.

- Most EPC labels for buildings use similar layout for all buildings.

- Energy certification of a new building in the European Union often demonstrates the compliance with the national building code

- For existing buildings, the certification can assess the performance and provide information on the efficiency and saving options.

- This makes it possible to compare the standards of different buildings when on sale or rented

- Making it easier for the consumers to make the right choice.

- Documents possible saving opportunities.

Compliance with requirements

Countries have found different ways to ensure the quality of certification by:

• Requiring on-site inspection during and after the construction process

• Providing adequate training to inspectors, including the requirement for a qualification to inspect

• Setting up independent control systems/ Spot checks

• Imposing a monetary fine – paying for the systems

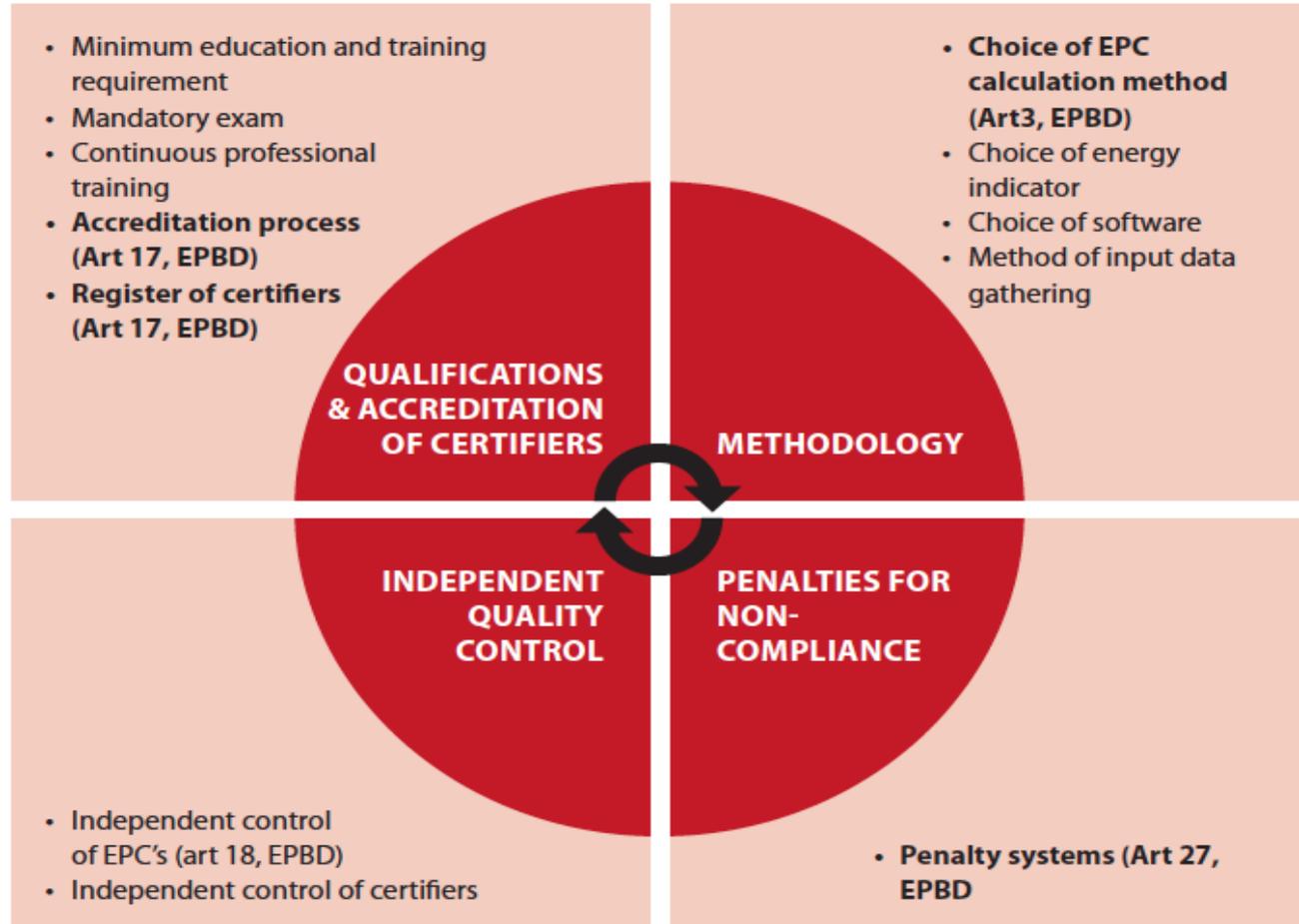• Recertification or suspension of the certifier's licence

The quality assurance of EPCs and certification mechanisms is deemed by the MS as the most important aspect for the successful implementation of the certificate system,

The credibility of the schemes is destroyed if the quality is low and this will prevent the future use of EPCs in (CA EPBD, 2013).

compliance with the certification methodology

- Minimum education and training requirement
- Mandatory exam
- Continuous professional training
- **Accreditation process (Art 17, EPBD)**
- **Register of certifiers (Art 17, EPBD)**

- **Choice of EPC calculation method (Art3, EPBD)**
- Choice of energy indicator
- Choice of software
- Method of input data gathering

QUALIFICATIONS & ACCREDITATION OF CERTIFIERS

METHODOLOGY

INDEPENDENT QUALITY CONTROL

PENALTIES FOR NON-COMPLIANCE

- Independent control of EPC's (art 18, EPBD)
- Independent control of certifiers

- **Penalty systems (Art 27, EPBD**

Elements of the quality assurance of EPC systems. (BPIE, 2010)

Competences of Certifier

The EU MS broadly agree:

• The competence of the certifier is one of the most influential factors that determines the quality and cost of the certificate (CA EPBD, 2011)

• 20 of the 28 MS have opted to set a compulsory exam that checks the certifiers' level of competence.

• This training must be adapted to previous skills

• Require continuous training.

• Possibility of removing approval.

Databases and certification

- Database-centred systems are a prerequisite for the management of energy performance certificates and collect the data acquired.

- Databases require minimum costs and allow for transparency and fraud prevention.

- Most EU MS have established centralised EPC registers.

- EU MS agree that a central database is the essential foundation for monitoring the information collected (CA EPBD, 2013).

- Robust and ambitious energy certification schemes provide decision makers in the building and property sector with trusted information on the building stock

- And hence aids governments in realising national energy and CO_2 targets.

Supportive measures are essential

- Linking supporting measures to the certificate is the most efficient way of ensuring certification schemes are successful and achieve impact.

- Impact of the certification scheme can be increased when linked to energy requirements in building codes and financial incentives.

- Many financial instruments exist in Europe and many EU MS use their EPCs as a means of accessing finance to support energy efficiency in buildings.

- Many countries use EPC to incentivise to go beyond the minimum standards for building codes.

Adaptation to Armenia

- Lessons learned in EU MS can to a high extend serve as basis and inspiration for the development of similar systems in Armenia,

- But none of these systems can be directly transferred or copied directly in Armenia.

- Lessons learned, systems in EU Member States and common standards can therefore be used as part of the development of certification systems in Armenia,

Buildings covered by the certification

- In the European Union, all buildings for residential and non-residential use are included in the EPC scheme.

- Buildings need certification by construction, sale and rental – for large public buildings regular inspection.

- This might also be **the end goal in Armenia**,

- But given the current situation, the costs of energy, the building stock in general and the overall level of the industry **it seems too dramatic to implement such a comprehensive system in one go.**

Start more slowly - stepwise

- Start with some buildings and develop systems, capacity and acceptance stepwise.

- Different types of building were discussed during the first mission in Armenia and several building types came up in the different ministries.

- Some elements, which could seem interesting at the beginning, could be large public buildings, buildings receiving public support or new constructions.

- Multiple story residential building with high-energy demands could also be a very beneficial as these have large potentials and the energy efficiency improvements

Adaptation of procedures

- *Develop Calculation procedures based on existing standards*

  Existing standards cover many elements of energy performance but there are also missing elements, which needs to be developed

  There is need for overreaching standard combining these

- *Develop labelling certificates based on current experience*

  The existing labelling certificates needs to be developed into certificates that can cover all relevant structures

  Scales should be developed based on existing levels and should leave room and possibility for improvements

Training

- **Select qualified experts and train them well using independent structures**

  Certifiers need to have sufficient skills and also need to be trained in the process of labelling and calculation.

  The need for training will depend on the choice of experts to be appointed in the scheme.

  Training and testing should be done by impartial institutions.

- **Develop Armenia specific handbooks and tools**

  Efficient tools is a key to reduce costs and to increase quality as time consumption will be reduced.

Control and central register

- **Make a central register system**

    A central register is important both to use data and to ensure quality

    Good computer tools can ensure low cost for reporting

- **Pay well attention to quality assurance**

    Experience from EU Member States shows that quality control is a key element of an EPC system.

    This needs to include independent control of certification and a check of certificates.

    Often systems are combined with penalties, meaning that experts can loose the right to issue certification.

Setting up a Roadmap

	Clarification / Concept	Development of systems	Training of Experts	Implementation	Evaluation	Successive Upgrades
Overall System	Central questions on scope, which are mandatory etc.	Development of procedures	Training in key parameters	Information for the public	Evaluation of system	Decision on upgrades and implementation
Certificate	Central decisions on certificates and need for adaptation	Development of certificates and scales		Registration of certificates	Evaluation	Implementation in changes in certificate
Calculation	Check on need for change and new development	Development of calculation procedures and tools	Training in use of tools			Improvements of calculation methodology
Frame Work	Decisions on set up and responsibilities	Development of databases, quality control		Quality Control	Evaluation of framework and quality	
Indicators	Development of action plan / roadmap	Design of and adaption systems, tools and rules	Number of trained experts	Number of certificates, knowledge to system	Evaluation report and decisions on actions	Implementation of changes Improved satisfaction