



Sustainable Energy Connectivity in Central Asia



Funded by  
the European Union

Training workshop “Studying international practices in implementation of innovative energy efficiency technologies in the electric power industry. Methodology, goal and objectives of electricity and heat consumers energy survey”

SEIT building, 62 Bayram Khan st, Mary, 13-18 March 2024

**International practices in implementation of innovative energy efficiency technologies. Experience of the Republic of Latvia in implementation of energy efficiency technologies in public buildings**

Ilze Purina, Key Expert, SECCA







# WHY ENERGY EFFICIENCY FIRST?



Funded by  
the European Union



# Energy efficiency first principle (1)

- **Energy Efficiency** is one of the key pillars not only to meet EU's climate objectives but also to reduce dependence on fossil fuels and increase security of supply and the use of renewable energy
- **Energy efficiency first (EE1st) principle** is generally understood as a guiding principle for energy-related policymaking, planning, and investments
- The principle aims to treat energy efficiency as a source of energy in its own right in which the public and the private sector can invest ahead of other more complex or costly energy sources
- This includes giving priority to demand-side solutions whenever they are more cost-effective than investments in energy infrastructure to meet policy objectives

# Energy efficiency first (EE1st) principle (2)

- The EE1st principle was formally introduced into EU legislation in the Governance Regulation (European Union 2018), which includes a formal definition and **requires Member States to report on the implementation of EE1st in their National Energy and Climate Plans (NECPs)**
- In essence, it is meant to **consider and prioritise** investments in both:
  - demand-side resources (end-use energy efficiency, demand response, etc.)
  - supply-side energy efficiency**whenever these cost less or deliver more value** than default energy infrastructure

# Role of Building stock

- Buildings account for approximately **40% of final energy consumption**
- Investing in EE measures in buildings can yield **substantial energy savings**, while **supporting economic growth, sustainable development and creating jobs**
- Greater use of **energy-efficient appliances and technologies**, combined **with renewable energy**, are cost-effective ways of enhancing **the security of energy supply**





# TO START WITH - CENTRAL GOVERNMENT BUILDINGS



Funded by  
the European Union



# Building stock

- Public buildings, incl. Central Government Buildings
- Commercial sector buildings (offices, etc.)
- Industrial Buildings
- Residential buildings
  - Multi-apartment buildings
  - Family houses



**Each group/ type of buildings has different features - ownership, operation and maintenance models, etc.**

# Purpose of Article 5 of EU Energy Efficiency Directive

## EU EED 2012, Article 5 sets the renovation requirement for Central Government Buildings:

- it is mandated to renovate annually **3%** of the total area of heated and/or cooled **buildings owned and occupied by the central government**
- these renovations must ensure that buildings meet at **least the minimum energy performance requirements**
- initially, this requirement applies to buildings with a total useful floor area over **500 m<sup>2</sup>**, which is later reduced to **250 m<sup>2</sup>**

## The rationale behind the Article 5 implementation:

- **Leadership and Exemplary Role:** it positions public sector buildings as energy efficiency leaders, mandating renovations to meet energy performance standards, thus setting an example for the private sector and the public
- **Economic and Environmental Benefits:** boosting energy efficiency in buildings lowers public spending on energy, freeing up the state budget for other priorities while also yielding environmental gains through reduced energy consumption and carbon emissions, supporting the goals for sustainable development and climate change mitigation
- **Stimulating the Market for Energy Services:** the directive demands public building renovations, boosting demand for energy services and fostering innovation, job creation in the green economy, and new business models needed to spread good practices





# Main steps for promotion of EE in building sector

- It is recommended:
  - to start up with selected, prioritized building categories** such as **offices for Central Government Building Stock (CGBS)** and **step-by-step expand** and include more building categories within CGBS to start **with the poorest energy performance buildings to be a priority for energy efficiency measures**, where cost-effective and technically feasible
- The building may be considered as a whole, including the **building envelope, equipment, operation and maintenance**
- **After** renovation buildings **must meet minimum energy performance requirements (MEPRs)**
- Usually a **Program for increasing the energy efficiency of CGBS** is developed



# Central Government Building Inventory (CGBI)

- Implementation should start with establishing a **Central Government Building Inventory (CGBI)** - starting with buildings with a useful area above 500 m<sup>2</sup>, extending to above 250 m<sup>2</sup>
- **CGBI** shall contain information of **total floor area of the building** and **energy performance of each building**
- **CGBI** should be made publicly available and updated each year
- Main problems:
  - Definition of central government institutions
  - Information on energy consumption





# Main criteria for selecting buildings for renovation

**Owned by the  
Governmental institution**  
(excluding rented)

**The building is foreseen to  
be used for more than  
10 years**

(There are no plans to sell or  
demolish the building, there is  
the basic need for use)

**It does not meet the  
Minimum Energy  
Performance Criteria**

**Feasibility to achieve  
energy savings**

(regular construction vs  
complex architecture vs  
cultural heritage)

**Amount of energy savings  
per investment**

(cost-benefit ratio)

...







# A WAY FORWARD – TO ALL PUBLIC BUILDINGS



Funded by  
the European Union



# Upcoming changes with EED 2023

## EED 2018\*:

### **Article 5: Exemplary role of public bodies' buildings**

- **Renovation:** 3% of government buildings (>250 m<sup>2</sup>) renovated yearly for energy standards
- **Priority:** Target poorest performing buildings first
- **Exemptions:** Historic, military (with exceptions), and religious buildings
- **Flexibility:** Excess renovations credited; replacements for demolished buildings qualify

\*Not all requirements reflected

\*\* Not yet transposed to EU MS national legislation

## EED 2023\*\*:

### **Article 5: Public sector leading on energy efficiency**

- **Annual Reduction:** Public bodies to reduce energy consumption by 1.9% yearly
- **Exclusions:** Possible to exclude public transport and armed forces
- **Exemptions:** Units with <50,000 population (till 2026) and <5,000 (till 2029) exempt
- **Lifecycle and Performance Considerations:** encourage consideration of lifecycle carbon emissions and wider benefits

### **Article 6: Exemplary role of public bodies' buildings**

**Renovation:** 3% of public bodies' buildings floor area to be renovated to nearly zero-energy/zero-emission standards annually

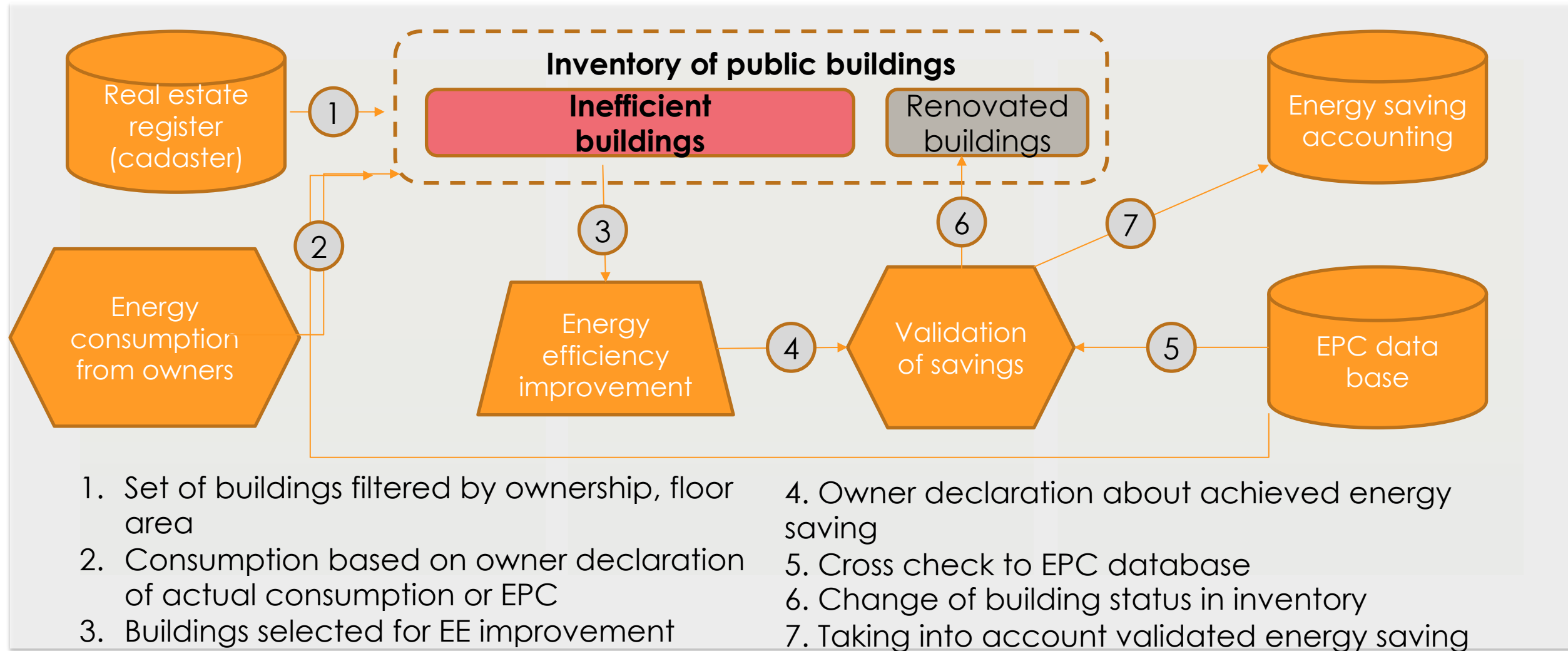
- **Selection:** Based on cost-effectiveness and technical feasibility
- **Exemptions:** Social housing, historically significant buildings, military buildings, and places of worship
- **Negotiations:** For leased buildings to meet standards
- **Credit for New/Replaced Buildings:** Towards the renovation rate if more energy and CO<sub>2</sub> efficient
- **Inventory:** Establish/update biennially an inventory of public buildings over 250 m<sup>2</sup>



Funded by  
the European Union



# Example of an operational Public Building Inventory linked to EPC DB (Based on current practice in Lithuania)



# Evolution of implementation of EE solutions/ technologies in LV

- 1) **Shallow/step-by-step renovation of buildings** - investment decisions are based on simple payback period calculation (replacement of windows, insulation of walls, etc.)
- 2) **Deep/complex renovation of buildings** - investment decisions are based on cost-benefit analysis (deep renovation, incl. ventilation system, etc.)
- 3) **Renovation to meet Minimum Energy Performance Requirements (MEPRs)** - investment decisions are based on cost-optimal studies
- 4) **Nearly-zero Energy Buildings (NzEB)**
- 5) **Zero-emission buildings (ZeB)**
- 6) **Passive House (PH)**

Start with energy performance requirements for **new buildings** followed by requirements for **existing buildings/ renovation**



# The upcoming Building Energy Performance Directive will introduce various changes

