Ministry of Energy and Water Resources
of Republic of Tajikistan

Green Diplomacy Week – a global just energy transition
EU-Central Asia Sustainable Energy Days

International Conference
Energy Efficiency in Tajikistan: prospects and challenges
Dushanbe Serena Hotel, 25-26 October 2023

Energy performance certification of buildings – role, key elements and eu best practices

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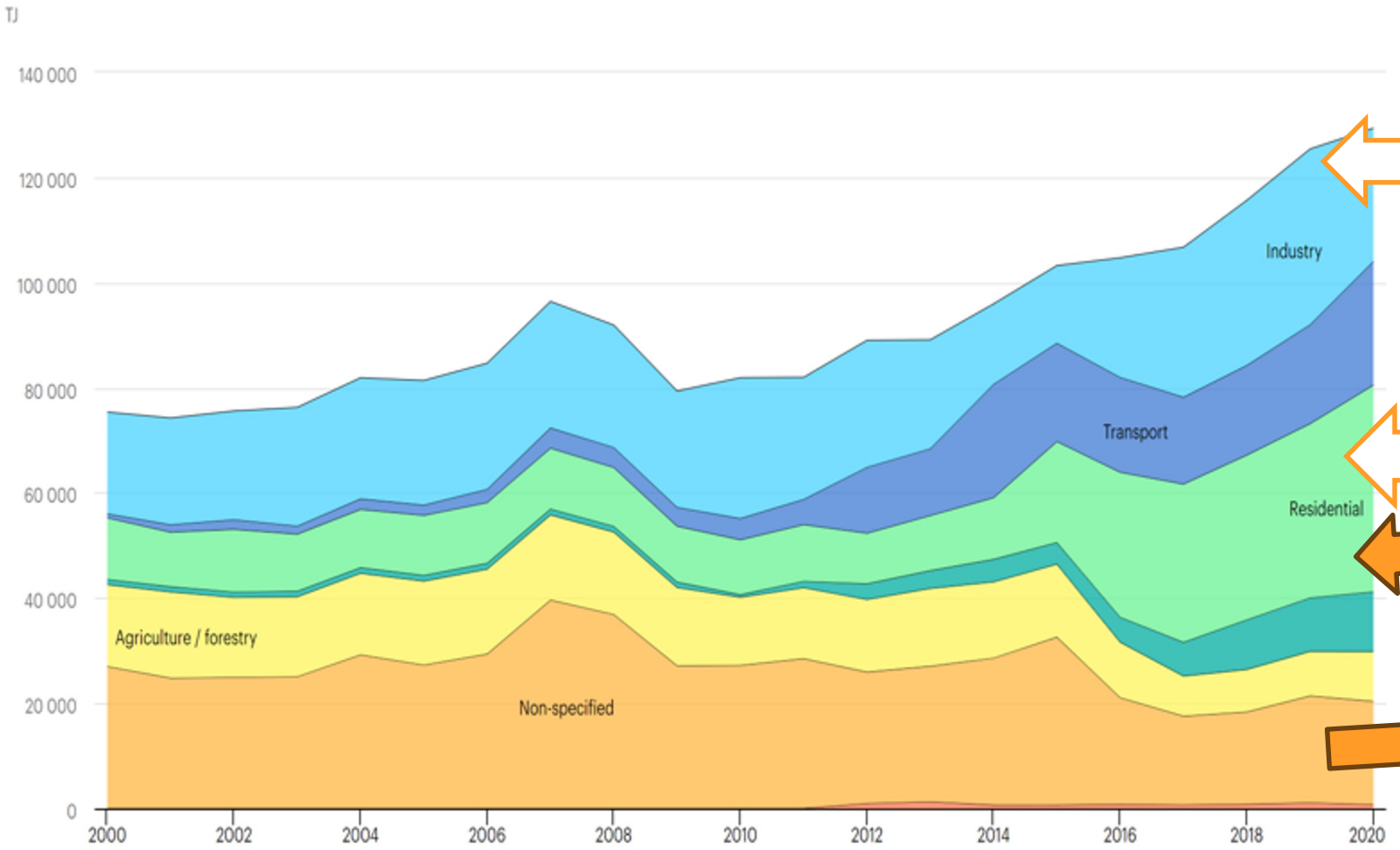
THE OUTLINE OF PRESENTATION

- Why the building sector is important in Tajikistan?
- How do you understand what EPC is?
- Why should we care about energy efficiency if we have a low-carbon energy supply?
- How may Energy performance certification (EPC) help?
- What are the main approaches to defining the performance of a building?
- What benefits does it bring to the country's economy?
- What makes people demand EPC?
- How can EPC demand be stimulated from the policy level?
- What infrastructure is needed to run the EPC system?

THE BUILDING SECTOR IS THE LARGEST ENERGY CONSUMER IN TAJIKISTAN



2nd largest sector - 7.03TWh

Largest energy-consuming sector **10.91 TWh 30%**

Part of this may be related to Biomass consumption in the Residential sector.

Source: https://www.iea.org/countries/tajikistan

EVEN WITH LOW CARBON ENERGY SUPPLY ENERGY EFFICIENCY PROVIDES BENEFITS

ENERGY EFFICIENCY IMPROVEMENT

- Efficiency ensures optimal use of RES
- Reduced energy demand decreases infrastructure costs and prolongs RES system's lifespans
- Efficiency reduces the scale RES of installations needed
- Energy-efficient buildings reduce grid loads, ensuring stability and resilience during supply interruptions

SUSTAINABLE & OPTIMIZED ENERGY

Using energy wisely with renewables saves money, helps nature, strengthens our systems, and prepares us for a green future

RENEWABLE ENERGY SOURCES UTILIZATION

- Renewables, though sustainable, aren't infinite
- While renewables are cleaner, their production has environmental costs

ENERGY PERFORMANCE CERTIFICATION SHOULD BE UNDERSTOOD AS RATING SYSTEM GIVING MARK FOR A BUILDING FOR THE PERFORMANCE

ENERGY PERFORMANCE CERTIFICATION is a rating* scheme to summarize and express the performance of the building in a simplified way.

ENERGY PERFORMANCE CERTIFICATE (EPC) is a document that shows the energy performance of a building. It provides information on the building's energy consumption (calculated or measured), and additional information like carbon dioxide emissions, and gives indicative recommendations on how to improve its energy performance

***Rating** could be understood as a marking system used in school:

10 (A) – the best

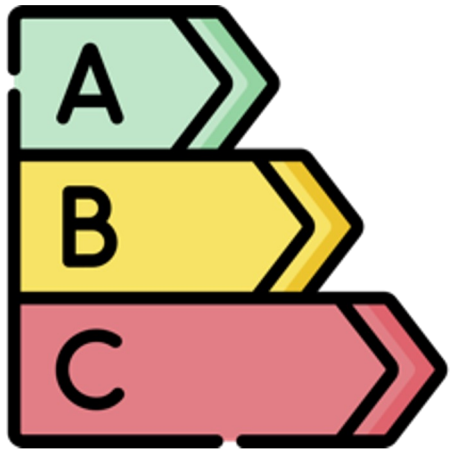
….

….

1/0 (G) – the worst

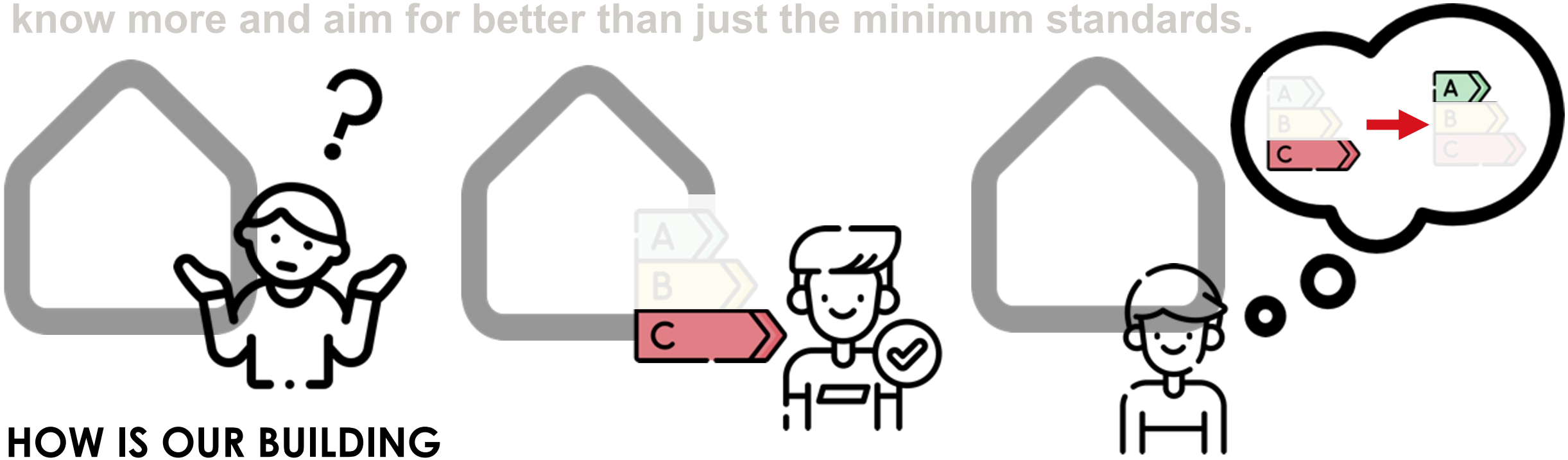
To have a rating for building performance, we should define:

- What criteria or values the best performer should satisfy
- What are the minimum requirements to be acceptable?
- When is the lowest rating assigned?



ENERGY PERFORMANCE CERTIFICATES MAKE BUYERS AND OWNERS LIVES EASIER BY INFORMING THEM ABOUT THE STATE OF THE BUILDING

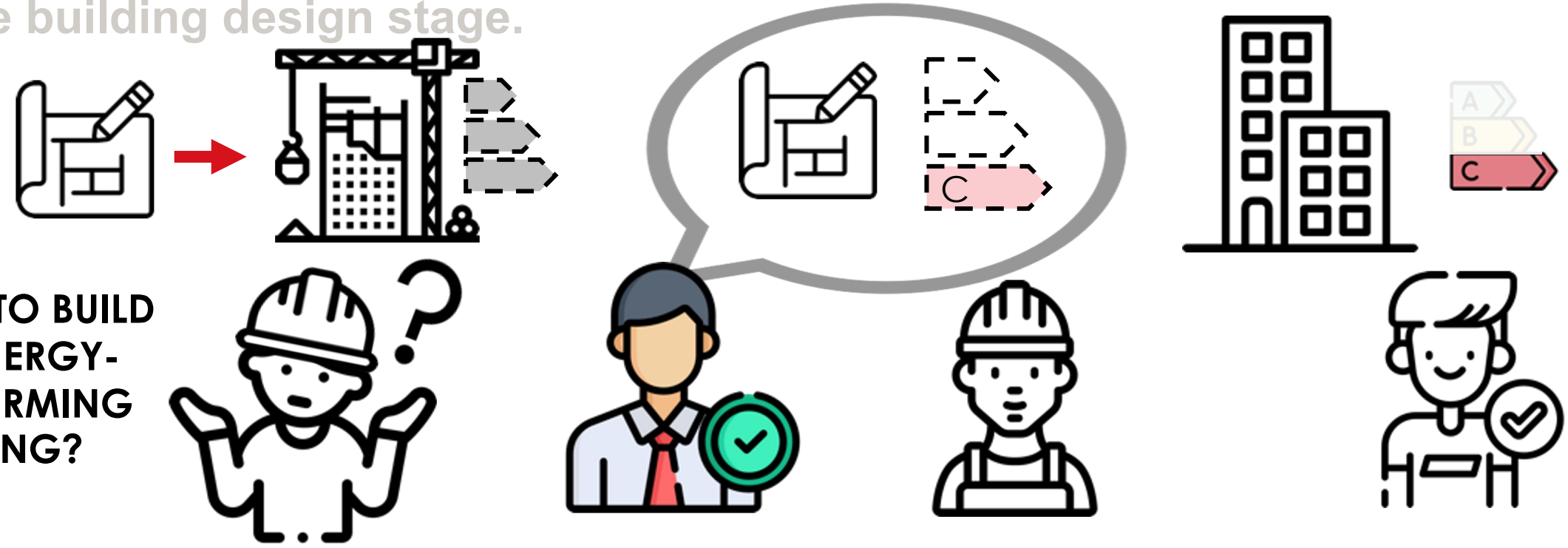
Energy Performance Certificates (EPCs) make it easier to understand how good in terms of energy consumption the building is. They help customers know more and aim for better than just the minimum standards.



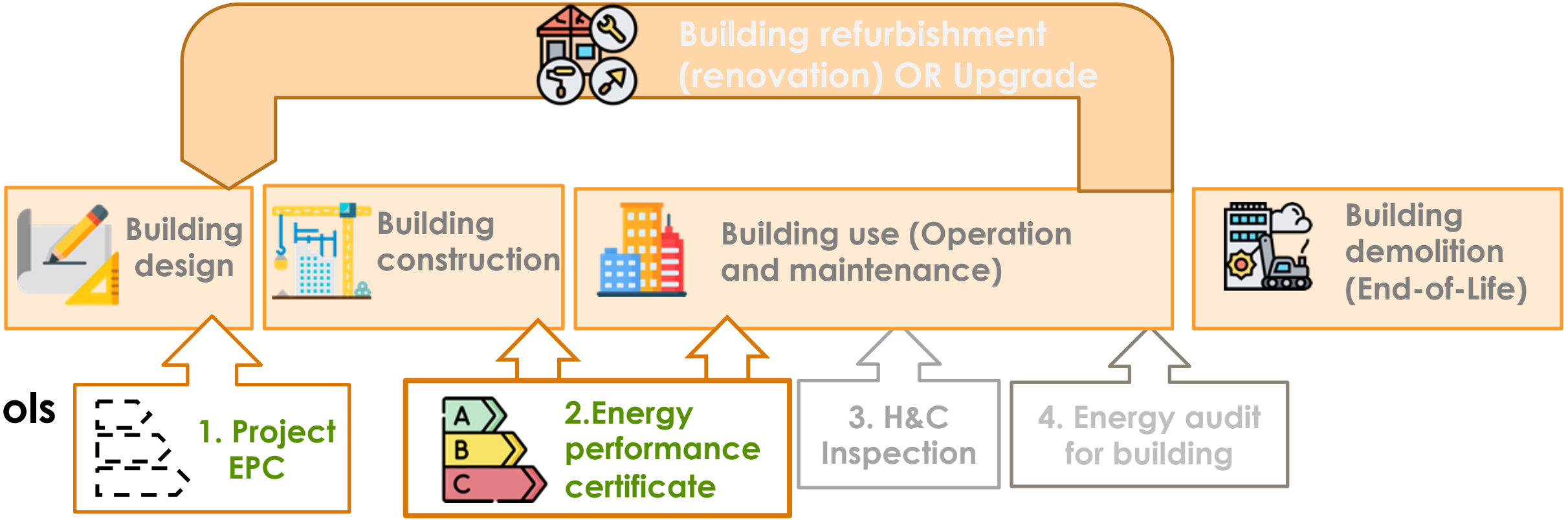
HOW IS OUR BUILDING PERFORMING?

ENERGY PERFORMANCE DESIGN DESCRIBES HOW THE BUILDING SHOULD BE BUILT TO MEET ENERGY PERFORMANCE REQUIREMENTS

Energy Performance Design (project EPC) sets the requirement how building should be built if specific energy performance class should be reached. It ensures that energy performance goals are set and detailed since the building design stage.



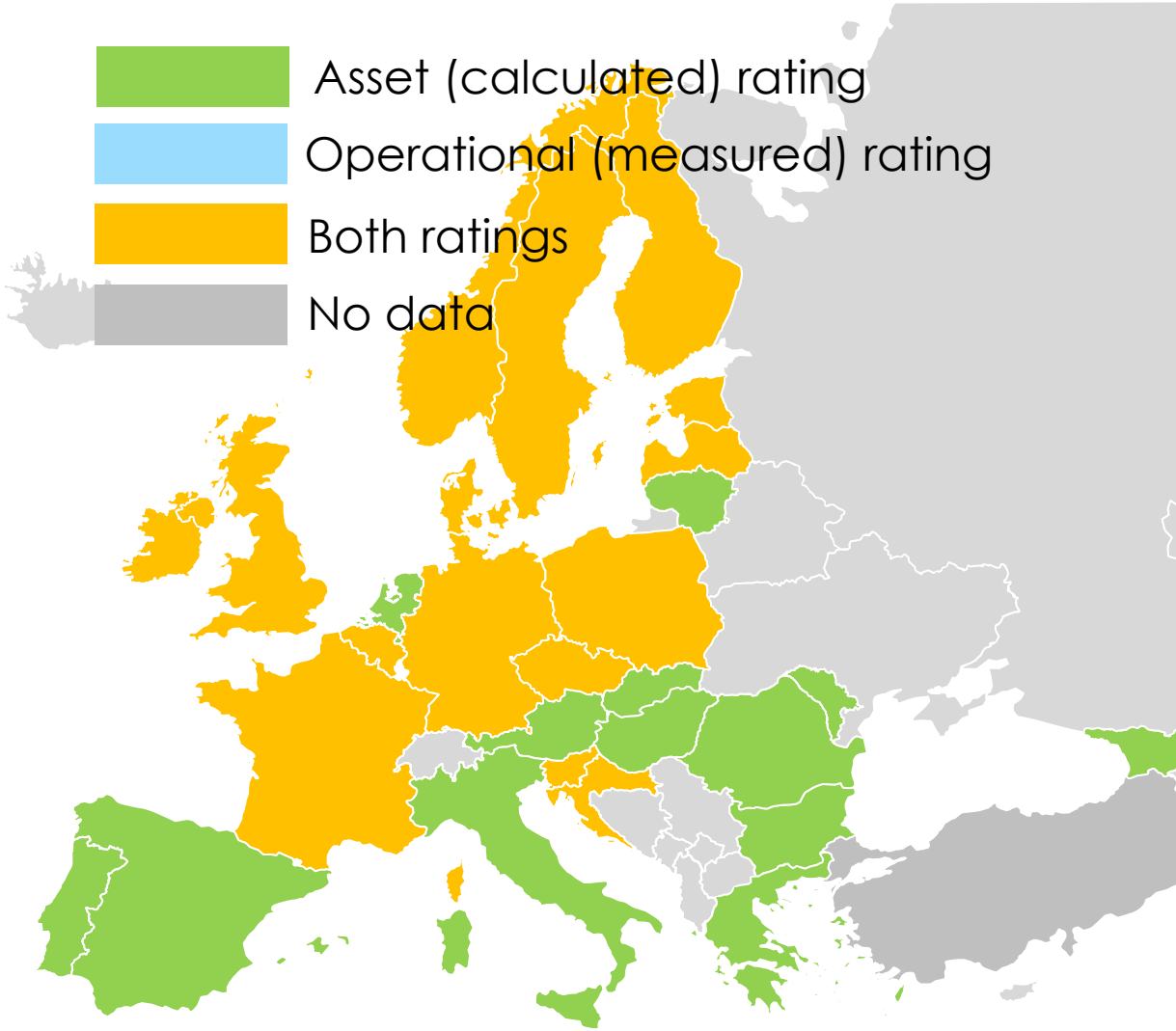
ENERGY PERFORMANCE CERTIFICATION HELPS TO SET AND CORRECT THE COURSE OF BUILDING PERFORMANCE IN ITS LIFE CYCLE



THE PERFORMANCE OF THE BUILDING COULD BE EXPRESSED BY CALCULATING OR MEASURING THE PERFORMANCE

A methods that evaluates a building's **energy performance** based on:

CALCULATED (ASSET) rating	MEASURED (Operational) rating
Rely on **built-in design and construction** information. This method uses **standardized conditions** and **calculation procedures** to estimate the theoretical **energy needs**, without considering actual operational patterns.	Rely on **actual energy consumption** data obtained from **direct measurements**. It reflects real-world **energy use**, influenced by **occupant behaviour**, **maintenance**, and **external influences**.



THE CONSTRUCTION SECTOR IS POSITIVELY IMPACTED BY BETTER UNDERSTANDING OF ENERGY PERFORMANCE CERTIFICATES

- Informed Decision-making for Buyers and Renters
- Property Valuation and Pricing
- Demand Shaping Through Positive User Experience
- Facilitating Sustainable Financing for Buyers
- Stimulation of building modernization

Stimulation from real estate sector

- Demand for Energy-Efficient Construction Materials and Products
- Upskilling and Training for Construction Workers
- Enhanced Competitive Advantage for Proactive Construction Companies:

Stimulated transformation & additional growth of the construction sector

WILLINGNESS TO USE EPC IS INFLUENCED BY MULTIPLE FACTORS

TRUST IN PROMISED RESULTS

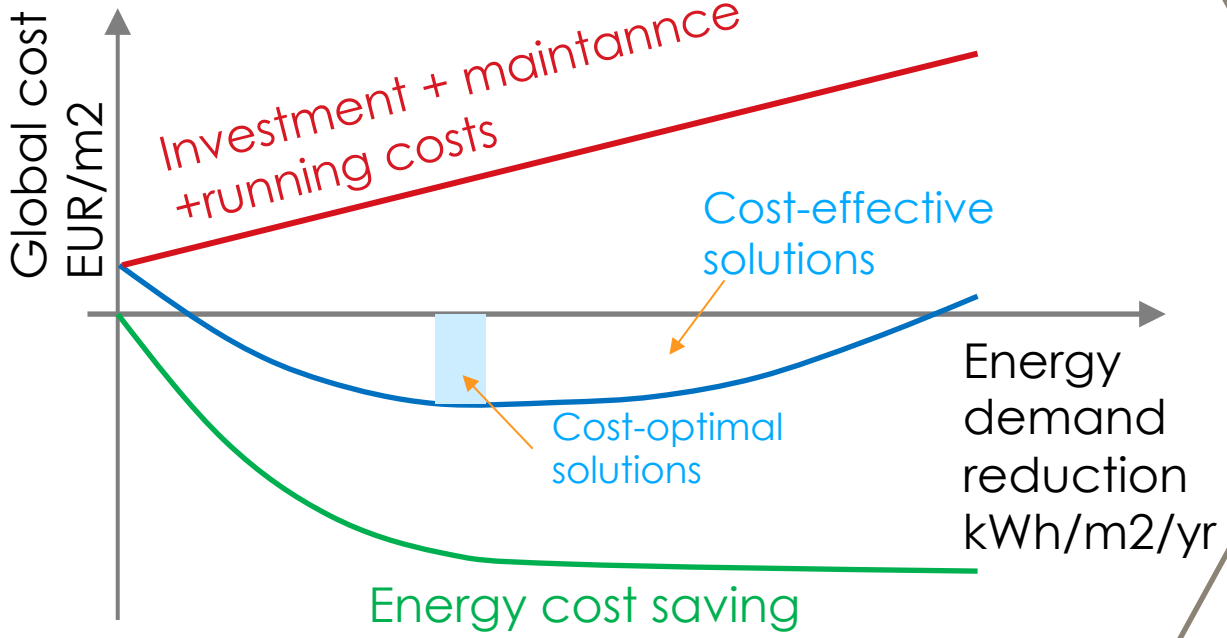
- REGULATORY COMPLIANCE
- COST OPTIMALITY
- MARKET DIFFERENTIATION
- ACCESS TO INCENTIVES AND FINANCING
- DATA-DRIVEN DECISION MAKING
- POSITIVE PUBLIC PERCEPTION

WILLINGNESS TO USE ENERGY PERFORMANCE CERTIFICATES

The key enabler for willingness to use the EPC is the trust that promised results will be delivered.

MAIN REASON OF EPC POPULARITY – ECONOMIC RATIONALE BASED ON COST OPTIMALITY

1. Cost-optimal calculations allow the identification of what should be minimum energy performance requirements:



2. Energy performance class and minimum energy performance requirements are aligned with cost-optimal calculation results

<u>It ensures that:</u>

1. Obligation to reach specific energy performance class when building new or renovating existing building delivers cost-effective result.
2. The recommendations given by EPC are also cost-effective

THE EPC WAS BLENDED IN CONSTRUCTION AND REAL ESTATE SECTOR LEGISLATION IN EU AND EC COUNTRIES

TYPICAL REQUIREMENTS SET IN THE EU Member States AND EnC contracting parties LEGISLATION:

REQUIREMENT FOR PUBLIC BUILDINGS

The certificate has to be publicly showcased (initially for buildings >500m^2 later >250m^2)

SELLING, RENTING OR LEASING THE PROPERTY

The information must be provided in the advertisement. And EPC must be added to the agreement documents

BEFORE AND AFTER THE RENOVATION

The EPC calculation procedures are used as a basis for investment planning and as a proof of achieved result

FOR NEW CONSTRUCTION BUILDINGS

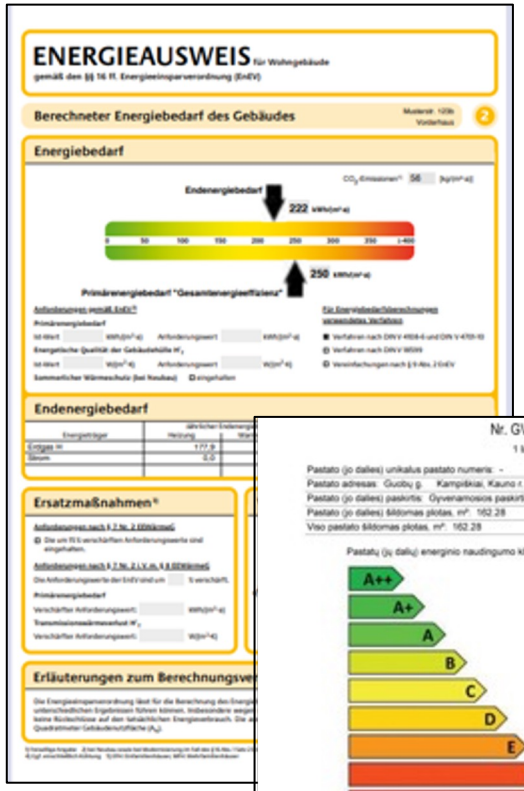
To complete the construction process building has to be certified to show the compliance with requirements

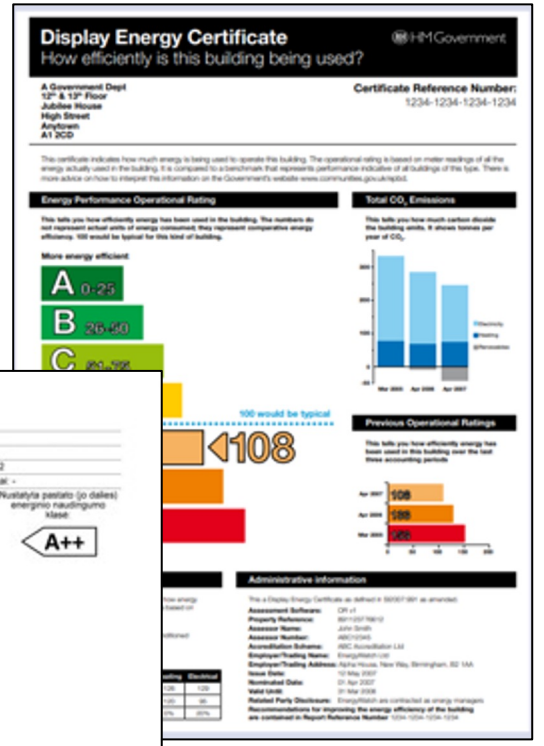
THE RESULT OF ISSUING EPC SHOULD LEAD TO UNDERSTANDABLE DOCUMENT INFORMING THE CONSUMER

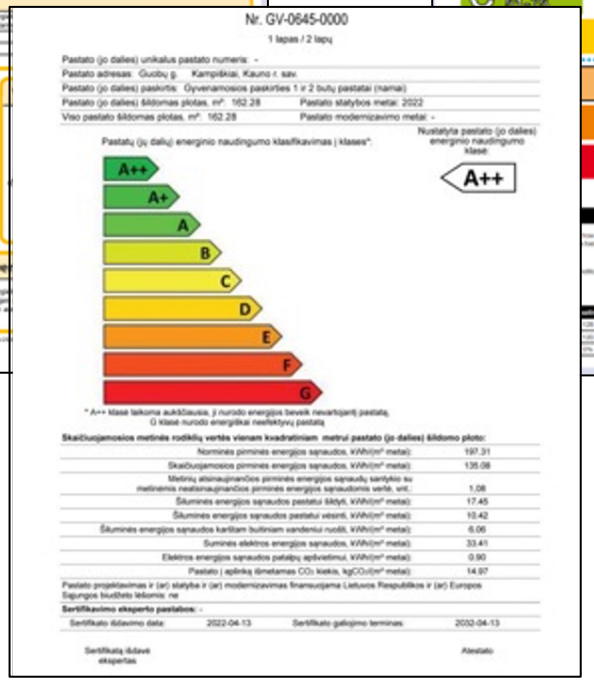
Performed by energy performance certification (EPC) assessor

1. DATA COLLECTION
2. SITE VISIT
3. DATA APPROVAL
4. CALCULATION
5. RATING ASSIGNMENT
6. RECOMMENDATIONS
7. DOCUMENTATION
8. SUBMISSION

Examples of various EU countries:







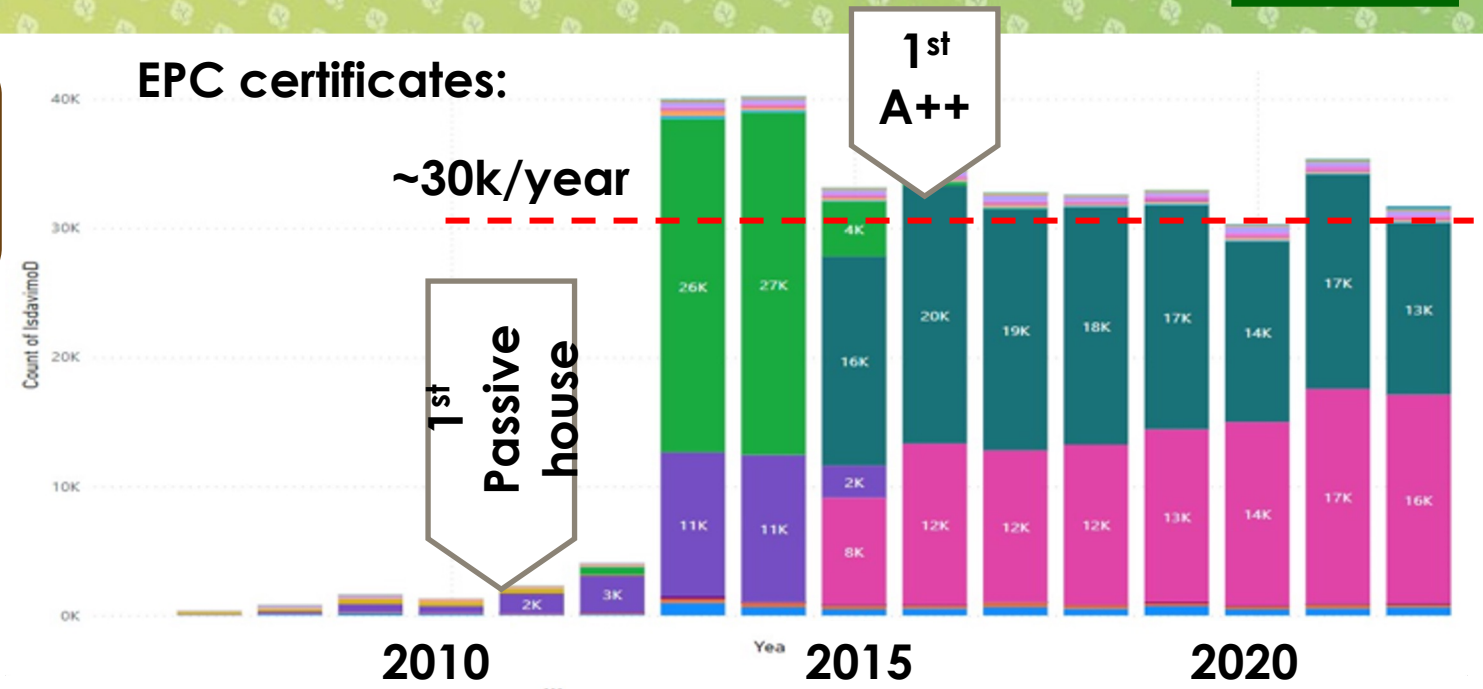
IN LITHUANIA, EPC HELPED TO STIMULATE EE IMPROVEMENT IN NEW CONSTRUCTION AND RENOVATIONS

Lithuania
2,8 mln. Citizens
2,6 mln buildings - 235.3 mln. m^2

- Requirements for building thermal properties since **1992**
- EU member state since **2004**
- The EPC system was introduced in **2007**, that resulted in **+354k of EPC in total, 30k in average annually**

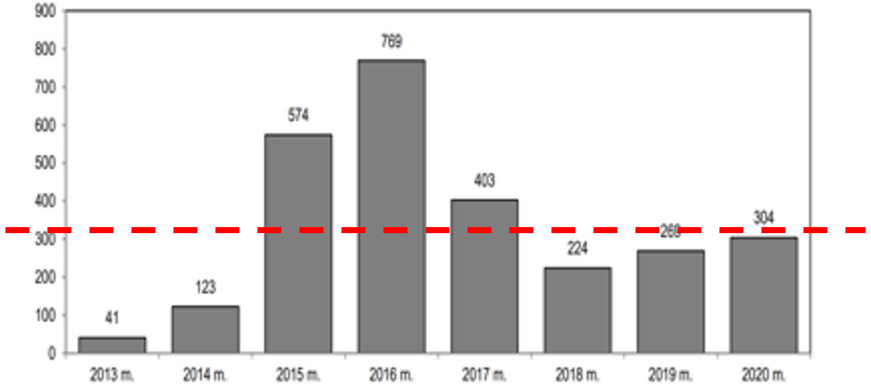
The sharp increase in numbers was due to mandatory EPC requirement when selling, renting or leasing the building or part of it.

EPC certificates:



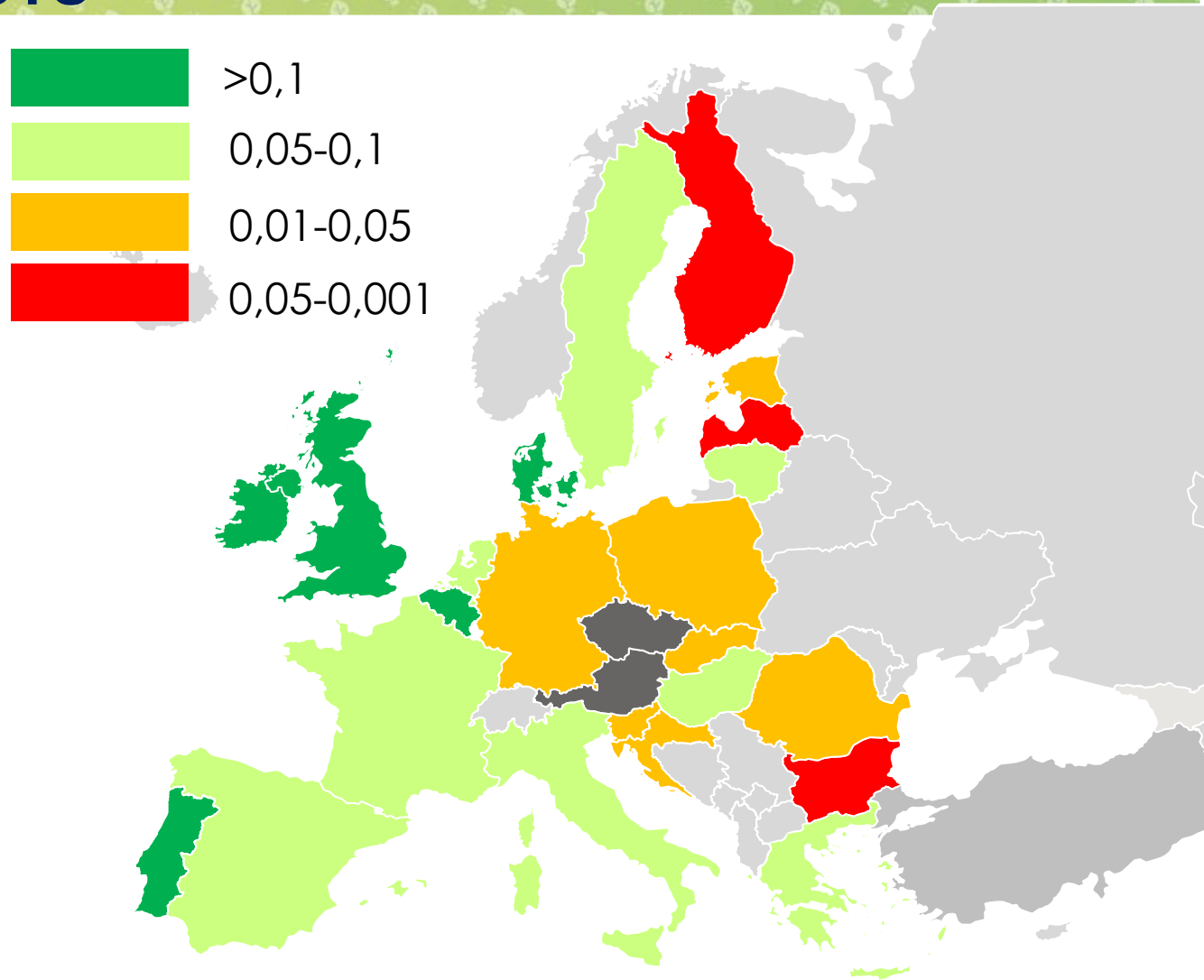
Renovation rates:

~338/year



THE RELATIVE NUMBER OF EPCs IS UNEQUALLY DISTRIBUTED OVER THE EU MEMBER STATES DUE TO IMPLEMENTATION DIFFERENCES AND LOCAL ASPECTS

Different market penetration is related to various implementation aspects and local context.



High penetration:

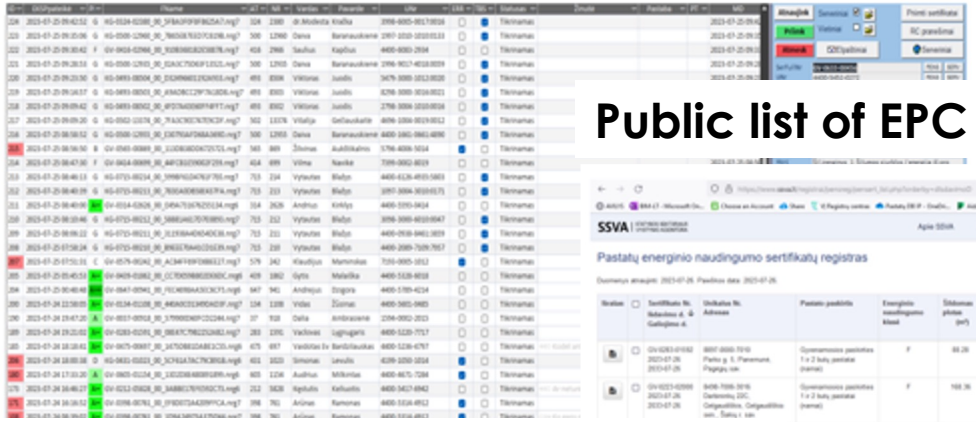
- The **number of real estate transactions influences the number of issued EPCs**. (UK)
- **Digitalised and automated process** of issuing the certificate (Belgium)
- **The early introduction of EPC in the market** (Denmark)

Low penetration:

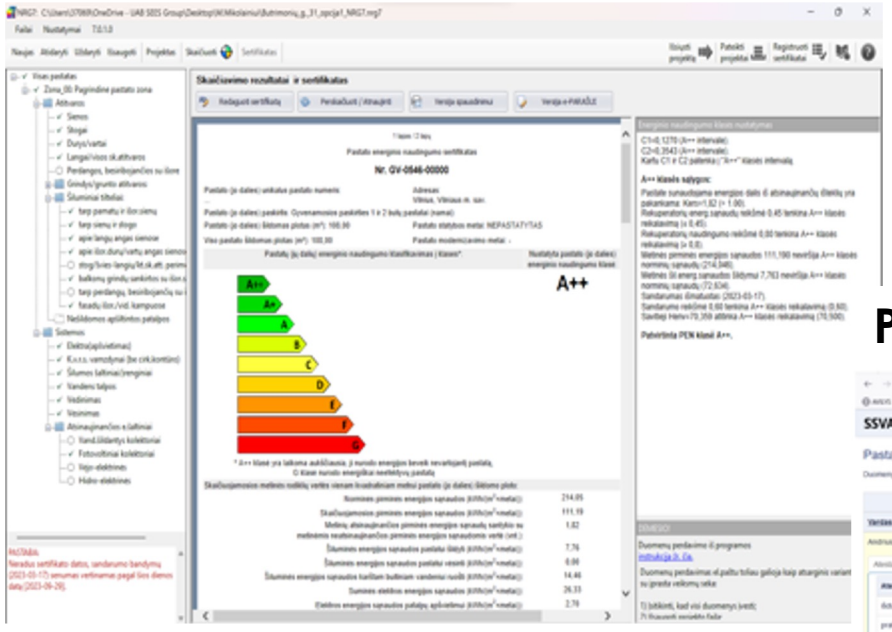
- In Bulgaria, the **complex ownership structures** in multifamily buildings
- The **country is relatively small, with a low total number of buildings** (e.g. Malta and Estonia)

THE TECHNICAL INFRASTRUCTURE IS NEEDED TO ENSURE PROPPER OPERATION OF THE SYSTEM

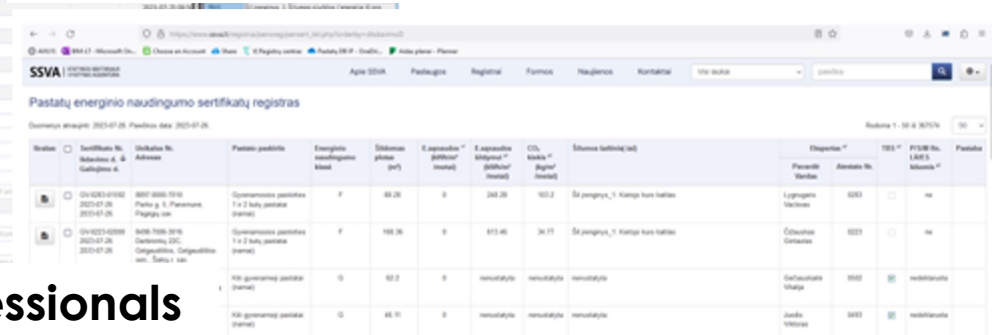
Internal interface of the data pipeline



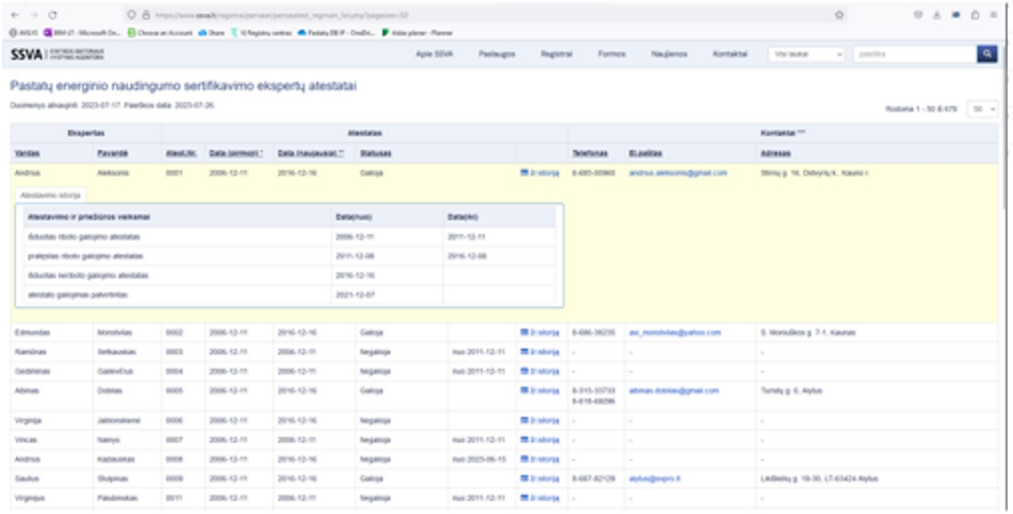
Software to calculate and issue EPC



Public list of EPC



Public list of approved professionals



THE PUBLIC DATABASES ENSURES THE TRANSPARENCY AND QUALITY

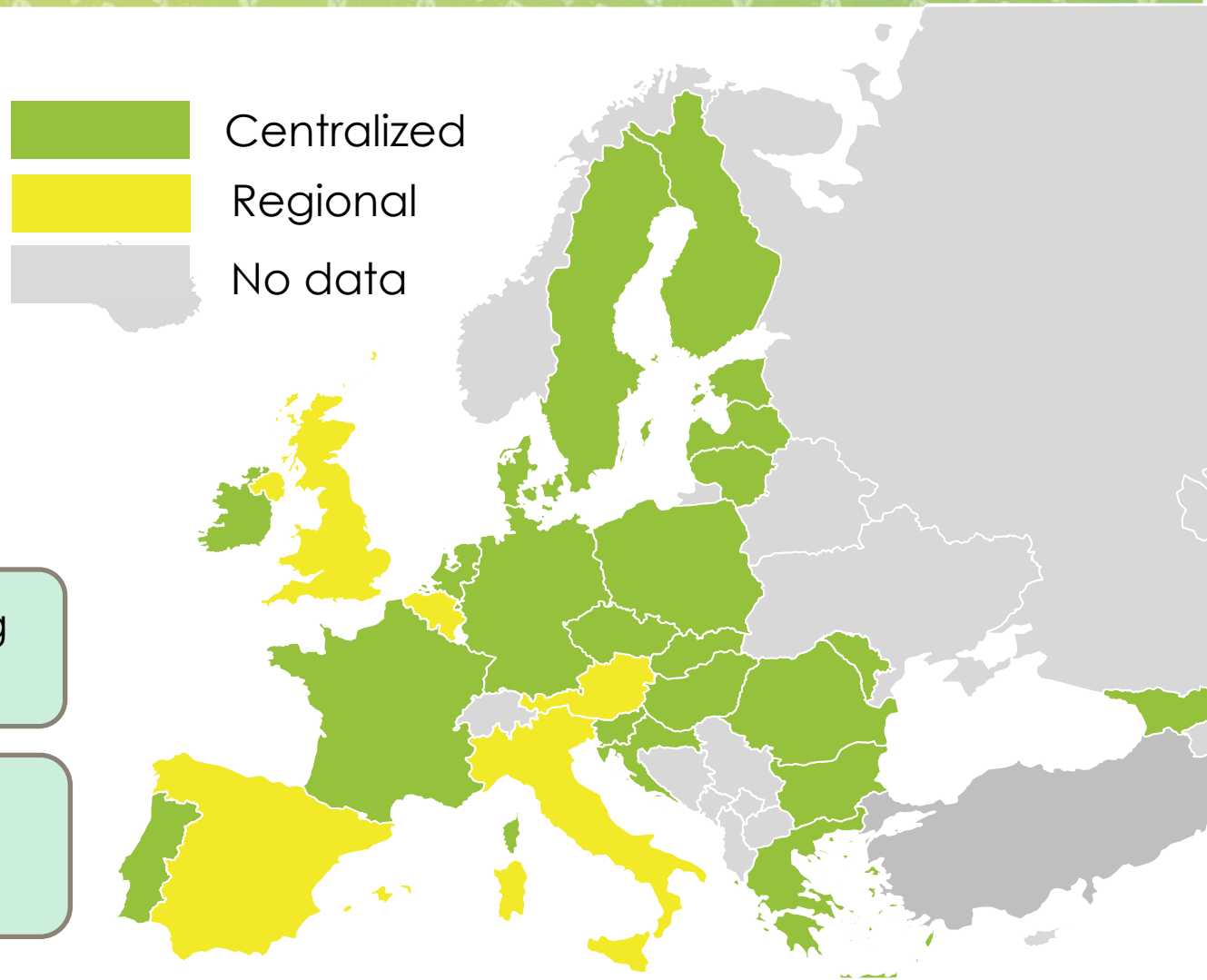
Typically, in EU and EC countries EPC are stored in the centralized databases, ensuring that the information is publicly available.

Information in the public database must be validated by passing through quality control.

The public databases also serve another important purposes for quality control:

Collected data allows to perform benchmarking and performance monitoring over time.

The data in the database could be used to identify outliners and select them for detailed review due to the higher risk of poor-quality



EPC HELPS TO UNDERSTAND THE NATIONAL BUILDING STOCK AND ITS PERFORMANCE

ESTABLISH THE BRIGHTER PICTURE OF THE SITUATION IN THE BUILDING STOCK

Identifying Renovation Priorities: Pinpoint less energy-efficient buildings/areas for prioritized renovations.

Tailoring Regional Strategies: Address specific energy efficiency needs and challenges of different regions..

Protect Vulnerable Consumers: Identify regions at risk of energy poverty and develop support measures.

Develop Renovation Strategies: Forecast future energy demands and prioritize renovation areas.

Evaluate Policy Impact: Monitor changes in EPC ratings to assess policy effectiveness

SUMMARY: KEY TAKE AWAYS

- THE BUILDING SECTOR IS THE LARGEST ENERGY CONSUMER IN TAJIKISTAN
- EVEN WITH LOW CARBON ENERGY SUPPLY ENERGY EFFICIENCY PROVIDES BENEFITS
- ENERGY PERFORMANCE CERTIFICATION SHOULD BE UNDERSTOOD AS RATING SYSTEM GIVING MARK FOR A BUILDING FOR THE PERFORMANCE
- ENERGY PERFORMANCE CERTIFICATES MAKE BUYERS AND OWNERS LIVES EASIER BY INFORMING THEM ABOUT THE STATE OF THE BUILDING
- ENERGY PERFORMANCE DESIGN DESCRIBES HOW THE BUILDING SHOULD BE BUILT TO MEET ENERGY PERFORMANCE REQUIREMENTS
- THE PERFORMANCE OF THE BUILDING COULD BE EXPRESSED BY CALCULATING OR MEASURING THE PERFORMANCE
- THE CONSTRUCTION SECTOR IS POSITIVELY IMPACTED BY BETTER UNDERSTANDING OF ENERGY PERFORMANCE CERTIFICATES
- MAIN REASON OF EPC POPULARITY – ECONOMIC RATIONALE BASED ON COST OPTIMALITY
- THE RESULT OF ISSUING EPC SHOULD LEAD TO UNDERSTANDABLE DOCUMENT INFORMING THE CONSUMER
- THE RELATIVE NUMBER OF EPCs IS UNEQUALLY DISTRIBUTED OVER THE EU MEMBER STATES DUE TO IMPLEMENTATION DIFFERENCES AND LOCAL ASPECTS
- THE TECHNICAL INFRASTRUCTURE IS NEEDED TO ENSURE PROPER OPERATION OF THE SYSTEM
- EPC HELPS TO UNDERSTAND THE NATIONAL BUILDING STOCK AND ITS PERFORMANCE

ENERGY PERFORMANCE CERTIFICATION OF BUILDINGS – ROLE, KEY ELEMENTS AND EU BEST PRACTICES

THANK YOU FOR YOUR ATTENTION !

Karolis Januševičius, PhD

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„Helping to Unlock the Value of Energy Efficiency and Sustainability for a More Resilient Future “

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