



What are the steps?

Enabling investment with energy efficiency policies

Buildings

 IEA #energyefficientworld

Buildings energy efficiency sessions in partnership with:

UCL **ENERGY**
INSTITUTE



1. **Where to start:** Energy use in buildings
2. **Where to start:** Energy efficiency potential in buildings
3. **Toolkit:** Energy efficient building design
4. **Toolkit:** Energy efficient building technologies
Special session. Technology demonstration
Where do I get help? IEA's Technology Collaboration Programmes
5. **Toolkit:** Energy efficiency policies and target setting
6. **What are the steps?** Enabling investment with energy efficiency policies
7. **What are the steps?** Implementing building energy codes and standards
8. **What are the steps?** Building operations and procurement
Special session. The multiple benefits of energy efficiency
9. **Did it work?** Evaluation and energy efficiency indicators
Where do I get help? International and regional energy efficiency initiatives
10. **Energy efficiency quiz:** Understanding energy efficiency in buildings

6. What are the steps? Enabling investment with energy efficiency policies

Trainers: Brian Dean

Purpose: To teach the fundamentals of energy efficiency policies that can enable effective investment and finance for energy efficiency in buildings.

Scenario: You continue to hear from stakeholders that all they need is money and then they will consider doing energy efficiency in buildings. *What policy approaches can be used to enable energy efficiency investment?*

Investment-grade energy efficiency policy

What is investment-grade?

Introduction to a “banker”

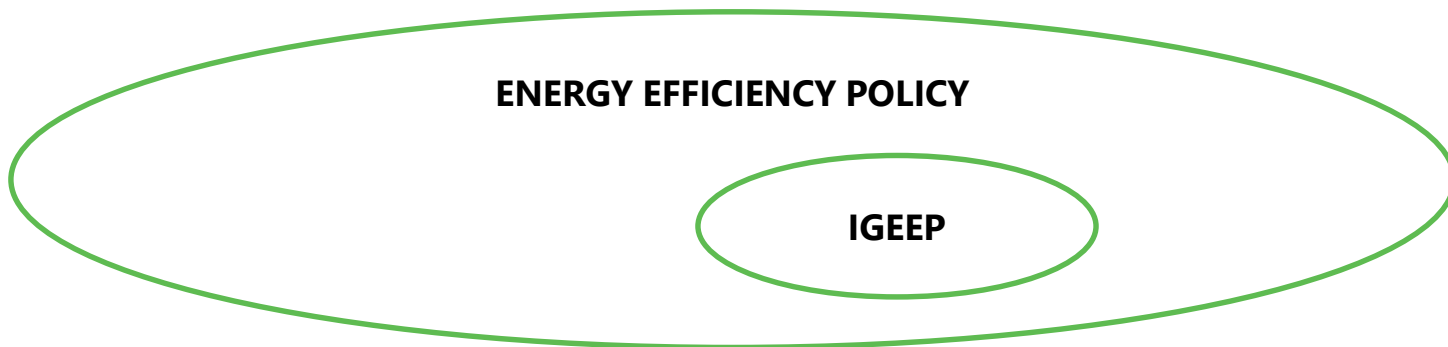


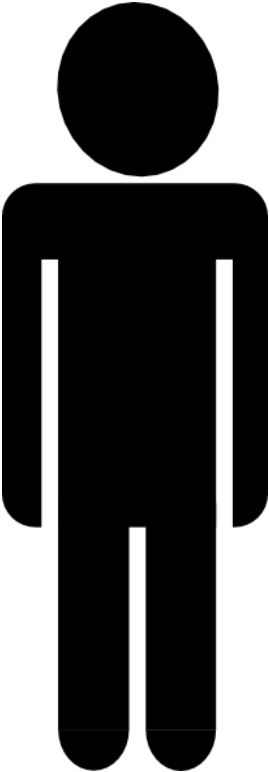
- What is **energy efficiency** policy?

A set of strategies, legislation, regulations, measures and programmes that together stimulate energy efficiency improvement

- What is **investment-grade energy efficiency** policy?

A set of strategies, legislation, regulations, measures and programmes that together **stimulate investment** efficiency improvement





Policy maker

Long term

Public good

Social cost
benefit analysis

Political

Casio

Economic impact
Political impact

Time horizon

Motivation

Evaluation criteria

Relationship to risk

Type of watch

Big concerns

Short term

Revenue target

Internal rate of
return (IRR)

Legal &
financial

Rolex

Risk, bankability,
creditworthiness



Banker

Investment-grade policy

How is it different?

What does it look like?

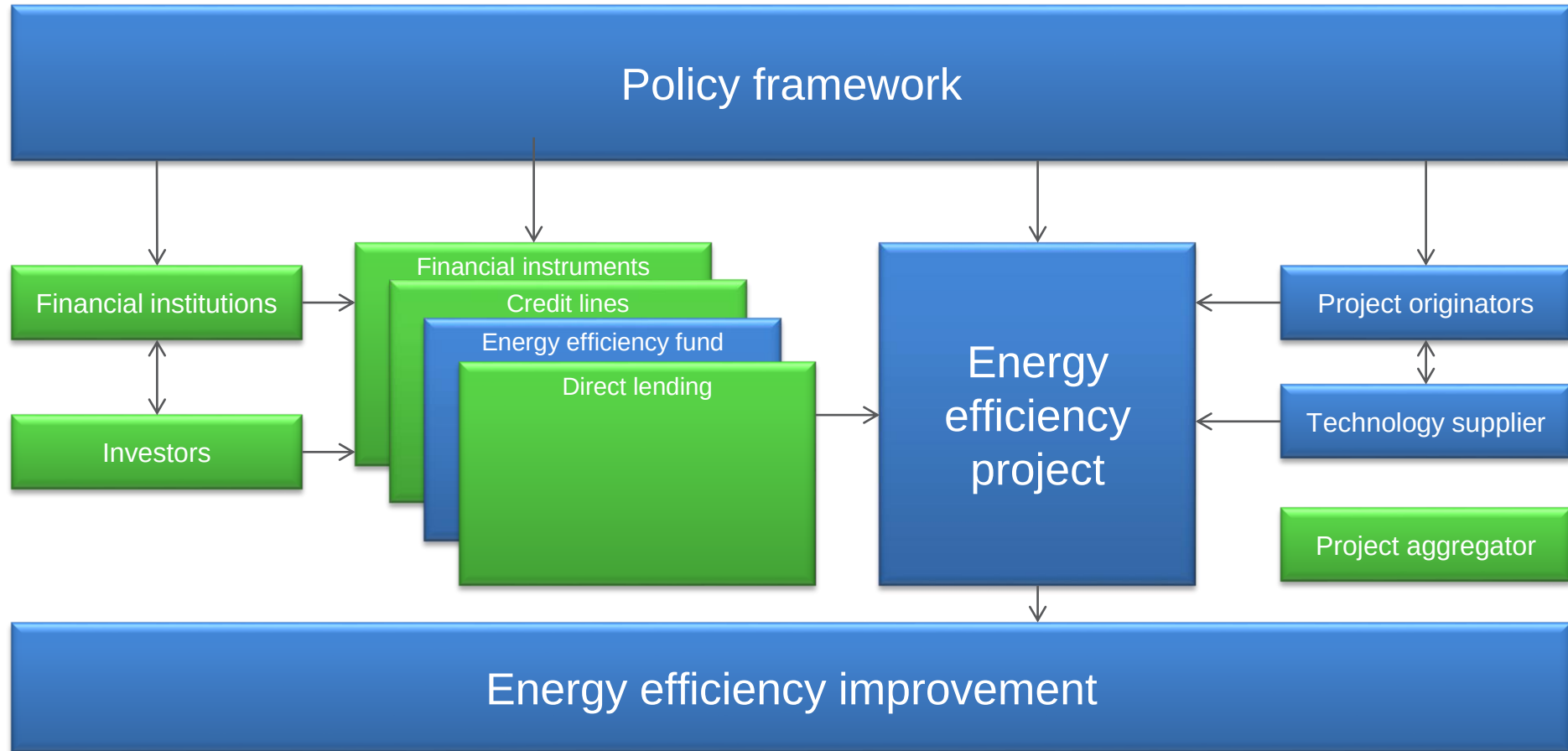


How is investment-grade different to typical energy efficiency policy?

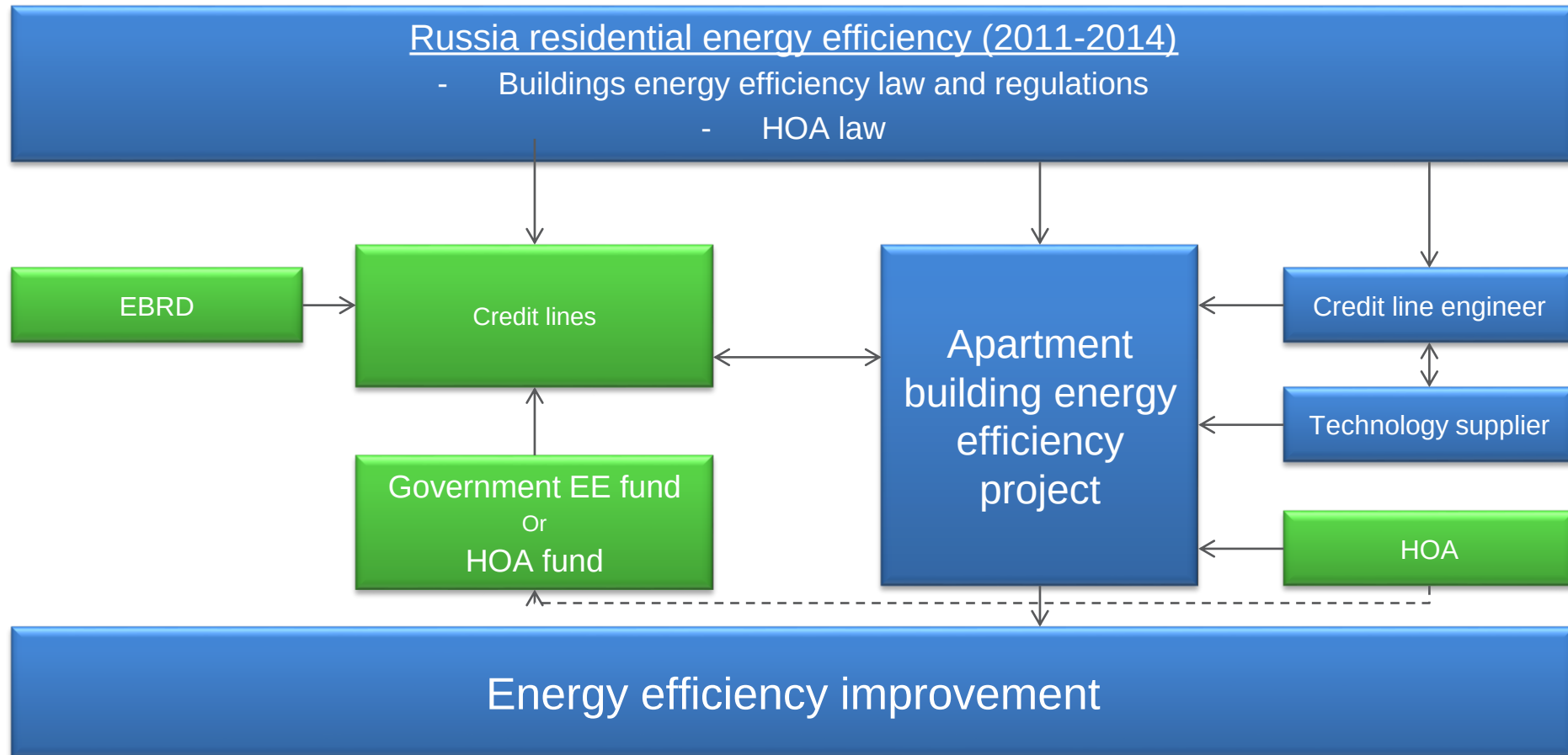


- Focused **goal**
- Focus on specific set of **barriers**
- Focused group of **stakeholders**
- Specific **criteria**
 - for evaluating appropriateness of measures
 - for evaluating success of measures
- Specific **types of measures**
 - including those not traditionally associated with energy efficiency

Investment-grade energy efficiency policy. What does it look like?



Russia: Residential energy efficiency in apartment buildings



Russia: Residential energy efficiency in apartment buildings



Why focus on existing multi-family buildings?

- 100 million people (70% of population) live in multi-family buildings most of which require major retrofits
 - ✓ 2.4 million multi-family buildings, 2.1 billion m²
 - ✓ Average age of a building – 42 years
 - ✓ High level of tear (50%+) due to low level of up-keep and maintenance
- Low level of new construction (1-2% of existing multi-family buildings stock)
- Low level of energy efficiency in existing multi-family buildings (up to 50% heat losses)
- Multi-family buildings are the second-largest end-user of energy and have the largest energy savings potential



Retrofitting existing multi-family buildings is key to addressing worsening housing conditions and reducing energy consumption in the residential housing sector in Russia

Main barriers for energy efficiency in residential buildings in Russia in 2010:

Paradigm shift

- Government shifting responsibility for financing building retrofits to homeowners
- Massive investments needed to fix the problem (estimates of US\$50-\$100 billion)

Legal environment

- No effective legal and regulatory environment to facilitate building retrofits

Financing

- Private-sector financing for multi-family building retrofits not available
- No suitable banking products for multi-family building renovation exist

Homeowner mentality

- Performing technical assessment of projects and providing HOAs with recommendations on project implementation.

Investment example in Russia

A new system for facilitating building retrofits has been put in place with supporting laws and regulations:

	Source of funding	Reach	Energy efficiency	Legal framework	Financial Products
Before Reform	Government budget	15% of multi-family housing	Low priority	Weak	None
Today (2019)	Private funds (homeowners + banks)	90% of multi-family housing	High priority	Conducive for private finance	Special savings accounts and loans

Mandatory payments for multi-family building renovations is a law, with homeowners able to pay to either a savings program managed by government or HOA. \$ 8.5 billion collected from 2014-18.

Investment-grade policy

Government financial support

Non-financial incentives

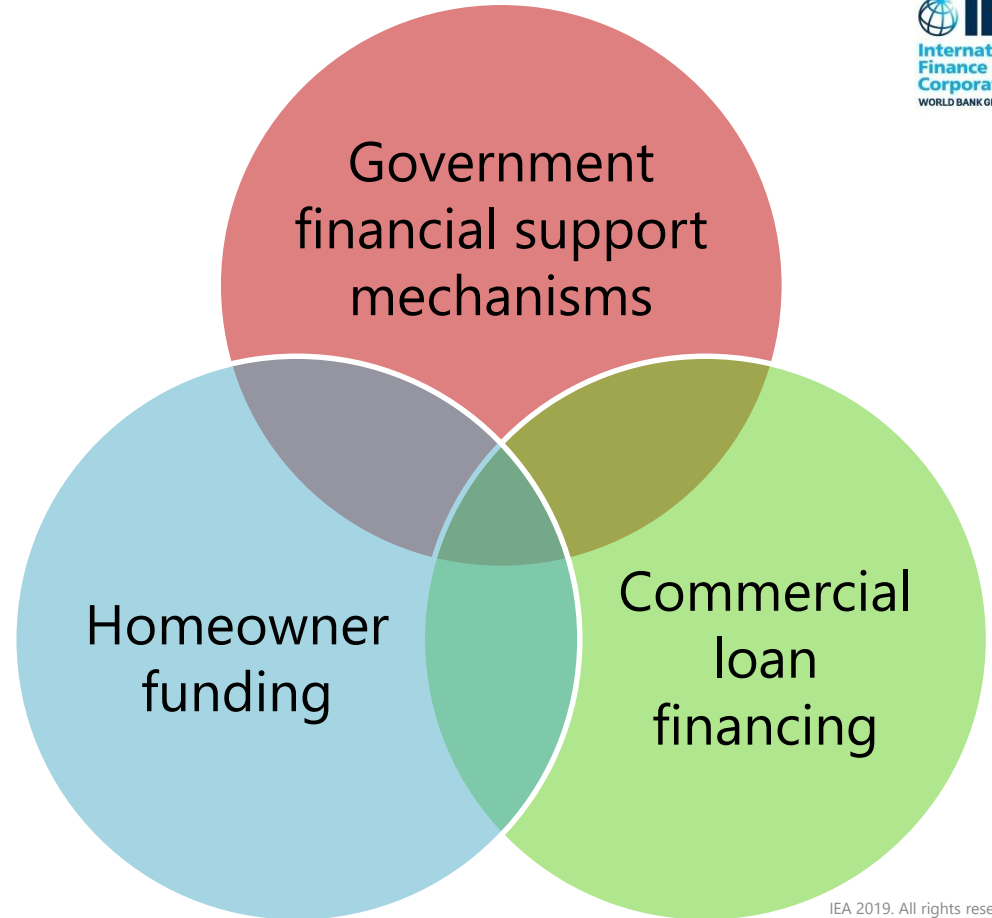
Certificates and labels



Enabling investment

An effective investment model supports financing of energy efficiency retrofits in residential (particularly multi-family buildings) consists of three main elements.

- Government: supporting the banks to deliver funding
- Bank: delivering loans
- Homeowner: spending funds



What can we build on? Investment example in Poland



Program for improving energy efficiency in multi-family buildings in Poland

State Thermo-modernization Fund

- Provides financial support in the form of a reduction to principal amount of a loan taken by a homeowners association to finance energy efficiency (EE) building retrofits (up to 20% of loan amount)

Delivered:
\$479 million
in support

Commercial banks

- Offer loans (on a commercial basis) to homeowners associations to finance EE building retrofits

Delivered:
\$2.6 billion
in commercial loans

Homeowners of multi-family buildings

- Mandatory condition for receiving financial support from the State fund – achieving a reduction in actual energy consumption in a building by 25% or more

Invested:
\$3.4 billion
in efficiency improvements

Achieved:
\$250 million
per year in energy savings

What can we build on? Investment example in Poland



Main success factors for improving energy efficiency in multi-family buildings in Poland:

- **Government:** willing to provide financial support
- **Banks:** willing to provide loans for energy efficiency retrofits
- **Homeowners:** willing to implement energy efficiency retrofits
- **Awareness:** increasing knowledge among homeowners about economic benefits of energy efficiency retrofits

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\$479 million
in support

Delivered:
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- **Height and density bonuses:** Building developers are granted extra height or floor/area ratio (FAR), reductions in landscaping requirements and other non-financial benefits in return for achieving high levels of sustainability.
 - This is also valuable to cities where there is limited available area for construction, developers will be able to increase the profitability of their projects by increasing floor area while improving the efficiency beyond minimum requirements.
- **Expedited permitting:** Buildings require construction permits and occupancy permits, which can often take a long time. However, with the expedited permitting sustainable and efficient buildings are incentivized by receiving priority during their permit appraisal.
 - This is also valuable to cities that have a large number of permits, where the sustainable and efficient buildings that are surpassing the requirements of law are easier to evaluate if they are achieving the minimum requirements.

Non-financial incentive example: height bonus in Peru

Aerial view of San Borja's district, in Lima, Peru

HEIGHT BONUS IN SAN BORJA (LIMA, PERU)

In October 2018, the district of San Borja in Peru's capital, Lima, has approved [an incentive policy](#) for sustainable construction of buildings by mean of a height bonus. Buildings may obtain up to 4 additional floors if several different requirements are followed, such as:

- *Buildings must have a Sustainability label according to international standards (e.g. BREEAM, EDGE, LEED);*
- *Buildings must have separate containers for waste, by type;*
- *Green rooftops must be installed, with waterproof coatings, anti-rooting barriers;*

The incentive is valid for both new and already built buildings, and the amount of additional floors related to the location and other building characteristics. The incentive has been recently put on hold while being revised and adjusted.



Non-financial incentive example: density bonus in the United States



DENSITY BONUS PROGRAMS AND OTHERS:

Different types of programs are currently in place in the United States, including particularities related to their area coverage and existing construction codes. Some examples of these non-financial incentives are:

- **Arlington, VA:** commercial buildings are entitled to an extra FAR between 15% and 35% and/or additional height of up to three stories, being the higher the certification rating, the greater the density awarded.
- **Bothell, WA:** LEED Certified buildings may reduce the number of on-site parking spots required by the buildings code. Building officials for such projects are also authorized to approve alternative materials, design and methods of construction to account for new green building technologies.
- **Miami, FL:** Projects are granted a density bonus based on the level of LEED certification. Office projects may receive up to 0.45 for LEED Platinum, while residential buildings can receive up to 0.50 FAR for LEED Platinum;
- **Pittsburgh, PA:** the city grants a density bonus of an additional 20% FAR and an additional variance of 20% of the permitted height for all projects that are certified under LEED for New Construction or LEED for Core and Shell certification.



Aerial view of Pittsburgh, PA - US

Non-financial incentive example: expedited permitting



EXPEDITED PERMITTING

Several cities from the United States offer a quicker process for issuing building permits whenever the projects meet specific green standards. Some examples of expedited permitting incentives are:

- **Houston, TX:** expedited permitting to commercial buildings that meet LEED standards;
- **Miami-Dade County, FL:** the county has a program called Green Building Expedited Plan Review, where different criteria must be met such as a minimum value of USD 50,000 for the project and also a certification from the Green Building Council attesting the register of the building;
- **San Francisco, CA:** priority is given to all new and renovated buildings with LEED Gold certification or other pre-approved high sustainability ratings;
- **San Diego, CA:** expedited permitting available to residential and commercial construction which meet green building standards. Projects achieving LEED Silver have their processes reviewed in 75% of the standard time;
- **Seattle, WA:** the city offers expedited permitting to green building projects through its Priority Green Expedited program. Accepted green building certifications are Built Green, LEED, LBC or Passive House Institute scores.



Aerial view of San Diego, CA - US

- **Energy Performance Certificates (EPCs)** document basic building information as well as the energy performance of the building. They are common all over the world, and we will see some example in the following slides.
 - In some markets the energy performance certificate or EPC is required for a sale or rental transaction at a property.
- **Building labels** are slightly different to energy performance certificates, in that their principal function is to bring awareness to the consumer, enabling them to make an informed choice, and recognise products that are more efficient than others.

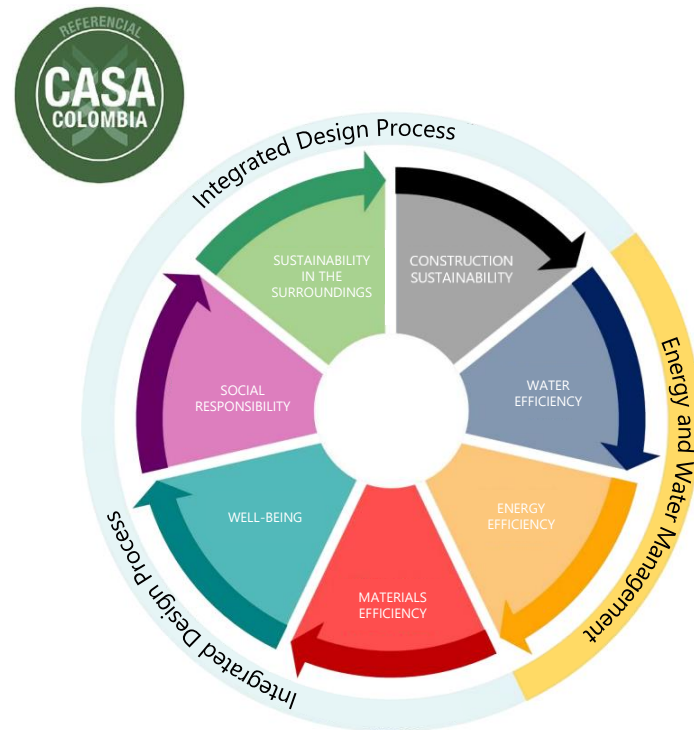
Example: energy performance certificates in Colombia

OBJECTIVE

The **Referencial CASA Colombia** is a certificate issued for buildings developed based on best sustainable practices. The program aims to facilitate and promote the development of sustainable buildings focusing on the concept of “integral sustainability”.

BACKGROUND

The program was established in 2013, and **takes into consideration 7 critical aspects for granting the certificate**: sustainability with the surroundings, sustainability with construction works, water, energy and materials efficiency, well-being and social responsibility. Social housing (VIP/VIS) can be also contemplated by the certificate, having lower standards to take the cost compromise into consideration. The criteria utilized for scoring the housing within the different categories are given in the program's manual. **Complying with the mandatory conditions grant the certificate and a single star, while additional improvements will contribute for increasing the score**, and consequently the number of stars.



The Referencial CASA Colombia awards buildings with sustainable approaches on multiple levels.

Example: energy performance certificates in other countries



BRAZIL

The *Selo Procel Edificações* was created in 2014, and is used as a voluntary mechanism to award best performing buildings according to their energy efficiency classification. Commercial buildings are evaluated according to their envelope, lighting and air conditioning, while residential buildings are assessed by the efficiency of their envelope and water heating systems. The certificate can be issued in both project phase and also after the building is built. 17 laboratories throughout the country have professionals eligible for conducting the audits and granting the certificates.



MEXICO CITY

The Mexican capital has established the *Programa de Certificación de Edificaciones Sustentables (PCES) in 2014*. It is a political planning tool for tackling climate change in current and future buildings. Its approach on sustainability focuses on energy, water, residues, well being and environmental impact.

WORLDWIDE

International building certifications such as the *Leadership in Energy and Environmental Design (LEED)*, *Building Research Establishment Environmental Assessment Method (BREEAM)* and the *Excellence in Design for Greater Efficiencies (EDGE)* also have been deployed globally.



Example: Calificación Energética de Viviendas in Chile

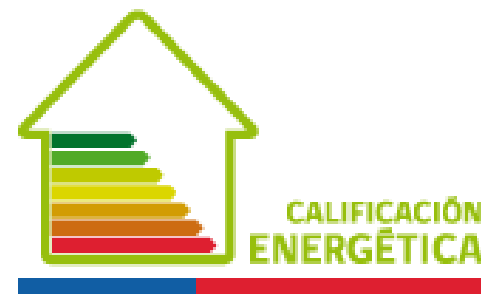
OBJECTIVE

Increase awareness on consumers regarding the consumption of residential buildings, classifying them according to performance standards. Its use is voluntary and considers the quality of envelope, hot water system, lighting and heating.

BACKGROUND

The label from *Calificación Energética de Viviendas* was created in 2012 and updated in 2017. There are two possible evaluations performed in the scope of the project, the *Precalificación Energética* and the *Calificación Energética*, which relate to project phase and constructed building, respectively. After a thorough analysis of different construction aspects of the building (e.g. walls insulation, thermal inertia, thermal bridges, radiation level, orientation, internal heat gains, natural and mechanical ventilation, air infiltration, renewables integration and others) efficiency properties are compared to the performance of a reference building, compliant with 2007 building standards from the *Ordenanza General de Urbanismo y Construcciones (OGUC)*. The scale is from A+ to G, being E the reference standard.

By 2018, 744 professionals granted the label for over 44,000 houses. In the previous year, 22% of the houses obtaining level C or higher. A map with all certified buildings can be found [here](#).



Source: <https://www.calificacionenergetica.cl/>

Voluntary labelling for residential buildings in Chile since 2012.

Scenario:

You continue to hear from stakeholders that all they need is money and then they will consider doing energy efficiency in buildings.

What policy approaches can be used to enable energy efficiency investment?

- **Break into groups** (preferably one region or country per group)
- **Select a policy instrument** (e.g. one you are working on/have worked on/would like to see)
- **Evaluate the strong and weak investment grade components** (e.g. what stakeholders were involved? what investment does it lead to? etc.)



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