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European Union – Kyrgyzstan: Sustainable Energy Days 2024

Workshop "Green buildings: trends and innovations in sustainable development"

BIshkek, 22 October 2024

Green Building Guidelines Through the Building Lifecycle and Value Chain for Kyrgyzstan

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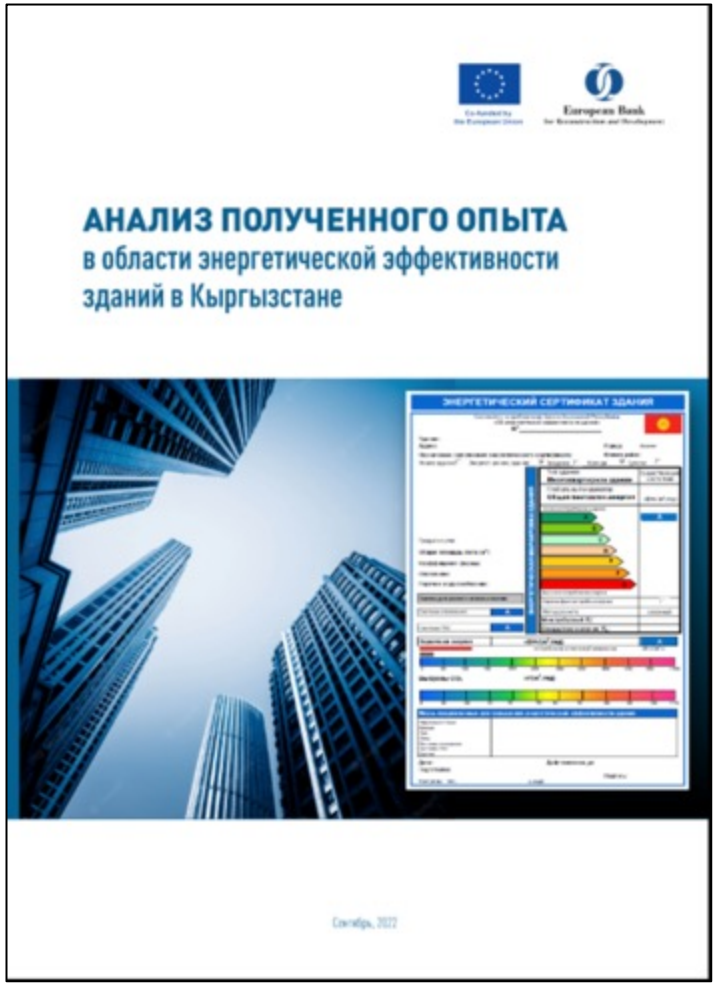
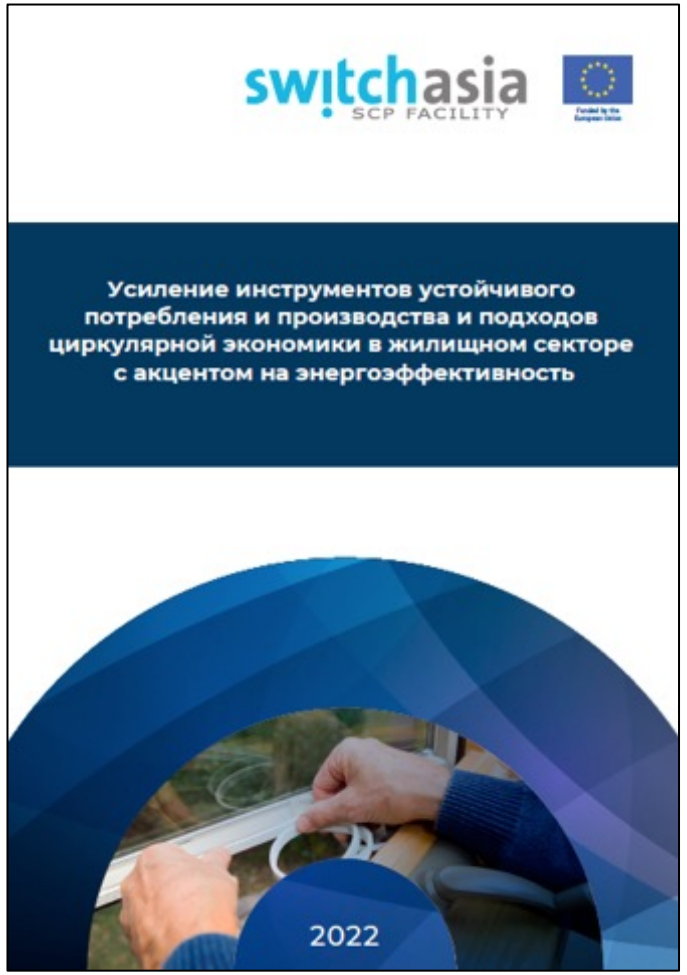
Analytics in the field of green building





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Legislative framework of the Kyrgyz Republic on energy efficiency of buildings

Law "On Energy Efficiency of Buildings" No. 137 of 2011

- Designation of a government body responsible for improving the energy performance of buildings;
- Minimum energy efficiency requirements for new and renovated buildings;
- Regular inspection of heating and hot water supply systems;
- Issuance of energy efficiency certificates (EEC);
- Labeling/demonstration of SEE;
- Introduction of the institute of independent certified specialists in energy certification of buildings;
- Installation of the state register of energy efficiency

ЗАКОН КЫРГЫЗСКОЙ РЕСПУБЛИКИ

от 26 июля 2011 года N 137

Об энергетической эффективности зданий

(В редакции Законов КР от 18 октября 2013 года N 194, 20 июня 2019 года N 74)

Целью настоящего Закона является содействие повышению энергетической эффективности зданий с учетом улучшения теплового микроклимата в них, эффективности затрат, снижения потребления (использования) энергетических ресурсов и выбросов парниковых газов в атмосферу.

Статья 1. Правовое регулирование отношений в области энергетической эффективности зданий

Настоящий Закон устанавливает правовые основы в области оценки энергетической эффективности и снижения потребления энергетических ресурсов зданий, энергоэффективного строительства, а также регулирует правовые и организационные отношения между собственниками зданий независимо от форм собственности, сертифицированными специалистами и государственными органами исполнительной власти.

Статья 2. Сфера действия настоящего Закона

Действие настоящего Закона распространяется:

1) на здания: жилые, общественные, административные и многофункциональные непроизводственные, а также на их технические системы;

2) на деятельность, связанную с энергетической эффективностью зданий, при их:

а) проектировании и строительстве;

б) сдаче в эксплуатацию;

в) сдаче в аренду;

г) выставлении на продажу;

д) энергетической реновации.

Статья 3. Основные термины, понятия и определения

В настоящем Законе использованы следующие основные термины, понятия и определения:

1) **здание** - строительный объект, имеющий помещения для жизнедеятельности людей, ограждающие конструкции и технические системы, использующие тепловую и электрическую энергию на отопление и горячее водоснабжение, а также другие системы и оборудование, предназначенные для его эксплуатации;

2) **энергетическая реновация здания** - поэтапное или единовременное изменение:

а) ограждающих конструкций существующего здания или его технических систем, при котором за счет дополнительной тепловой изоляции, замены светопрозрачных и открывающихся конструкций или замены оборудования технических систем изменяется структура энергопотребления;

б) уровня тепловой защиты наружных ограждающих конструкций не менее чем на 25 процентов их общей площади;

3) **технические системы здания** - установленные для одного здания технические системы отопления, горячего водоснабжения, вентиляции, охлаждения и освещения;

4) **котел (теплогенератор)** - объединенная конструкция, состоящая из непосредственно котла и блока горелок и предназначенная для передачи тепловому носителю теплоты, высвобождаемой в процессе горения;

5) **энергетическая эффективность зданий** - количество энергии, необходимой для удовлетворения всех энергетических потребностей в нормативном использовании здания;

6) **минимальные требования энергетической эффективности зданий** - установленный минимальный уровень энергетической эффективности зданий, который должен быть реализован;

7) **класс энергетической эффективности здания** - классификация, обозначающая уровень энергетической эффективности здания, характеризуемый интервалом значений удельного расхода тепловой энергии на отопление здания и горячего водоснабжения за отопительный период;

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Stages

- **Stage 1 (2009-2011):** development of primary legislation
- **Stage 2 (2012-2018)**: finalization of new legislation and issuance of regulations; development of financial instruments
- **Stage 3 (2019-2022)**: harmonisation of new primary and secondary legislation with other laws and government regulations

Law of the Kyrgyz Republic "On Energy Efficiency of Buildings" No. 137 of 2011

Regulation on the procedure for conducting energy certification of buildings, approved by Government Decree No. 531 dated August 2, 2012

Regulation on the procedure for conducting periodic monitoring of energy efficiency of boilers, heating systems, air conditioning systems, and hot water supply systems, approved by Government Decree No. 531 dated August 2, 2012

Regulation on the rules and procedures for the qualification certification of specialists in energy efficiency, approved by Government Decree No. 13 dated January 17, 2020

Regulation on the State Register of Energy Efficiency Specialists, approved by Government Decree No. 131 dated January 17, 2020

SNiP 23-01:2013 "Construction Thermal Engineering (Thermal Protection of Buildings)," Order of the State Committee for Construction dated May 26, 2013

SP 23-101-2013 "Design Standards for the Thermal Protection of Buildings," Order of the State Committee for Construction dated May 26, 2013

Testing system for specialists

Online State Energy Register

Methodology for calculating energy efficiency indicators for buildings, Order of the State Committee for Construction dated May 26, 2013

Guidance for completing the energy passport of a building, Order of the State Committee for Construction dated May 26, 2013

Methodological guidelines for conducting energy efficiency monitoring for buildings, Order of the State Committee for Construction dated May 26, 2013

Set of test questions

User guide for the online register

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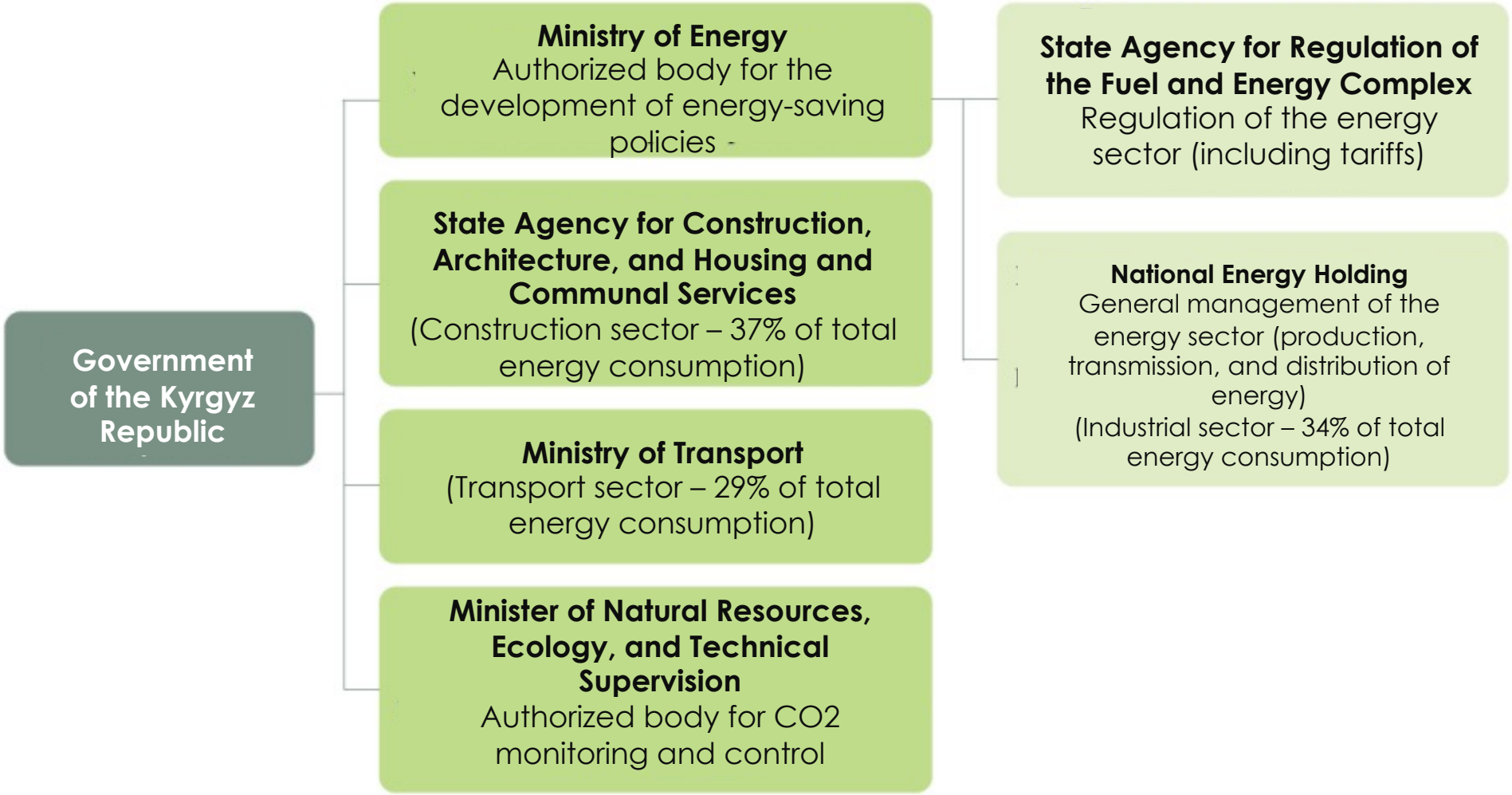
Organizational structure for energy and energy efficiency in Kyrgyzstan



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Introduction to Green Building

A "green or sustainable building" is a building that, when designed, constructed or operated, reduces or eliminates negative impacts and has a positive impact on the climate and natural environment. Green buildings conserve valuable natural resources and improve the quality of life of citizens.

Specifications:

1	2	3	4	5	6	7
Efficient use of energy carriers, water, and other resources	Use of renewable energy sources, such as solar energy, biomass, etc.	Measures to reduce pollutant emissions and waste, as well as practices for waste reuse and recycling	Proper quality of the "indoor environment" within buildings	Use of non-toxic and environmentally friendly materials	Consideration of environmental aspects in the design, construction, and operation phases	Design that allows adaptation to the changing environment

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Life cycle of a green building

The value chain encompasses all the different parties involved and responsible for the stages of a building's life cycle: from building owners, developers, designers and architects, construction companies, manufacturers of building materials, building components and systems, through to facility managers and right through to waste management and disposal companies.

The importance of considering environmental impacts at all stages of the cycle.

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Planning and design stages

01	Maximizing the energy efficiency of the building from the start.
02	Application of passive energy solutions (natural light, thermal insulation).
03	Use of advanced construction techniques to minimize emissions.

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Construction stage

Reduced use of carbon-intensive materials (e.g. concrete and steel).

Efficient utilization of natural resources.

Utilizing prefabricated construction techniques to reduce waste.

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Operation and modernization stage

Operation:Minimize energy consumption through regular maintenance.

Modernization:Using modern solutions such as building management systems to improve energy efficiency.

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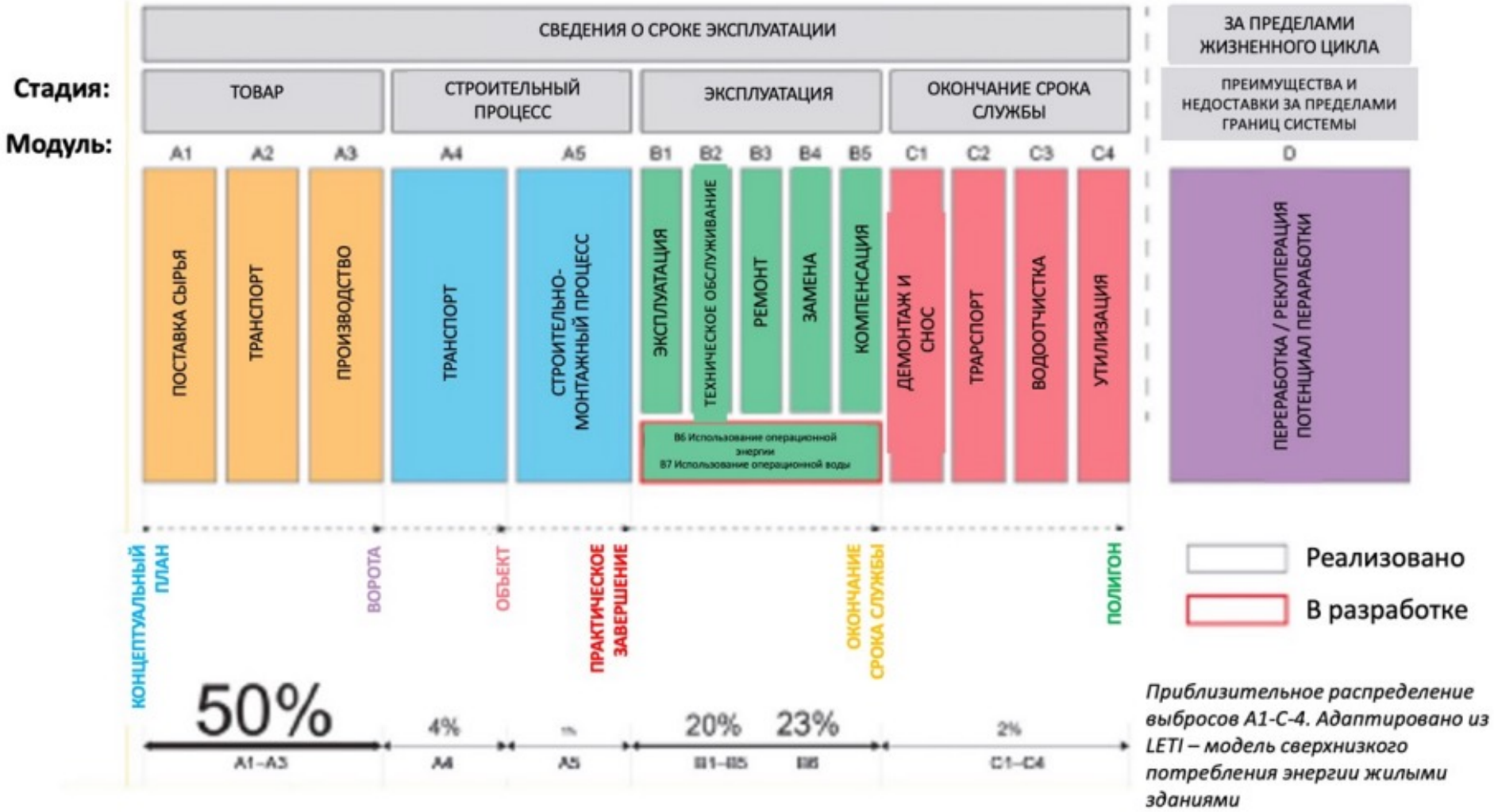
Stages of the service life



Приблизительное распределение выбросов A1-C-4. Адаптировано из LETI – модель сверхнизкого потребления энергии жилыми зданиями

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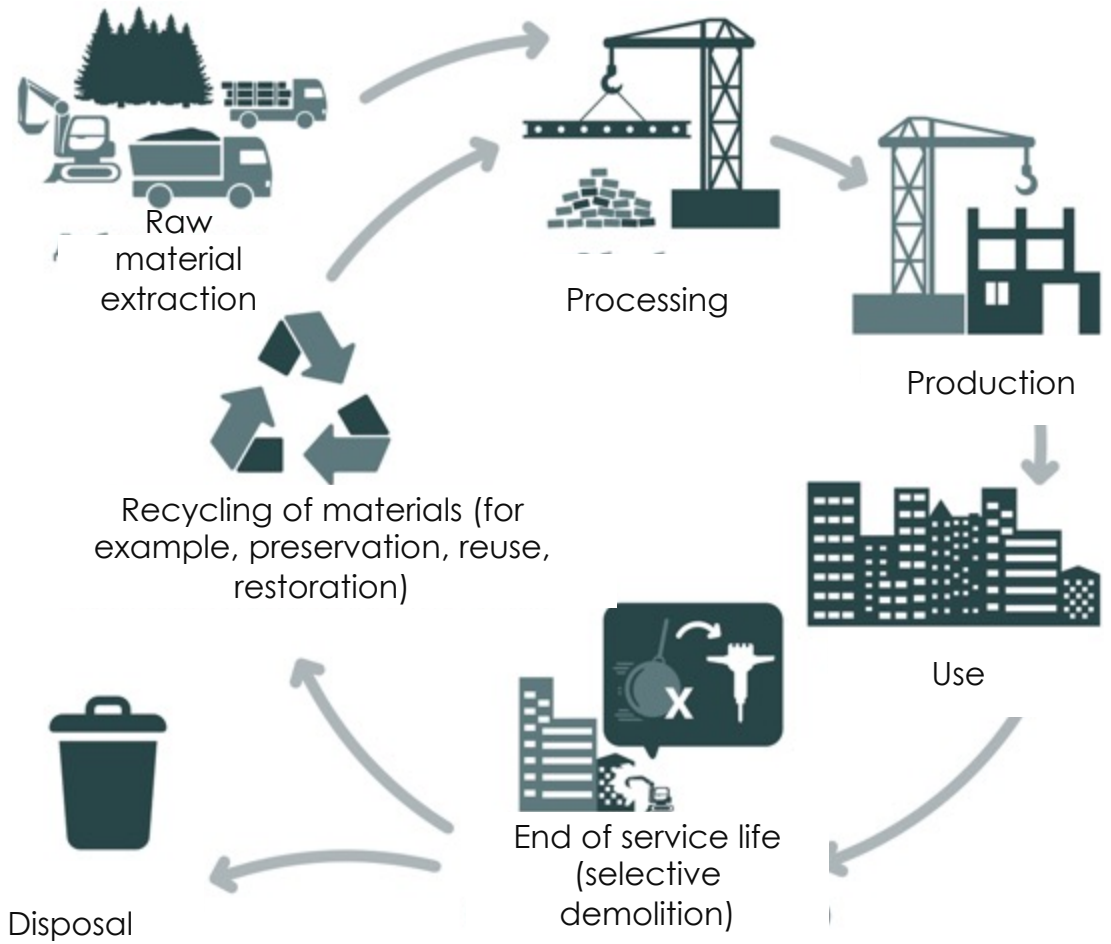
End of service life

Circularity in Construction

- Reuse of materials after the demolition of buildings

Land Reclamation

- Minimizing environmental impact through the reuse and recycling of materials.



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Examples of international practice

Best practices of EU countries

In Europe, much attention is paid to the standardization of near-zero energy buildings (ZEB). More than 65% of buildings in the EU were built before 1980, and a significant proportion require extensive renovation. In the EU, renovation is aimed at achieving near-zero energy standards, which allows energy consumption to be reduced by 75% or more.

Deep reconstruction implies the implementation of highly efficient solutions: insulation, installation of energy-saving windows, replacement of heating systems with more energy-efficient ones. The EU actively supports the financing of such projects through various funds.

Circular Economy in Construction

The application of circular principles, such as reuse and recycling of building materials, is actively promoted in Europe. Renewable materials such as wood andbiocomposites, are becoming an important part of the construction process. In Europe, construction and demolition waste accounts formore than a third of all waste, and the circular economy helps to reduce them.

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Adaptation of international experience for Kyrgyzstan

Application of international standards

- *The implementation of energy efficiency standards for buildings in Kyrgyzstan is based on the successful experience of the EU. However, the country's climatic conditions require the adaptation of technologies to local characteristics, such as high mountain areas and seasonal temperature fluctuations.*
- *The need to implement near-zero energy standards and deep renovations to improve the energy efficiency of existing buildings.*

Potential for decarbonization

IT IS EXPECTED THAT BY 2050 THE CONSTRUCTION INDUSTRY CAN REDUCE EMISSIONS BY **80-90%** THROUGH THE USE OF GREEN TECHNOLOGIES. THIS INCLUDES NOT ONLY IMPROVING THE CONSTRUCTION OF NEW BUILDINGS, BUT ALSO MODERNIZING EXISTING BUILDINGS THROUGH THE USE OF MORE EFFICIENT HEATING AND VENTILATION SYSTEMS AND THE USE OF RENEWABLE ENERGY SOURCES.

Source: UN Intergovernmental Panel on Climate Change (IPPC report, 2018), Global warming of 1.5 °C.

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Goal 2030 according to NDCs

Ensuring a significant reduction in CO_2 emissions through comprehensive improvement of building energy efficiency, including the large-scale implementation of energy-efficient technologies in households, modernization of boiler houses, construction of new energy-efficient buildings, and enhancement of the energy efficiency of existing structures.

The target CO_2 emission reduction by 2030 is **2,137.745 thousand tons of CO_2 equivalent**, which will be achieved through the following measures:

1. Scaling up the use of energy-efficient stoves in households – **886.314 thousand tons of CO_2.**
2. Replacing coal boilers with gas boilers in small boiler houses – **1,223.697 thousand tons of CO_2.**
3. Construction of new energy-efficient buildings – **16.866 thousand tons of CO_2.**
4. Improving the energy efficiency of existing buildings – **10.868 thousand tons of CO_2.**

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Benefits for Kyrgyzstan

01 ECONOMIC	Reduced energy costs for both citizens and businesses. Energy efficient buildings require less heating and cooling costs, which reduces overall energy consumption
02 SOCIAL	Improved quality of life: buildings with good insulation and ventilation create comfortable living and working conditions. It also contributes to better health by improving air quality and reducing harmful emissions.
03 ENVIRONMENTAL	Improved quality of life: buildings with good insulation and ventilation create comfortable living and working conditions. It also contributes to better health by improving air quality and reducing harmful emissions.

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Conclusions

The need for sustainable approaches	• Kyrgyzstan, like many other countries, needs to transition to sustainable construction to address issues related to climate, resource use, and energy consumption.
The role of energy efficiency	• Energy efficiency is a key aspect of green construction, allowing for reduced heating, lighting, and cooling costs in buildings.
The importance of a circular economy	• Reusing materials reduces waste and carbon footprints, increasing the sustainability of the construction sector.
Adaptation of international experience	• Kyrgyzstan can apply successful EU energy efficiency practices, adapting them to its climate and economic conditions.
Green construction — the path to a sustainable future	• Savings on energy resources, job creation, improvement of living conditions, and reduced environmental impact.

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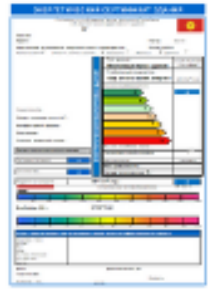
National Policy Recommendations

Tougher building codes for new buildings.

Improving energy efficiency standards for existing buildings



Introduction of mandatory energy certificates for all buildings

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CONCLUSION

Green construction is the key to sustainable development in Kyrgyzstan. By implementing circular economy principles and energy-efficient technologies, the construction industry can make a significant contribution to reducing emissions and improving the environmental situation in the country.

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