Energy-efficient modernisation of the housing stock in Kazakhstan – strategic objectives and practical implementation

20 March 2026

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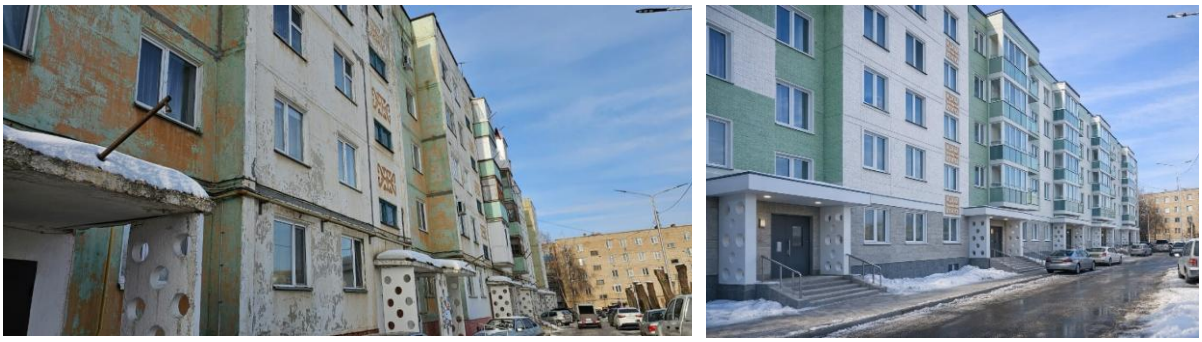

From maintenance to comprehensive modernisation: comfort, energy efficiency and sustainability
left: apartment building in Kazakhstan; right: simulation of a comprehensively modernised apartment building

As part of the national project 'Modernisation of the Energy and Utilities Sector' (MEU) for the period 2025–2029, Kazakhstan is placing great emphasis on expanding energy capacity and upgrading the infrastructure of centralised heating, electricity and water supply systems. Billions are being invested in the construction of new energy facilities, the modernisation of district heating networks and the expansion of municipal infrastructure.

These measures are crucial for improving security of supply and reducing wear and tear on supply networks, which in some regions remains above 50 per cent[1]. At the same time, however, a strategic question arises: how sustainable can energy policy be if a significant proportion of energy consumption is accounted for by buildings with low energy efficiency?

Today, buildings and the housing and utilities sector account for around 45.7 per cent of Kazakhstan's total energy consumption[2]. In order to meet the commitments under the Paris Agreement and implement national climate policy, improving the energy efficiency of buildings is becoming a key factor in sustainable development.

Without a systematic modernisation of the existing housing stock, the expansion of energy capacity will inevitably be accompanied by persistently high energy consumption.

[1] *Source: 'Deterioration of municipal infrastructure and pricing policy: Kazakhstan and the world', https://ranking.kz/reviews/socium/iznos-kommunalnoy-infrastruktury-i-tarifnaya-politika-kazahstan-i-mir.html (article dated 24 December 2025, accessed in February 2026).*
[2] *Source: Presentation by the Institute of Electrical Power Engineering and Energy Saving in Kazakhstan (EEDI), 6th International Forum on Energy Saving in Astana, 7 November 2024.*

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Therefore, the modernisation of buildings must be viewed not only as part of housing policy, but also as a key instrument for the country's energy and climate transition.

The housing stock as untapped potential for energy policy

Most of the apartment buildings in Kazakhstan were built between the 1960s and the 1990s. Many of them are characterised by

- significant heat losses,
- lack of effective thermal insulation,
- outdated heating systems, and
- lack of systems for monitoring and controlling energy consumption.

Consequently, the housing stock is one of the main causes of inefficient energy consumption.

The trend in heating costs highlights this problem. Heating tariffs vary considerably between regions: from around 3,200 tenge per gigacalorie in southern cities to more than 10,000 tenge in Almaty for buildings without heat meters. The differences in costs cannot be explained solely by climatic conditions, but also by the state of the infrastructure, the technical characteristics of the buildings and high heat losses.

Given rising living costs, this problem is taking on particular social significance. Over the last three years, prices for goods and services in Kazakhstan have risen by around 34 per cent, whilst the cost of housing and utilities has risen by more than 42 per cent[3]. In such a situation, the energy-efficient modernisation of buildings becomes not merely an environmental or technological challenge, but a key socio-economic factor in easing the financial burden on households.

Gap between homeowners' expectations and actual modernisation practices

Programmes to modernise apartment buildings are already in place in Kazakhstan. In practice, however, modernisation is often limited to individual repair works, such as the refurbishment of roofs, façades or heating systems, without comprehensive energy-efficient solutions being developed or applied.

The media regularly report on cases where problems persist after a complete refurbishment, including leaky roofs, cold flats or flooded basements[4]. Such situations reflect deeper systemic problems, including

- the failure to implement mandatory energy efficiency standards for renovation,
- outdated technical standards,
- inadequate quality control during construction work, and
- an unclear division of responsibilities between clients, contractors and regulatory authorities.

As a result, the substantial investments made by homeowners do not always have a long-term impact, and public confidence in government modernisation programmes may decline.

[3] *Source: 'Rise in the cost of living in Kazakhstan over three years: paid services have seen the sharpest increase in prices',* https://ranking.kz/digest/socium-digest/rost-stoimosti-zhizni-v-kazahstane-za-tri-goda-zametnee-vsego-podorozhali-platnye-uslugi.html *(article dated 29 January 2026, accessed in February 2026).*

[4] *Source: 'A Sham Modernisation',* https://time.kz/articles/territory/2025/06/30/imitatsiya-polnoj-modernizatsii *(article dated 30 June 2025, accessed in February 2026).*

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Redefining the role of buildings in the energy transition

The national MEU project aims to reduce heat losses in district heating systems from 52 per cent to 42 per cent by 2029[5]. This objective is an important step towards improving the efficiency of the energy infrastructure.

However, international experience shows that the greatest impact is achieved when the modernisation of the energy infrastructure takes place at the same time as the modernisation of the buildings connected to these networks. If buildings continue to suffer from high heat loss, a significant proportion of the investment in infrastructure development will be wasted.

The targeted further development of Kazakhstan's energy strategy could encompass three key areas:

1. Recognition of the buildings sector as a distinct component of energy and climate policy.
2. Fine-tuning of government support mechanisms for modernisation, with the granting of financial support made conditional on compliance with minimum standards regarding technology and energy efficiency.
3. Integration of tariff policy, social support and programmes to boost energy efficiency, in order to ensure a socially just transition to a more efficient energy system.

The role of homeowners and property management companies

In the 1990s, around 97 per cent of apartments in multi-family buildings in Kazakhstan were privatised. This means that the successful modernisation of the housing stock is not possible without the active involvement of homeowners and without effective management mechanisms for multi-family buildings.

Support for such mechanisms – including the development of homeowners' associations and other forms of collective management – is one of the necessary prerequisites for the successful and effective implementation of comprehensive modernisation programmes.

Government policy can play a key role in creating conditions under which homeowners can actively bring about decisions on the modernisation of their buildings.

Pilot projects as a tool for developing a national strategy

Pilot projects aimed at the energy-efficient refurbishment of apartment buildings can play an important role in the development of national policy.

Such projects make it possible to

- test comprehensive technical solutions
- assess the actual energy savings,
- analyse the modernisation costs for households,
- improve the qualifications of construction companies and skilled workers,
- develop a quality control mechanism for energy-efficient modernisation, and
- gain institutional experience for scaling up programmes.

Furthermore, pilot projects do not require significant budgetary resources. On the contrary, they can be an effective tool for testing innovative approaches with limited financial risks.

[5] *Source: 'Deterioration of municipal infrastructure and pricing policy: Kazakhstan and the world', https://ranking.kz/reviews/socium/iznos-kommunalnoy-infrastruktury-i-tarifnaya-politika-kazahstan-i-mir.html (article dated 24 December 2025, accessed in February 2026).*

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A key prerequisite for their success is the systematic evaluation of results, transparent communication and the use of the practical experience gained to further develop national programmes.

Conclusion: A change of perspective as a prerequisite for sustainable modernisation

Kazakhstan is already taking significant steps to modernise its energy and utilities infrastructure. However, to ensure these investments are effective in the long term, a shift in perspective is required.

The building stock, particularly the housing stock, must not be regarded as a secondary aspect of housing policy, but rather as a central component of the country's energy and climate transition.

A comprehensive modernisation of buildings can

- significantly reduce energy consumption,
- reduce the financial burden on households caused by utility bills,
- increase the stability of the energy system, and
- boost public support for reforms.

A comprehensive energy-efficient refurbishment of buildings is a project that benefits everyone involved.

- Residents: Improved housing and living conditions for a large proportion of the population who live in older buildings,
- Economy: New jobs through the development of the construction industry, the building materials sector, and small and medium-sized enterprises
- Government: Increased tax revenue for the budget through the revitalisation of the economy and the growth of businesses in the building renovation sector
- Global community: Contribution to international climate protection efforts

The key political and institutional conditions for such a policy in Kazakhstan are already in place. The next step could be to develop them further in a consistent manner, building on pilot projects, international experience and a systematic government strategy to improve the energy efficiency of buildings.

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