

2.3 Action Plan for Improved insulation of panel apartment buildings

2.3.1 Description of the technology

Buildings constructed during the socialist period are still in use in large numbers. In central city areas they may be replaced by private developers with newer/larger buildings, but elsewhere the socialist period buildings are likely to remain in use for decades to come. These buildings have minimal levels of insulation and need to be retrofitted with extra (generally external) wall insulation and modern lower heat loss windows to replace old twin openable wooden windows. These existing buildings are not fitted with heat meters, nor do tenants have user-adjustable heat output controls on their radiators, nor can automatic temperature control thermostatic radiator valves (TRV) be fitted due to the single pipe vertical heating pipe layouts used. Therefore, for these existing socialist period buildings, a key barrier is that building owners and tenants have no means to control their heat use except by opening their windows and venting excessive heat to the outside, nor do they have any incentive to carry out expensive retrofitting insulation or modern insulating and air-tight windows.

Given the low income level of most occupants of existing apartment buildings, it is not realistic to expect any future building control system to be able to mandate, let alone enforce, the necessary costly retrofitting of insulation, re-piping of radiators, the fitting of heat meters, the use of consumption based heat tariffs, the fitting of controls such as TRV on radiators, and the installation of triple glazed or other equivalent performance insulating windows.

Benefits from the improved insulation of panel apartment buildings:

- Living conditions of the residents will be improved;
- Financial income of the people will be increased
- Heat energy costs of the apartments will be reduced.
- Reserve capacity for the city's heat sources will be set up and this reserve source can be used for heating of apartments planned to be built in future.

2.3.2 Target for technology transfer and diffusion

The majority of the apartment buildings in UlaanBaatar was constructed in the 1970s, 1980s and early 1990s and is in a poor state, without systematic professional maintenance and repairs. The energy efficiency in centrally and district heated buildings leaves room for technical and managerial improvement. Per square meter heat consumption of the buildings is about five times higher than the modern buildings in Europe. This to some extent is because of the very cold climate in Mongolia, but the main reason is poor technology and a lack of incentives to save energy.

A recent study (Mongolia: NAMA) on heat losses concluded that nearly 40% of the heat is lost in houses and buildings. The heat losses occur through windows, walls and doors: the design and construction of old apartment buildings in bigger cities are very similar to the buildings found in many places of the former Soviet Union.

A study on local building standards indicated that heat demand in multi-family buildings could be reduced by about 60%. (BEEP Report) There are around 500 panel apartment buildings which house around 200,000 people or around 20% of the population of Ulaanbaatar.

The first phase the implementation plan of the National Action Program on Climate Change approved by the government mentions the insulation of existing buildings with high heat losses during the period 2012-2016.

Mongolia's Nationally Appropriated Mitigation Actions (NAMAs) submitted to the UNFCCC secretariat also include building energy efficiency improvement measures such as the improvement of insulation in existing buildings.

After stakeholder consultation it is assumed that 300 existing panel apartment buildings will be insulated by 2020 as general target of building insulation technology transfer and diffusion.

2.3.3 Barriers to the technology's diffusion

Table 76: Barriers to the technology's diffusion

<i>Key barriers identified</i>		<i>Enabling measures</i>
Category	Barriers	
Economic and financial	Inappropriate financial incentives and disincentives	<ul style="list-style-type: none"> - Change the existing constant heat tariff and make heat charges depending on actual heat consumption. - The residents should have sufficient incentive to insulate their apartment. - Government should find adequate access to financial sources and establish financial mechanisms, such as making soft loans and government support available to residents.
	Lack of adequate access to financial resources	<ul style="list-style-type: none"> - The Government should continue its efforts in attracting Clean Development Mechanism (CDM) financing for energy efficiency projects, including efficient lighting technology. - The Government should consider consolidating the Green Credit Guarantee Fund and other similar funds in order to create revolving credit liquidity
	High cost of capital	<ul style="list-style-type: none"> - The Government should make efforts to provide resident of un-insulated apartments with insulation of apartment using such instruments as subsidies and micro credits - The Government should take action to develop building insulation projects and organize the implementation
Market	Poor market infrastructure	<p>The government policy should focus on energy efficiency in energy production and energy saving among consumers. The energy producers and distributors should be motivated to support energy saving among consumers, including energy saving in buildings. The Government should put strong emphasis on the implementation and enforcement of adopted building regulations.</p> <p>The Government should introduce individual heat metering in apartment building where this is technically possible.</p>
	Under-developed competition	<p>It is necessary to motivate the property developers and rental market to invest in building insulation. The government should have strong and effective policy to implement building standards among existing un-insulated buildings. The government needs to support technical and managerial improvement in buildings with district heating.</p>
Policy, legal and regulatory	Insufficient legal and regulatory framework	<p>The Government should finalise the Energy Conservation Law as soon as possible. The Energy Conservation Law should send a strong signal to energy stakeholders and the wider public about the importance of energy efficiency. The Government should reinforce cooperation with all relevant Governmental institutions and other stakeholders in drafting the Energy Conservation Law. Upon the adoption of the Energy Conservation Law the Government should proceed with the development of secondary legislation and regulations in different sectors, in close cooperation with relevant actors</p>

<p>Institutional and organizational capacity</p>	<p>Lack of professional institutions</p>	<p>It is important to establish Energy Service Companies (ESCOs) specialized in energy efficiency planning and energy efficiency project implementation. One assignment for the high level decision makers is to organise a knowledge base by compiling information regarding energy efficiency projects (including donor financed projects), including lessons learned. This could assist the Government in developing a strategy and prioritising future donor financing of energy efficiency projects</p>
<p>Information and awareness</p>	<p>Lack of awareness about climate technologies</p>	<p>Cooperation between the Ministry for Energy and other relevant Governmental institutions should be enhanced. Cooperation with other actors such as NGOs, donor organisations, and private actors should also be improved. The Government should promote energy efficiency awareness raising and training for Government officials and the wider public at local, regional and national level. One assignment for the high level decision makers is to organise a knowledge base by compiling information regarding energy efficiency projects (including donor financed projects), including lessons learned. This could assist the Government in developing a strategy and prioritising future donor financing of energy efficiency projects</p>

2.3.4 Proposed action plans for insulation of panel apartment buildings

Table 77: Proposed action plans for insulation of panel apartment buildings

Measures	Actions	Why the actions need	Responsible organization	Time frame	Expected budget, 1000USD	How can be fund
Establishment the legislation	Development and adoption of the law on energy saving	Establish a working group to develop the law of energy conservation. Building heat loss shall be covered in the law	Energy Regulatory Authority of Mongolia	1-2 year	No need	State budget
	Decision making of the city mayor	The decision should specify an approach of how, when and what organization and with which funding insulation of older buildings will be improved	Ministry of Construction and Urban Planning city administrations	2013 year	No need	
Economic and financial measures						
Creation of financial resources	Set up fund to improve building insulation	About 80 million dollars is required for additional insulation of about 500 panel buildings as counted by 2010. In case of successful insulation of each building, over 550 thousand tons of coal can be saved each year. This way, investment payback period is very short.	Ministry of Construction and Urban Planning city administrations	1 year	80 000	-
Market						
Increase awareness for residents about the concept of building insulation	Organize workshops and trainings	Curriculum on building insulation with affordable technologies and their economic and environmental benefits shall be developed for the relevant authorities	Ministry of Construction and Urban Planning city administrations	2 year	150.0	State budget
	Organize public awareness raising campaigns	Not every resident is aware of the importance of building insulation	Ministry of Construction and Urban Planning city administrations	3 year	50.0	State budget
Improved rates of heat prices for heating buildings	Set up a working group to develop a new pricing/tariffing system	Currently, residents pay heating charge based on a constant rate per square meter of floor area and the area of their apartments; residents do not have interest to save heat	Energy Regulatory Authority of Mongolia	2013-2014	No need	--
Creating incentives	Guidelines to provide financial incentive to residents who successfully improved the building insulation	Precast panel buildings are all privatized. Even though the residents have interest to insulate their buildings, they have no financial resources to pay for the investment cost.	Ministry of Environment and Green Development	yearly	100.0	State budget