



# Pre-Feasibility Study Thermo-Technical Rehabilitation of Pre-Cast Panel Buildings in Ulaanbaatar

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Executive Summary



1. Pre-cast concrete panel buildings from the socialist period represent a major part of the housing stock of Ulaanbaatar, the world's coldest national capital. They comprise 47.000 housing units, sheltering approx. 20% of the total population of more than 1 million inhabitants. These buildings are not insulated and are in a poor state due to a lack of maintenance. Most are connected to a city wide heating system which was partially upgraded through an ADB financed project. The current heat pricing system lacks incentives for efficient use of energy, capital and capacity. Heat consumption is not metered; the residents are billed a fixed, square meter based fee, estimated to reach less than 30% of the full cost recovery level.
2. The point of departure of the CDIA pre-feasibility study was a pilot project, equally financed by the Ulaanbaatar City Government and GTZ, which thermo-technically rehabilitated a panel building in 2007. The technical specifications of the rehabilitation indicate potential heat energy savings of approx. 50 - 60%, with substantial reductions in CO2 emissions.
3. The proposed Programme envisages the rehabilitation of 40.000 housing units at unit costs of between USD 6.000 – 12.000 (average of USD 160/m<sup>2</sup>) over a period of 15 years. The rehabilitation entails insulation of outside walls, replacement of windows and outside doors, repairs of heating pipes and radiators, the installation of heat control valves and heat cost allocators as a basic package, to be complemented by other construction measures according to necessity. Other Programme components address the mobilisation and empowerment of the residents, technical training, capacity building and the support to introduce the required changes for a conducive legal and institutional framework including the implementation of consumption based billing.
4. The Programme will increase energy efficiency and reduce CO2 emissions by approx. 660,000 tonnes per year which justifies CDM credits as an essential source of finance. In addition, the Programme will have tremendous other benefits: it will increase the quality of life for the residents; it will stop the process of deterioration of the panel buildings and extend their useful lives; it will also free heat capacity for further urban development. Investment costs will be recovered through a long-term betterment charge on the monthly service bill paid by the residents, through contributions by the City of Ulaanbaatar and/or the Government of Mongolia, and through the sale of carbon credits.
5. The executing agency of the Programme will be the City Government of Ulaanbaatar. Other key stakeholders are the condominium organisations and their Supreme Council, housing companies and District Heating Company; Ministry of Roads, Transport, Construction & Urban Development (MRTCUD), Ministry of Mineral Resources and Energy (MMRE) and the Energy Regulatory Authority (ERA).
6. In a first investment phase (2010 – 2012) of USD 10 million a cluster of 8 – 12 panel buildings containing approx. 800 housing units around one pump station is suggested to be rehabilitated to test the feasibility of the Programme. Given the limited financing possibilities of local and national governments due to the present international financial and economic crisis, the counterpart contribution is proposed to cover only the costs of the PMU. KfW has declared readiness to evaluate co-financing the construction component of the first investment phase with a loan at concessionary terms, subject to the execution of a detailed feasibility study. GTZ would be ready to provide the required technical assistance on a grant basis, subject to the approval of BMZ. ADB is considering a small grant to finance the necessary CDM baseline study.