

Feasibility study for the thermo-modernisation of public buildings in the city of Kamianske

Project background

Name of applicant	Kamianske City Council, Dnipropetrovsk region, Ukraine
Project info/Project name	Feasibility study for the thermo-modernisation of public buildings in the city of Kamianske
Contractor	UAB Nomine Consult
Project duration	November 2019-August 2020
Contract value	EUR 119,842

Project summary

1 Project summary

The objective of the project was to conduct a feasibility study on the thermo-modernisation of public buildings in Kamianske. The comprehensive feasibility study consisted of a baseline assessment, and the development of a Priority Investment Programme (PIP), financial model and environmental and social impact assessment.

The project also included the development of Implementation and Procurement Plans as well as Long-Term Investment Planning (LTIP). The project scope included 36 of the 38 public buildings selected by the city on the basis of energy audits conducted in 2015 and a preliminary study on the thermo-modernisation of the buildings. Of the buildings considered, 17 were selected for the PIP (based on compliance with non-financial criteria and a 4% return on investment rate – discount rate commonly used for public sector projects) and 19 for the Secondary List (these buildings do not meet the financial profitability criteria). Energy savings and CO₂ emissions reductions are expected if the project is implemented according to the PIP. The estimated investment cost for the PIP is EUR 15.2 million, including a EUR 12.9 million loan and the city's own financing.

2 Project conclusions

The energy audit reports and site visits showed that the buildings are mostly in poor condition, for instance the indoor air quality (IAQ) does not meet hygiene and comfort requirements. They are mostly in the poorest energy-efficiency classes, 'E' or even 'F'. The Feasibility Study recommended a set of measures to be applied for each building (in different combinations):

- External wall insulation and replacement of external doors (building envelope)
- New windows (building envelope)
- Mechanical ventilation and recuperation – full scale, mainly installation of a new mechanical ventilation system
- Roof insulation (building envelope)
- Ground floor insulation (floor above the unheated basement)
- New heating substation with automatic control
- Complete reconstruction of the building's heating (radiator) system
- Piping insulation – replacement and insulation of heating distribution pipelines located in the unheated basement and attic
- Operation, maintenance and energy management
- Replacement of existing lighting system with LED lights
- Outdoor lighting system

Implementing the recommended measures would improve energy efficiency in

the buildings; the energy efficiency classes would be expected to improve from classes 'F' or 'E' to 'B' or 'A' and energy consumption per square meter reduce. In addition, the project would result in a reduction of CO2 emissions, provide proper IAQ for people working and visiting the buildings and increase public awareness of the energy-savings measures.

3 Impact on human rights and the UN's Sustainable Development Goals

The project would positively impact human rights by supporting improvements in infrastructure and living standards, and ensuring environmental sustainability and energy security, so all consumers, including vulnerable groups, would have access to affordable, reliable and modern energy services.

The feasibility study concerns the following SDGs:



4 Project deviations

Out of 38 public buildings initially identified, 36 were assessed in the Feasibility Study as two had already been renovated. Due to the coronavirus pandemic, the final phases of this project were slightly delayed.

5 Lessons learnt

The project has demonstrated the importance of energy-efficiency measures. Thermo-modernisation of public buildings leads to heating energy and electricity savings and thus reduces air pollutants related to energy generation, which overall has a positive impact on air quality.

The project helped the city to understand the best approach for implementing the project given the scarce financial resources – all 36 buildings considered for LTIP were prioritised by economic, social, environmental and financial criteria, as a result of which 17 were selected (based on compliance with non-financial criteria and return on investment rate). The feasibility study has also shown that even under the pessimistic scenario conditions, the local budget will not be significantly affected and the City will be capable to finance the PIP. Therefore, attracting an international loan is a good option for financing large infrastructure projects.