

# NS-228 - Energy Efficient Refurbishment in the Georgian Public Building Sector

## Georgia

### NAMA Seeking Support for Implementation

#### A Overview

A.1 Party

Georgia

A.2 Title of Mitigation Action

Energy Efficient Refurbishment in the Georgian Public Building Sector

A.3 Description of mitigation action

The NAMA is aimed at long term transformation of building energy efficiency with a first focus on building readiness to create the necessary regulatory structures to support the nationwide adoption of deep energy efficient refurbishment and rehabilitation of the existing building stock. By piloting the renovation of key public buildings in Covenant of Mayors (CoM) cities as well as central government facilities the NAMA (NAMA1) seeks to build capacity and experience in carrying out deep energy efficient renovation of entire buildings and testing the model of energy performance contracting through Energy Service Companies (ESCOs).

In this process the project offers to demonstrate a programmatic approach for low carbon renovation of existing buildings. In this approach all stakeholders are equally involved including households associations who are currently a very formal establishment with limited activity and influence. This inclusive approach allows the different stakeholders to understand private benefits as well as the benefits achieved through national and international processes. This NAMA then paves the way for a second phase to extend the process to the residential sector once the majority of barriers are removed and the country has more experience with the implementation of full building refurbishment, rehabilitation and maintenance.

A.4 Sector

- |  |   |
|--|---|
| <input type="checkbox"/> Energy supply                                   | <input type="checkbox"/> Transport and its Infrastructure |
| <input checked="" type="checkbox"/> Residential and Commercial buildings | <input type="checkbox"/> Industry                         |
| <input type="checkbox"/> Agriculture                                     | <input type="checkbox"/> Forestry                         |
| <input type="checkbox"/> Waste management                                |   |

Other Initial focus on public bu

A.5 Technology

- |   |  |
|---|--|
| <input type="checkbox"/> Bioenergy                    | <input type="checkbox"/> Cleaner Fuels           |
| <input checked="" type="checkbox"/> Energy Efficiency | <input type="checkbox"/> Geothermal energy       |
| <input type="checkbox"/> Hydropower                   | <input checked="" type="checkbox"/> Solar energy |
| <input type="checkbox"/> Wind energy                  | <input type="checkbox"/> Ocean energy            |
| <input type="checkbox"/> Carbon Capture and Storage   | <input type="checkbox"/> Low till / No till      |
| <input type="checkbox"/> Land fill gas collection     |  |

A.6 Type of action	<input type="checkbox"/> Other <input type="text"/>					
	<table border="1"> <tr> <td><input type="checkbox"/> National/ Sectoral goal</td> <td><input type="checkbox"/> Project: Investment in machinery</td> </tr> <tr> <td><input checked="" type="checkbox"/> Strategy</td> <td><input checked="" type="checkbox"/> Project: Investment in infrastructure</td> </tr> <tr> <td><input type="checkbox"/> National/Sectoral policy or program</td> <td><input type="checkbox"/> Project: Other</td> </tr> </table>	<input type="checkbox"/> National/ Sectoral goal	<input type="checkbox"/> Project: Investment in machinery	<input checked="" type="checkbox"/> Strategy	<input checked="" type="checkbox"/> Project: Investment in infrastructure	<input type="checkbox"/> National/Sectoral policy or program
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<input checked="" type="checkbox"/> Strategy	<input checked="" type="checkbox"/> Project: Investment in infrastructure					
<input type="checkbox"/> National/Sectoral policy or program	<input type="checkbox"/> Project: Other					
A.7 Greenhouse gases covered by the action	<input type="checkbox"/> Other <input type="text"/>					
	<table border="1"> <tr> <td><input checked="" type="checkbox"/> CO2</td> <td><input checked="" type="checkbox"/> CH4</td> </tr> <tr> <td><input checked="" type="checkbox"/> N2O</td> <td><input type="checkbox"/> HFCs</td> </tr> <tr> <td><input type="checkbox"/> PFCs</td> <td><input type="checkbox"/> SF6</td> </tr> </table>	<input checked="" type="checkbox"/> CO2	<input checked="" type="checkbox"/> CH4	<input checked="" type="checkbox"/> N2O	<input type="checkbox"/> HFCs	<input type="checkbox"/> PFCs
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<input checked="" type="checkbox"/> N2O	<input type="checkbox"/> HFCs					
<input type="checkbox"/> PFCs	<input type="checkbox"/> SF6					
<input type="checkbox"/> Other <input type="text"/>						

### B National Implementing Entity

B.1.0 Name	The Ministry of Environment and Natural Resources Protection (UNFCCC Focal Point) The Ministry of Economy and Sustainable Development The Ministry of Energy
B.1.1 Contact Person 1	Mr. Grigol Lazriev
B.1.2 Address	6 Gulua str. Tbilisi, Georgia
B.1.3 Phone	+995-593 324944
B.1.4 Email	g.lazrievi@moe.gov.ge
B.1.5 Contact Person 2	Mr. David Gigineishvili
B.1.6 Address	12, Chanturia str., Tbilisi 108, Georgia
B.1.7 Phone	+995-599 551285
B.1.8 Email	dgigineishvili@economy.ge
B.1.9 Contact Person 3	Ms. Marita Arabidze
B.1.10 Address	2 Sanapiro str. Tbilisi, Georgia
B.1.11 Phone	+ 995-593 728595
B.1.12 Email	marita.arabidze@minenergy.gov.ge
B.1.13 Comments	These three ministries have been actively involved in the NAMA preparation and coordination process. The establishment of an enabling environment for deep energy efficient refurbishment supported by EPC (Energy Performance Contract) and ESCO activities is envisaged at the readiness phase of NAMA following this will be an implementation phase during which chosen demonstration projects will be tendered to ESCOs to carry out the deep refurbishment of the building. For the implementation of readiness phase of the NAMA the responsible ministries are currently considering different options which will be finally decided together with the grant provider. To test different solutions in Georgia, the central government will set up a unit to manage the renovation of their buildings, including energy performance contracting. The municipalities will be responsible implementing entities for the implementation stage. Their responsibility will include issuing a tender for an external party to manage the renovation process including securing finance and energy performance contracting. The external party can be a traditional energy services company (ESCO) either for profit or not for profit, or any other with the right qualifications. As ESCOs are not established yet in

Georgia, existing developers will be trained for this purpose during the readiness phase as well as joint ventures with experienced ESCOs might be formed. These entities would deliver the energy efficient renovation of 50 000 – 60 000 sq. metres in a 3 year period, with monitoring and reporting of the performance of the buildings continuing after that period. Part of the contracting for the energy –efficient renovation work would include provisions to help disseminate the results from the renovation and the financing/contracting arrangements (allowing for commercial sensitivities).

C Expected timeframe for the implementation of the mitigation action

C.1	Number of years for completion	5
C.2	Expected start year of implementation	2016

D Currency

D.1	Used Currency	AED
		Conversion to USD: 1

E Cost

E.1.1	Estimated full cost of implementation	18900000
E.1.2	Comments on full cost of implementation	NAMA consists of two phases: phase I -readiness phase (Euro 0.9 million) and phase II-implementation phase targeting the full renovation of 50 000 to 60 000 sq. meter in buildings including EE measures (18 million Euro, Euro 300 per sq.m). Full cost estimated to amount to Euro 18.9 million.
E.2.1	Estimated incremental cost of implementation	5940000
E.2.2	Comments on estimated incremental cost of implementation	Incremental cost only for the implementation phase (without the EUR 0.9 million grant requested for readiness phase) is EUR 5.04 million. Total incremental cost including grant requested for readiness phase amounts to EUR 5.94 million .  Costs for implementation of energy efficiency/renewable measures are considered by the project as incremental costs. Cost for full renovation of per sq. meter including EE measures estimated in range of EUR 200-300. From this amount about 28% cover cost of EE measures. 5.04 million Euro is 28% of 18 million Euro. Grants requested for readiness phase and management of implementation process plus costs of EE considered by the project as incremental cost (5.94 million Euro) is about 31.4% of total budget.

F Support required for the implementation the mitigation action

F.1.1	Amount of Financial support	18900000
F.1.2	Type of required Financial support	<input checked="" type="checkbox"/> Grant <input type="checkbox"/> Loan (sovereign) <input type="checkbox"/> Loan (Private) <input checked="" type="checkbox"/> Concessional loan <input type="checkbox"/> Other <input type="text"/>
		<input checked="" type="checkbox"/> Guarantee <input type="checkbox"/> Equity <input checked="" type="checkbox"/> Carbon finance
F.1.3	Comments on Financial support	EUR 0.9 million (grant); EUR 18 million (concessional loan and Carbon Finance);

F.2.1 Amount of Technological support	18000000
F.2.2 Comments on Technological support	The full renovation of 50 000 -60 000 sq. meter public building area including installation of EE/renewable measures is planned with this amount. Focus is mainly on heating systems and building fabric and even though savings will be generated they will not be enough to full commercial loans at the rates available in Georgia. Therefore, implementation process should be supported by partial grants and concessional loans.
F.3.1 Amount of capacity building support	900000
F.3.2 Type of required capacity building support	<input type="checkbox"/> Individual level <input checked="" type="checkbox"/> Institutional level <input checked="" type="checkbox"/> Systemic level <input type="checkbox"/> Other <input type="text"/>
F.3.3 Comments on Capacity Building support	<p>To increase the rate of energy efficient renovation of Georgia's buildings a number of preparatory and regulatory actions, identified as gaps during the NAMA preparation process, need to be carried out. Therefore the NAMA is split into two phases: phase I-readiness phase and phase II-implementation phase. This first phase can be seen as a readiness programme that will allow the country to build capacity, knowledge and awareness towards the topic of energy efficiency and low carbon buildings. The first phase therefore focuses on developing the capacity in the Georgian public sector to be able to pilot renovation activities and energy performance contracting in public buildings. This phase has the clear objective of creating the structures to enable the scale up of activities towards the residential sector. Under the readiness programme activities will be carried out to further advance the understanding of the Georgian building sector and create pillars to support energy efficiency measures within the country. It will also be an opportunity to identify a suitable implementing agency within the country to carry out the envisioned work in the public sector and beyond.</p> <p>These additional preparatory cost of the readiness phase are considered as significant barrier by the central and local governments, hindering them to widely implement EE building programmes.</p>
F.4 Financial support for implementation required	<input type="checkbox"/>
F.5 Technological support for implementation required	<input type="checkbox"/>
F.6 Capacity Building support for implementation required	<input type="checkbox"/>

### G Estimated emission reductions

G.1 Amount	0.0012
G.2 Unit	MtCO <sub>2</sub> e/yr
G.3 Additional information (e.g. if available information on the methodological approach followed)	Based on energy audits of typical buildings carried out in Georgia's cities it is assumed that around 30% of emissions savings can be achieved

through the envisioned renovation activities. which corresponds to 0.02 t (20 kg) CO<sub>2</sub>eq per sq.m per annum. In monetary values, annual energy savings per sq.m is maximum 2.88 Euro (8 GEL) and for rehabilitated 60 000 sq.m savings will be around 60 000\*2.88= 172 800 Euro annually. For the ten years period the project will reach reduction of 12 000 t CO<sub>2</sub>eq and financial savings (only as a results of energy savings) 1 728 000 Euro. As it is mentioned above 300 Euro is estimated for full rehabilitation of per sq. m including EE measures. The latest covers 30% of total costs (100 Euro). Relevantly EE measures for 60 000 sq.m need 6 000 000 Euro. Taking into consideration monetary savings for ten years final expenses are 6 000 000 -1 728 000= 4 272 000 Euro. Cost per ton of CO<sub>2</sub>eq= 4 272 000/12 000 = 356 Euro. Two key issues should be mentioned here: savings on annual fixation of old/ deteriorated buildings caused after their renovation are not taken into consideration because they are not estimated at this stage (this could improve financial parameters of the project) and energy tariffs in Georgia is quite low (in this case investment is estimated in Euro exchange rates off which goes up and tariffs are in GEL and stay the same, of course this worsen financial parameters of the projects). This can be scaled up by targeting a larger share of buildings and more savings through energy efficient renovations can be achieved compared to the business as usual projects described in Georgia's INDC.

## H Other indicators

H.1

Other indicators of implementation

## I Other relevant information

I.1 Other relevant information including co-

benefits for local sustainable development. Some sustainable development benefits should be highlighted here:

- **Energy security and economic benefits** at national level: Energy security is an important priority of country. All national calculated reference scenarios further indicate an increase in energy use as the country continues to develop. The increase in energy use goes hand in hand with an increase in energy imports under business-as-usual. Facilitating energy efficiency gains within Georgia can therefore offer great benefits with respect to energy security. Limitation of energy import contribute to the country's macro-economical parameters;
- **Economic benefits at the households level** that are achieved by strengthening energy efficiency measures in buildings include job creation, due to increase in renovation activities, energy auditing as well as jobs in the construction and energy efficient material production. This benefit will also be seen through the implementation of the NAMA in which market creation for energy efficiency services and products form a key element.
- **Social and health benefits** are envisaged as a long term outcome of NAMA once it stimulated the wider adoption of EE refurbishments through the residential sector. Not all public buildings (including schools and kindergarten) are being heated 100% and temperature inside the building does not always correspond to established standards. The worst situation in terms of under-heating of buildings is observed in residential sector. Due to low-income and limited access to capital to invest in

heating systems often only part of the home is heated in Georgian buildings. The low energy efficiency of residential buildings in Georgia further leads to energy loss and waste that increases the issue of low comfort levels inside dwellings. There is a well-documented link between poorly heated homes and several negative health effects. These include cardio-vascular and respiratory diseases, as well as more minor illnesses such as cold and flu;

- **Environmental benefit** are anticipated on a long –term due to the avoidance of the use of unsustainable fire wood for heating, in private as well as public houses.

## J Relevant National Policies strategies, plans and programmes and/or other mitigation action

### J.1 Relevant National Policies

The Georgian government has submitted its **Intended Nationally Determined Contribution (INDC)**, and has been further developing its **Low Emission Development Strategy (LEDS)**. Georgia’s INDC foresees a mitigation target of 15% by 2030 below the optimistic BAU scenario and has further set an ambitious conditional target of 25% by 2030 below the same optimistic BAU scenario in case that sufficient international funding can be secured. The energy efficient refurbishment NAMA is one of the actions planned to be implemented in preparatory pre-2020 period to pave the way towards low carbon buildings in Georgia.

The Georgia Action Plan for the **EU’s European Neighbourhood Policy programme** includes plans to continue working on regional infrastructure for energy transit and development across the Caspian and Black Sea region. Of particular relevance is that this agreement entails a gradual convergence towards the principles of the EU internal electricity and gas markets, including the commitment to progress in energy efficiency and the use of renewable energy sources (Energy Charter Secretariat 2012).

The adoption of the **EU Association Agreement** has significant consequences for the energy and building sector. In general terms, the Association Agreement requires Georgia to assume more responsibility for mitigation, to contribute to the development of regional energy security and energy infrastructure in the Southern Corridor, to promote energy efficiency, and to restructure internal energy markets for electricity and natural gas so as to ensure competition, efficiency and transparency.

Through the **Covenant of Mayors (CoM) scheme**, a number of cities (10 self-governing cities and 4 municipalities) have demonstrated pro-activity in the development of sub-national agendas. The Covenant consists of the voluntary commitment of the signatory cities to meet and exceed the European Union 20% CO<sub>2</sub> reduction objective by 2020 through the implementation of Sustainable Energy Action Plans covering energy efficiency, promotion of renewable energy and clean transport.

### J.2 Link to other NAMAs

[Adaptive Sustainable Forest Management in Borjomi-Bakuriani Forest District](#)

## K Attachments

K	Attachments	<b>Title Description</b>
K.1	Attachment description	
K.2	File	<input style="width: 150px; height: 20px;" type="text"/> <input style="margin-left: 10px; border: 1px solid black; background-color: #d3d3d3; padding: 2px 5px;" type="button" value="Browse..."/>

## L Support received

L.1 Outside the Registry	<p>Support for the development of the NAMA proposal was provided through Mitigation Momentum project, which is part of the International Climate Initiative (IKI). The German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) supports this initiative in the basis of a decision adopted by the German Bundestag. Ecofys together with local partner Remissia provided the Technical Assistance to the Georgia Government for the development of the proposal.</p>					
L.2 Within the Registry	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Support provided</th> <th style="text-align: left;">SupportType</th> <th style="text-align: left;">Amount</th> <th style="text-align: left;">Comment</th> <th style="text-align: left;">Date</th> </tr> </thead> </table>	Support provided	SupportType	Amount	Comment	Date
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