



## **How to develop and promote an Initial Financial Appraisal for local sustainable energy projects?**



Guidelines developed by the Covenant of Mayors EAST Office

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## Introduction

The Covenant of Mayors is a voluntary commitment of signatory cities to meet and exceed the **EU 20% CO<sub>2</sub> reduction target** through the implementation of **Sustainable Energy Action Plans (SEAPs)**.

Launched in 2008 by frontrunner European local authorities and the European Commission, the “Covenant family” has been growing to over 6,000 signatories today.

Success is spreading as the initiative has been **extended to Eastern Europe, South Caucasus and Central Asia** in 2011, including signatories from Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine and Uzbekistan. **Covenant of Mayors EAST Office (COMO EAST)** has a mission to support local authorities from these countries in the development and implementation of their SEAPs for which the **financing is a crucial issue**.

At the Covenant of Mayors high-level forum in Istanbul in November 2013, lack of high quality bankable sustainable energy projects was identified as a key barrier to SEAP implementation by all present International Financing Institutions (IFIs) such as the EIB, EBRD, etc..

In order to tackle this barrier, COMO EAST financial experts invited all Covenant signatories with already developed SEAPs to join intensive personalized trainings. In 2014-2015, **16 most active pilot Covenant signatories from Ukraine, Georgia and Moldova** continued the cooperation with the experts.

During the trainings, they learned how to prepare an **Initial Financial Appraisal Form (IFA)** and calculate cash flow for their priority energy efficiency projects. The IFA is a short document summarising key technical and financial data of the project – for instance Net Present Value, Internal Rate of Return, Simple Pay-back Period, etc.. It gives local decision makers and potential financiers a quick overview of the project and shows whether it is viable and profitable or not.

Indeed, it turned out that especially smaller cities lacked capacity to gather financial information related to their sustainable energy projects and were not aware of the existence and the needs of potential donors and financiers. Often, city energy manager had to establish closer cooperation with the city financial department which was not initially involved in the IFA preparation.

Once IFAs developed, COMO EAST experts organised **match-making meetings** with international donors, International Financial Institutions and local commercial banks potentially interested in financing energy efficiency projects. Representatives of national authorities such as Ministry of Regional Development in Ukraine or Ministry of Finance in Georgia also assisted in the meetings and are now aware of the local projects and their financing needs.

Most of the municipal staff present at the trainings enjoyed a strong support of the mayor who occasionally participated in the trainings and match-making meetings. As a result, pilot cities in Ukraine established relations with donors and financing institutions such as NEFCO whose experts continue providing technical assistance to the cities and are further improving their projects, making them bankable. In Georgia, Ministry of Finance and the national Municipal Development Fund showed interest in financing local sustainable energy projects.

Although municipalities will be later obliged to prepare thorough and detailed grant or loan application, IFA is a **good start for discussions with potential project financiers**. When the project summary is comprehensive and of high quality, financiers are likely to show interest and continue working with the municipality, involving their own experts who can provide further technical assistance.

**The objective of this document** is to provide all Covenant of Mayors signatories who wish to develop IFA for their projects with a step-by-step guidance illustrated with practical examples of the pilot

cities. It was developed by the COMO EAST financial experts who supported pilot cities in IFA development and match-making activities.

The guidelines consist of the following chapters:

**Part 1: Local sustainable energy projects: financing needs** – in this chapter we estimate the SEAP financing needs, show a selection of pilot cities' priority projects as well as financing opportunities.

**Part 2: Initial Financial Appraisal** – this part leads you step by step through the Initial Financial Appraisal and cash-flow forms. Each step is illustrated by a real case – an energy efficient street lighting project promoted by the municipality of Kutaisi in Georgia. You will learn how to fill out these forms for your own projects.

ANNEX A: Initial Financial Appraisal (IFA) and Cash-flow Forms:

- IFA form template (Word - English and Russian version)
- Cash flow calculation sheet template (Excel – English version)
- Example of the city of Kutaisi (Georgia): Energy efficient street lighting
- Example of the city of Konotop (Ukraine): Energy refurbishment of public buildings

ANNEX B: Summary of the Covenant pilot cities' projects & key indicators

ANNEX C: International Financial Institutions and donors active in Ukraine & Georgia

More useful guidelines and tools have already been developed by various institutions. We decided not to replicate already existing information and instead recommend these guides to the municipalities as they are complementary to our practical guidelines based on the ground experience of pilot Covenant of Mayors signatory cities.

Comprehensive guidelines on **Financing Municipal Energy Projects**<sup>1</sup> were developed by the Energy Sector Management Assistance Programme (ESMAP) run by the World Bank. It provides information on the barriers and challenges to financing, applicability of the financing mechanisms to different energy efficiency options as well as on how to select an appropriate financing mechanism.

Another useful tool is a **municipality self-assessment**<sup>2</sup> that should be carried out before deciding to undertake any energy efficiency project.

Hopefully, all documents will be useful and bring you one step closer to the implementation of your SEAPs!

COMO EAST Team

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<sup>1</sup> Financing Municipal Energy Projects, ESMAP, World Bank, 2014 (available only in English):

[https://www.esmap.org/sites/esmap.org/files/DocumentLibrary/FINAL\\_MGN1-Municipal%20Financing\\_KS18-14\\_web.pdf](https://www.esmap.org/sites/esmap.org/files/DocumentLibrary/FINAL_MGN1-Municipal%20Financing_KS18-14_web.pdf)

<sup>2</sup> Manual for the Development of Municipal Energy Efficiency Projects, p.5. IFC, 2008:

[http://www.ifc.org/wps/wcm/connect/topics\\_ext\\_content/ifc\\_external\\_corporate\\_site/ifc+sustainability/learning+and+adapting/knowledge+products/publications/publications\\_handbook\\_municipalenergyefficiency\\_wci\\_1319577370295](http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/learning+and+adapting/knowledge+products/publications/publications_handbook_municipalenergyefficiency_wci_1319577370295)

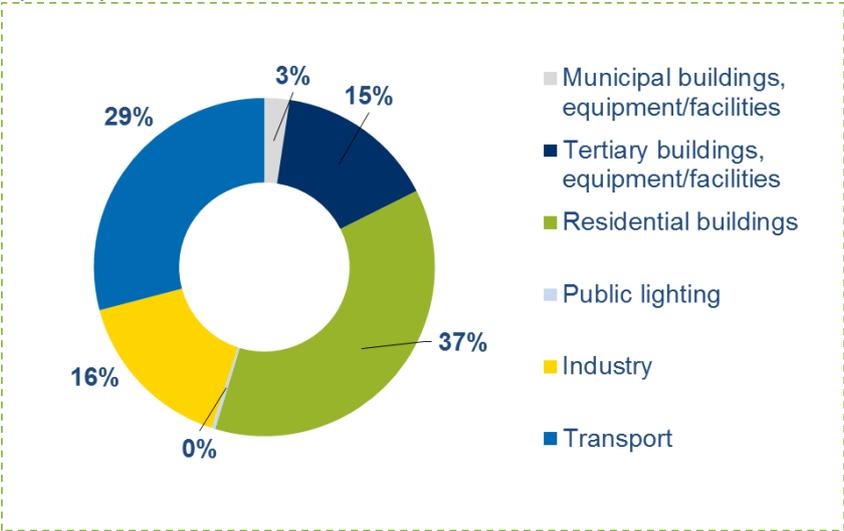
# Part 1: Local sustainable energy projects: financing needs

## A. Covenant cities’ priority projects and financing needs

A SEAP contains a set of actions (short, medium, long term) in different sectors that need to be financed and implemented:

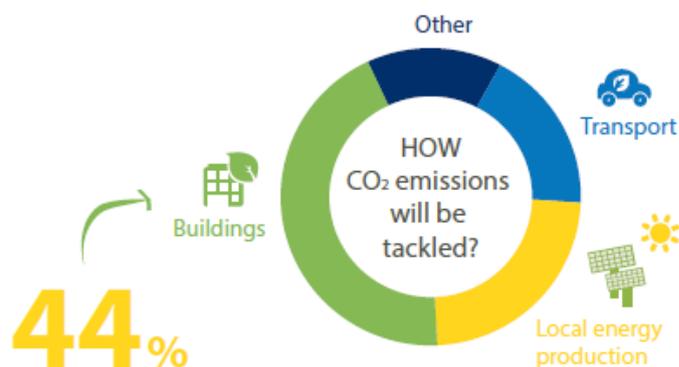
Public Buildings, Equipment / Facilities
Public lighting
Private residential buildings
Tertiary buildings
Public Transport
Private transport
Municipal fleet
Local District Heating / Cooling, Combined Heat and Power
Local Electricity Production
Land Use Planning
Working with Citizens and Stakeholders

Sectors with the biggest energy saving potential are residential buildings, tertiary buildings followed by transport:

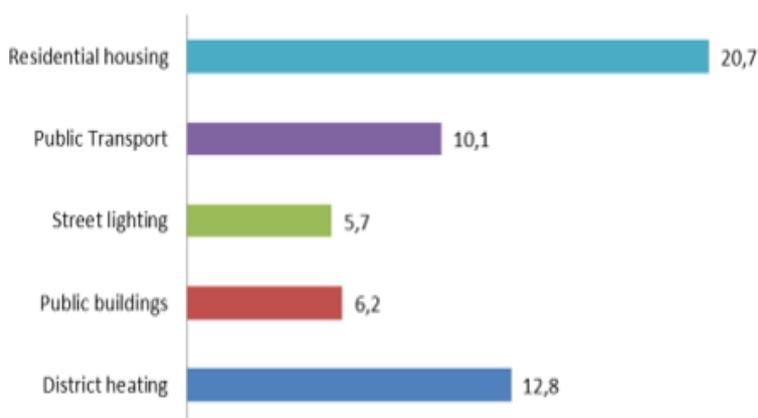


Breakdown of final energy consumption by sector

Indeed, majority of Covenant signatory cities plans to implement **energy efficient measures in buildings** - 44% of the overall reduction target will derive from these actions. These are followed by local energy production, transport and other measures.



The European Commission Joint Research Centre analysed 58 eligible SEAPs submitted by the Covenant signatories from four countries – Ukraine, Moldova, Armenia and Georgia. The average investment demand of these eligible projects is estimated as follows (in million EUR):



However, the individual priority projects of the 16 Covenant pilot cities that have been cooperating with the COMO EAST experts in 2014-2015 were rather small – here are some examples:

City	Project	Investments (EUR)
Konotop UA	Energy efficiency of public buildings	330,300
Slavutych UA	Reconstruction of the pumping station	39,305
Myrhorod UA	Optimization of heating systems in public buildings	107,400
Cherkasy UA	Energy refurbishment of municipal buildings	2,813,000
Sambir UA	Overhaul of roofing and facade insulation school № 9	230,000
	Boiler reconstruction on the Copernicus, 14 street.	146,090
Voznesensk UA	Introduction of energy saving technologies in the pre-school number 14 "Dzvinochok"	176,690

## B. Financing opportunities

During the match-making meetings between the Covenant pilot cities and IFIs, donors, local banks and national authorities, the cities explored several financial sources - additional to the municipal budget - available for **financing their sustainable energy projects**:

### *Loans from International Financing Institutions (IFIs)*

Most of the IFIs active in Ukraine and Georgia (and CoMO East zone in general) provide direct loans to municipalities for local sustainable energy projects. However, during the match-making meetings the pilot cities learned that their projects were too small to be financed directly via the **loans provided by IFIs** as the min. investment costs required by these financiers are too high (e.g. about 5 M EUR for the EBRD and 25 M EUR for the EIB). Moreover, they need a **state guarantee** to be able to take a loan from an IFI.

The main recommendation from the IFIs is that cities **bundle smaller projects into bigger investment packages** in order to achieve minimum investment size required. This project consolidation can be coordinated by the regions or national authorities (Coordinators) who can provide assistance to municipalities on its territory. This approach also allows for pooling of expertise and efficient use of human and financial resources related to project design and implementation.



One of the IFIs though is willing to finance smaller projects – the **NEFCO**. In Ukraine, the NEFCO implements three programmes for financing energy renovation of existing buildings and equipment. Financial products offered to municipalities are loans in local currency that can cover up to 90% of the investment costs while municipalities are expected to provide min. 10% co-financing. The interest rate is about 3% and cities can benefit from 3-6 months grace period. These terms are also interesting for smaller cities (some 10,000 inhabitants). Moreover, NEFCO provides technical assistance to cities and hires external experts to help them with the development of high quality bankable projects. Experts also coordinate the approval procedure required by the national government. NEFCO developed a short overview of its loans facilities<sup>3</sup>. More than 70 municipal projects financed by NEFCO are at different stages of implementation - a significant number knowing that there are 459 cities in Ukraine!

### *Loans from the Ministry of Regional Development in Ukraine / Ministry of Finance in Georgia*

These national authorities have a framework agreement with the IFIs and act as an intermediary for disbursing their loans to smaller projects promoted by municipalities.

**In Ukraine**, Ministry of Regional Development and Housing is responsible for disbursing loans from the World Bank and the European Investment Bank to municipalities. In practise, the procedures related to loan application are perceived to be complex by smaller cities. In the past, almost exclusively bigger and most influential cities could access the loans, leaving smaller cities behind.

**In Georgia**, it is required by law and also is advantageous for municipalities to work with the Ministry of Finance to secure long term low interest loans from leading IFIs as well as apply to potential grant donors. Municipalities can apply for smaller loans to the Municipal Development Fund (MDF)

<sup>3</sup> [www.nefco.org/sites/nefco.viestinta.org/files/NEFCO%20facilities\\_Ukr.pdf](http://www.nefco.org/sites/nefco.viestinta.org/files/NEFCO%20facilities_Ukr.pdf)

managed by the Ministry of Finance (MoF). The Georgian government attracts IFIs' funds and channels them to the MDF. First of all, municipalities need to apply to the MoF and get their project approved as a priority project. Next municipalities should apply to the MDF. Loan conditions vary for every municipal project. Municipalities should be ready for a project co-financing required by the MDF which can be up to 20% of requested loan. MoF is the first instance to apply to under local governance codex (Chapter 100: "Receiving loans and grants by municipality") and theMDF charter applies.

#### *Loans from local commercial banks and public banks managing IFIs' credit lines*

Municipalities can also apply for loans to local commercial banks but the interest rates they offer are usually much higher than those proposed by the IFIs or the governments.

In August 2015, the discount rate of the National Bank of Ukraine was 27%. It means that local banks offer loans in Ukrainian currency hryvnia (UAH) with interest rate which is higher than 27%<sup>4</sup>.

IFIs' credit lines in USD and EUR offer loans with interest rates which are usually not lower than 10%. For example, the Ukreximbank in Ukraine offers lending under the World Bank, EIB or EBRD.

At the COMO East match-making meeting the Ministry of Finance of Georgia urged municipalities to apply for commercial loans in last resort or for financing in urgent situation.

#### *Grants and technical assistance*

A number of donors and IFIs provide grants and technical assistance (TA) to municipalities via special multi-donor funds, programmes or facilities. The objective is to ease the access to finance for local authorities during project design and implementation. Among the most known are:

- **Eastern Europe Energy Efficiency and Environmental Partnership Program - E5P** (coordinated by: EBRD, EIB, KfW, IFC, NEFCO, NIB, WB, CEB): donates funding for projects to supplement lending by international financial institutions. The fund will complement energy efficiency loans provided by financial institutions including the EBRD, the European Investment Bank, NEFCO, the Nordic Investment Bank and the World Bank Group.
- **DemoUkraineDH** (coordinated by: NEFCO, SIDA): supports the development of environmental sustainable and energy efficient demonstration projects in Ukraine's district heating sector, etc. For the development and implementation of the projects the selected cities receive a loan, grant and Technical Assistance.
- **Municipal Project Support Facility** (coordinated by: EIB, EBRD, KfW, AfD): technical assistance to cities for implementation of SEAPs.
- **Sustainable Urban Demonstration Projects – SUDEP** (coordinated by: the European Commission): technical assistance to cities for implementation of SEAPs (via EU experts support team) and grants for demonstration projects.

For more information on existing IFIs, donors, local banks and national funds supporting municipal sustainable energy projects in Ukraine and Georgia, please, refer to **ANNEX C (separate file)**.

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<sup>4</sup> [www.bank.gov.ua/control/en/publish/article?art\\_id=20985436&cat\\_id=76291](http://www.bank.gov.ua/control/en/publish/article?art_id=20985436&cat_id=76291)

### C. Results of the match-making meetings in Ukraine and Georgia

The COMO EAST organized three match-making meetings with donors and financing institutions which took place in Kiev and Tbilisi in 2014-2015.

In Ukraine, 10 IFIs, banks and donors joined the meeting: The World Bank, The World Bank IBRD, NEFCO, EIB, INOGATE, DemoUkrainaDH, SWISS, Ukgazbank, GIZ «Energy efficiency in buildings», U.S. Agency for International development (USAID) and SUDEP. Two institutional representatives participated: Ministry of Regional Development, Construction and Housing and Communal Services of Ukraine and Delegation of the EU in Ukraine.

In Georgia were present the representatives of the NEFCO, Council of Europe Bank, Finance in Motion by GEF, KFW, GIZ, USAID, Ministry of Finance of Georgia, Municipal Development Fund of Georgia, EU Delegation in Georgia and local commercial banks.

The meeting was very interactive. Cities presented their IFAs to the financial sector and individual face-to-face meetings followed. During these meetings, some cities found out that some of their projects do not correspond to the offer or requirements of the financiers.

**Myrhorod** prepared an IFA for the project 'Optimization of heating systems of public institutions' (total investment: 107,400 EUR). During the matchmaking meeting the city found out about the DemoUkrainaDH facility and decided to prepare an application related to its district heating project.

The city of **Sambir** changed the original project 'Boiler reconstruction on the Copernicus, 14 street' (146,090 EUR) because its technical and financial parameters did not fulfill the financiers' criteria. DemoUkrainaDH and NEFCO suggested to change the technical solution.

Technical solution of for the project 'Introduction of energy saving technologies in the pre-school number 14 "Dzvinochok" (176,690 EUR) in the city of **Voznesensk** was not approved by the NEFCO experts. These continue to work with the city experts to improve the project.

**Cherkasy** project 'Energy refurbishment of municipal buildings (2,813,000 EUR) was expanded at the request of NEFCO.

Other pilot cities did not find any relevant financing opportunity at the time of the meeting.

The results of the match-making meetings in **Ukraine** are summarized in the table below:

City	Identified financing opportunities for pilot cities' projects
<b>Myrgorod</b>	<p><b>DemoUkrainaDH</b>  <i>Project:</i> Modernization of the heating system in Aviamistechko district.  <i>Total investment:</i> 17.8 mln UAH (cca. 890,00 EUR)  <i>Result:</i> In February 2015 the city was visited by DemoUkrainaDH experts. In June, it received a confirmation letter (the decision was taken at NEFCO co-founders committee).</p>
<b>Sambir</b>	<p><b>DemoUkrainaDH</b>  <i>Project:</i> Modernization of the city district heating system  <i>Total investment:</i> 681,458 EUR  <i>Result:</i> the city will finance the project via 30% grant and 60% loan from DemoUkrainaDH and 10% city co-financing</p>
	<p><b>NEFCO</b>  <i>Project:</i> Warm House - energy saving measures in Preschool No. 14, Sambir, Lviv Region  <i>Total investment:</i> 3,779,055 UAH (153,702 EUR). 10% city co-financing, loan for 5 years at 3 % interest rate.  <i>Results:</i> In April 2015, city was visited by NEFCO technical experts.</p>

	In cooperation with NEFCO experts, the city carried out energy audit and drafted a business plan. City council officially approved the investment.
<b>Slavutych</b>	<b>DemoUkrainaDH</b> <i>Project:</i> Reconstruction of the central boiler house - installation of the wood chips combustion <i>Total investment:</i> 5,295,000 UAH (cca. 264,750 EUR) <i>Results:</i> Project is under consideration by NEFCO.
<b>Voznesensk</b>	<b>NEFCO</b> <i>Project:</i> 1. Thermo-modernization in kindergartens №9, 12, school № 6, city house of culture 2. Street lighting (Centralna sqr, Lenina str.) 3. The individual heating units (kindergarten 12, school 6) <i>Results:</i> NEFCO experts are working with the city. Pre-feasibility studies have been carried out on all three projects.
<b>Cherkasy</b>	<b>NEFCO</b> <i>Project:</i> Thermo-modernization of two schools <i>Total investment:</i> 9,120,000 UAH (371,298 EUR). 30% co-financing from the municipal budget. <i>Results:</i> NEFCO approved the project, project to be approved by the city council
	<b>NEFCO / ESP</b> <i>Project:</i> Thermo-modernization of all remaining schools in the city <i>Total investment:</i> cca 8 mln USD <i>Results:</i> City and NEFCO agreed on a technical solution for the project. NEFCO launched a tender for a project expert. In June 2015, it launched a tender for an energy audit company and project technical design.
	<b>Ukrgazbank</b> <i>Project:</i> energy renovation of residential buildings (condominiums) <i>Results:</i> City administration organized a meeting for representatives of condominiums and Ukrgazbank (February 2015). The bank provides loans to housing associations / private residential buildings owners
<b>Ukrainka</b>	<b>NEFCO</b> <i>Project:</i> Energy refurbishment of kindergarten "Horovod" and "Solnyshko" <i>Total investment:</i> 332,568 EUR <i>Results:</i> Cooperation with financial institutions and attracting investment is planned for year 2016. A possibility of cooperation with various IFIs and Ukrainian banks was discussed. NEFCO investment funds seem to be the most appropriate.
<b>Kamianka Buzka</b>	<b>World Bank / NEFCO</b> <i>Project:</i> Energy efficient modernization of street lighting <i>Total investment:</i> 105,019 <i>Results:</i> A letter of interest and IFA form for project was sent to the World Bank and NEFCO
<b>Velyki Mosty</b>	<i>Project:</i> Reconstruction of the boiler house /conversion to bio fuels in the kindergarten <i>Total investment:</i> 45,800 EUR <i>Results:</i> The city plans to work with NEFCO in 2016.

In Georgia, the pilot cities started a cooperation with the **Ministry of Finance** which itself is in a negotiation phase with the IFIs (NEFCO, EIB, CEB) on country operations terms.

See **ANNEX B** for the Summary of Covenant pilot cities' projects and key indicators resulting from the IFAs and presented to the financiers during the match-making meetings.

## Part 2: Initial Financial Appraisal

**Initial Financial Appraisal Form (IFA)** helps the cities present the project concept and gather and systemize preliminary technical and financial data of the project in a clear and concise way. IFA is also a convenient tool for comparing the key figures of different projects and identifying those which are profitable and thus better placed to attract private investors and commercial financing.

In addition, **IFA helps potential financiers** quickly understand and assess a project rationale and key figures. Many IFIs and other financiers do not have a standard application form to apply for funding, nevertheless, they expect from all project promoters a basic preliminary information about the project – so called pre-feasibility study.

For instance, during a project concept review stage, the European Bank for Regional Development (EBRD) evaluates a project concept and overall structure, including the project plan, investment costs and proposed financing structure. The Nordic Environment Finance Institution (NEFCO) requests information about the project location, background, purpose, environmental benefits, approximate investment costs, financing plan, profitability and payback.

If the project pre-feasibility study meets the financiers' expectations, the project can be pre-selected for funding and even receive further technical assistance for the next step of project development – preparation of a project feasibility study. For instance, the EBRD or NEFCO offer a free of charge technical assistance of their own experts to the municipalities.

The IFA form was developed by 16 Covenant signatory cities from Ukraine, Georgia and Moldova and was appreciated by all financiers and donors who have been cooperating with these pilot cities. The IFA consists of three key parts:

- A. Presentation of the project promoter
- B. Presentation of the project
- C. Project summary

Here below, municipalities will find the guidance on how to fill in the IFA form. Each part is illustrated with **real data provided by Kutaisi municipality (Georgia)** which has developed IFA for a street lighting project.

**Remark:** in the whole document the following numeral format is used:

- A coma is used as a thousands' separator: 1,200,000 (one million two hundred thousand)
- A point is used as a decimal separator: 1.2 million (one point two million)

## A. Presentation of the project promoter

### 1. *General information about the project promoter*

In this part, the municipality and its eventual partners fill in general information about their organisations such as the name of the municipality where the project is implemented, its population, project name and information about the project promoter(s). Here, financier can also find useful information regarding municipality's past experience with implementation of similar sustainable energy projects what gives financier the first base for promoter's evaluation.

Project promoter can be a municipality, municipal company or other organisation (private partner). Several organisations can also submit a project together. It can be advantageous for municipalities to choose a project partner with strong financial background who can become a main promoter or co-promoter and so improve the project financial indicators. Banks and financial institutions provide loans to financially and economically stable institutions.

Name of the municipality	Kutaisi Municipality
Population	196,600
Name of the project	Energy efficient street lighting in Kutaisi municipality
Project promoter(s)	Kutaisi Municipality
Former financial partners / donors	None
Municipality's experience in the planning and implementation of similar projects	No experience

### 2. *Municipal financial characteristics*

Municipal financial characteristics part provides important information on the size of total municipal annual budget and annual capital budget for the **current year** (2015 for the case of Kutaisi municipality).

Financiers can see how much of the municipal capital budget can be allocated to municipal projects independently of state programs and whether the municipality is allowed to take a loan independently.

This information should be obtained from the municipal financial (accounting) department. For instance, Kutaisi municipality is allowed to take a loan only with the approval of the Ministry of Finance, not independently.

What is the <u>total</u> annual budget of the municipality?	28.7 mln EUR	<i>Total budget = operational + capital budget (without government transfer)</i>	
What is the annual municipal <u>capital</u> budget?	8.5 mln EUR		
What is the amount of municipal capital budget allowed to be allocated independently of state programs?	1 mln EUR	<i>Attention: for Ukrainian municipalities this question might be confusing because capital budget is always independent of state programs</i>	
Is the municipality entitled to take on a loan?	X YES		
Is the municipality entitled to contract an ESCO?	X YES		
Are loans available only in local currency?		X NO	

Can municipality obtain a State Sovereign Guarantee?	X YES		<i>Municipal priority projects have high probability to obtain an approval for the project implementation by the Ministry of Finance and so get a State Sovereign Guarantee</i>
Additional remarks: Municipality requires the Government approval to receive a loan			

### 3. Municipal financial data

In this part, municipalities present the **evolution of the municipal financial data in time** - for the last three years - making the figures more dynamic. The size of the municipal total annual budget, annual capital budget and the capital budget that can be allocated to municipal projects independently of state programs are shown simultaneously for the last three years. These figures enable the financiers to better evaluate the **municipality creditworthiness**.

Moreover, six different ratios related to the municipality's debt are presented here what enables them to run a quick **municipality debt analysis**. Input for the ratios calculations should be provided by the municipal financial department. The IFA form provides instructions for the calculation of each ratio.

From the IFA of Kutaisi municipality we can see a significant decrease of the amount of the municipal capital budget allowed to be allocated independently of state programs - from 3.5 mln EUR in 2012 to 1.05 mln EUR in 2013 and to 0.7 mln EUR in 2014.

Remark: Ukrainian municipalities can get a short-term interest-free loan from a State Treasury for operational expenditure (esp. for emergency situation such as for example a lack of budget to pay for employees' salaries). It needs to be clarified that such a short term operational debt should not be included in the debt calculations.

	Last year (2014)	Year before last (2013)	2 years before last (2012)	Explanation
Total annual budget of the municipality (in €)	24.2 mln	22.5 mln	25.3 mln	<i>Total budget = operational + capital budget (without government transfer)</i>
Annual municipal capital budget (in €)	6.06 mln	5.5 mln	8.5 mln	
The amount of municipal capital budget allowed to be allocated independently of state programs (in €)	0.7 mln	1.05 mln	3.5 mln	
Debt at date (in €)	0.31 mln	0.6 mln	0.85 mln	<i>"Debt at date" = "Total debt at specific date of the year"</i>  <i>Repayment of a loan from Municipal Development Fund will be completed in Feb. 2018</i>
Equity/debt ratio	2.26	1.75	4.12	<i>EQUITY was calculated as municipal capital budget allowed to be allocated</i>

				<i>independently of state programs what is more appropriate than whole total assets</i>
Debt service coverage ratio	0.1% of total budget (30,000 EUR)	0.1% of total budget (30,000 EUR)	0.1% of total budget (30,000 EUR)	<i>The ratio of cash available for debt servicing to interest, principal and lease payments</i>
Annual debt service: Percentage of long-term loans	12%	12%	12%	<i>The amount on a yearly basis required for the payment of interest and principal on a long-term debt (longer than 1 year)</i>
Annual debt service: Percentage of short-term loans	None short term loans	None short term loans	None short term loans	<i>Consider only loans below 1 year (those not included in the municipal budget for the next year)</i>
Debt per capita (in €)	1.57	3.05	4.32	<i>Total debt divided by number of project beneficiaries or number of citizens (according to available data)</i>

## B. Presentation of the project

### 1. *Project characteristics*

In this chapter, municipalities provide a short project description, including information on the technology used and selection criteria. Simple and clear explanation of the project concept emphasizing its financial viability, social and environmental benefits will strengthen the project. These points should be consciously listed under “Project selection criteria”.

This part also provides information on the revenues and savings from the project available to finance the project as well as the availability of a project (pre) feasibility study. Kutaisi carried out only a preliminary cost-benefit analysis and calculated CO<sub>2</sub> emissions reduction resulting from the project.

<b>Project description (max. 250 words)</b>	Existing Kutaisi`s street lighting is based on sodium light bulbs technology from the 60`s. Their energy efficiency is low (30-40%) as well as technology lifespan (1-2,000 hours) and reliability at low voltage and temperature. These bulbs also incorrectly reflect colors what increases a risk of pedestrian and car accidents. Besides, existing street lighting in Kutaisi does not comply with the norms and standards in force (height, slop angle and others) what stipulates high operational costs.	
<b>Technology description</b>	Alternatively, modern LED lights have 60-70% energy efficiency and expected lifespan of 15-20 years. LED lights do not require triggering equipment to be switched on. They can operate in wide voltage span (80-300v) hence “thin” cables and lower capacity transformation station is sufficient what decreases the equipment and maintenance costs. Besides LED operate at -40 - +65°C temperature and correctly express colors avoiding stroboscopic effect. Utilization of LED technologies will result in cost savings and mitigation of negative impact on environment.	
<b>Project selection criteria</b>	<ul style="list-style-type: none"> <li>• Project modernizes approx. 80-85% of city`s street lights</li> <li>• Expected 10 fold decrease in electricity consumption</li> <li>• Significant cost savings: <i>1,034,866.83 EUR</i> per year</li> <li>• Short payback period: 3 years</li> <li>• Significant energy savings: <i>6,646,524 KWh/year</i></li> <li>• Significant CO<sub>2</sub> emission savings: <i>5,583 tons/year</i></li> <li>• Expected high decrease of car accident risk through improving drivers` street vision</li> <li>• The project is necessary and dramatically improves life quality of the Kutaisi population</li> <li>• Positive impact on environment</li> </ul>	
<b>Pre-feasibility or feasibility studies for the proposed project: are they available?</b>	NO	Kutaisi carried out a preliminary cost-benefit analysis and calculated CO <sub>2</sub> emissions reduction resulting from the project. However, the municipality did not have capacity to carry out (pre)-feasibility studies and Environmental Impact Assessment.
<b>Will revenues and savings achieved thanks to the project be available to finance the project costs?</b>	YES	Project can be implemented in several stages, consequently savings from accomplished stage can be utilized for the next stage.

## 2. Project investment components

In this part of IFA, the **major technical components** that enable energy and CO<sub>2</sub> emission reduction (e.g. LED bulbs in Kutaisi case) and require substantial investments need to be identified.

First, total amount of investment should be estimated for each component. For this purpose, municipality needs to get a market price quotation through a request to number of suppliers of goods and services. Here should be noted that all project investment components in question should be identified and calculated before starting to fill out the IFA.

Then, total energy savings and CO<sub>2</sub> reduction per component, expressed in volume (e.g. MWh/year) are calculated as well as specific CO<sub>2</sub> abatement costs.

For electricity savings calculation, municipality needs to compare the volume of its electricity consumption in MWh per year before and after the project implementation. The same should be done for other types of energy sources (e.g. natural gas, diesel, etc.), if they are used. This is a good base for evaluation of energy saving benefits of the project.

Cities which have developed their SEAPs should have approximate calculations for each project (based on the SEAP guidelines). In spite of that, a detailed energy audit can provide more precise data.

Major (technical) components of the project <sup>5</sup>	Total investment (in Euros)	Energy savings - electricity (KWh/year)	Energy savings – other forms of energy (MWh/year)	CO <sub>2</sub> reduction (including use of renewable energy) <sup>6</sup> (tonnes/year)	Specific CO <sub>2</sub> abatement cost (€ / ton CO <sub>2</sub> ) <sup>7</sup>
LED lights	2,160,174.16	6,646,524		924 (6,646,524 *0.139/1,000)	3,113 (2,876,532.86 /924)
Total	2,160,174.16	6,646,524		924	3,113

These figures come from preliminary cost-benefit calculations including CO<sub>2</sub> emissions reduction Kutaisi did.

## 3. Investments by cost category

The project investment costs can be divided into different cost categories (see the table below). A clear cost structure may lead to a significant optimisation of certain costs.

In order to carefully identify all costs, all taxable amounts should be used after tax. Price of equipment and materials should be cross checked at local / international market with conservative approach.

<sup>5</sup> If the project consists of a number of substantial components that each have an energy and CO<sub>2</sub> emission reduction component these can be differentiated here

<sup>6</sup> Please, indicate total decrease, with the decrease from the use of renewable energy indicated separately in brackets thereafter.

<sup>7</sup> The specific abatement costs are derived by dividing total investment by tonnes of CO<sub>2</sub> reduction.

Kutaisi municipality carried out a pre-feasibility study which contained an expected cost structure of its street lighting project – the cost amounts by category were calculated. All amounts were calculated in local currency - Georgian Lari (GEL) - and then converted into EUR (exchange rate: 1 EUR = 2.4 GEL).

Cost category	Total costs (thousand €)	Detailed explanation of the costs (€)
Equipment, materials, construction	2,160,174.16	Replacement of 12,076 old bulb with modern LED lights Source: best locally available supplier quotation
Project preparation	110,058.25	Master plan and installation costs Source: local service and labour market
Project management	0	
Operation & maintenance	29,522.04 137,985.26 438,793.15	Transportation cost from custom to Kutaisi  Overhead (6%) Value Added Tax (18%)
Financing (banking costs during the investment period)	Not applicable	One-time loan issuing fee paid to the bank (this figure is not known at the stage of filling the IFA, usually it's 2% of the loan amount, the figure should be included in the cash-flow calculation)
<b>Total investments</b>	<b>2,876,532.86</b>	

#### 4. Energy costs

This part of the IFA form informs about the actual energy costs - final energy consumption by type of energy (electricity, gas, oil and heat) before the implementation of energy efficiency measures. Final energy consumption multiplied by price per unit of energy gives total energy cost. All data relate to the project only.

Kutaisi project pre-feasibility study identified, based on the electricity meters, that the existing number of sodium bulbs consumes 11,640 MWh of electricity per year. Multiplying this amount with the unit cost of 160 GEL per MWh results in total energy cost of 1,862,400 GEL per year or 776,000 EUR (1,862,400 / 2.4) per year.

Additionally energy unit price anticipated increase per year is shown (10% in Kutaisi). Prediction of energy unit price change is difficult in practice so conservative approach by municipalities could be useful.

To calculate “Anticipated price increase per year”, the cities can use the statistics from different official reliable sources such as the state or local budget, energy supplier invoices and statistics provided by the national government bodies.

	Final energy consumption	Price per unit (€)	Total energy cost (€)	Anticipated price increase per year (%)	Explanation
Electricity (MWh/year)	11,640	66.66	776,000	10	$11,640,000 \text{ KWh/year} * 0.16 \text{ GEL} = 1,862,400 \text{ GEL};$ $1,862,400 \text{ GEL} / 2.4 = 776,000 \text{ EUR}$
Gas (MWh/year or m <sup>3</sup> /year)					
Oil (MWh/year or m <sup>3</sup> /year)					
Heat (MWh/year)					
Other <i>If any other energy sources are applicable for this project, specify this energy source</i>					
<b>TOTAL</b>	11,640	66.66	776,000	10	

#### 5. Anticipated financial savings

What financial savings will project achieve per year is very important information for both – the project promoter and the financier. In the table below you will find clear formulas on how these savings should be calculated.

Financial savings can be achieved through:

- Reduction of energy volume consumed after the energy efficiency project.
- Reduction of the unit price of new energy source (shifting to lower cost energy).
- Lower maintenance costs

In Kutaisi, financial savings are achieved through decrease in:

- Electricity volume consumed after the project due to more efficient new technology.
- Maintenance cost after the project due to more reliable new technology (C6 vs E6, D6 vs F6; see the Excel sheet - Kutaisi cash-flow calculation form).

	Savings/ year (thousand € )	
Energy costs		Please indicate the calculation of these
<ul style="list-style-type: none"> <li>of which from reduced energy use (less volume)</li> </ul>	443,096	<b>11,640,146 KWh – 4,993,622 KWh= 6,646,524 KWh (savings)</b>  <b>0.16 GEL/KWh * 6,646,524 KWh =1,063,430 GEL</b> <b>1,063,430.4 GEL / 2.4 = 443,096 EUR</b>  <b>EUC x V0 – EUC x V1 (volume reduced)</b>  <i>In the first full year of the project operation, EUC=Energy unit cost, V0=consumed volume without project in the first full year, V1= consumed volume with project in the first full year</i>
<ul style="list-style-type: none"> <li>of which from reduced specific type energy cost</li> </ul>		<b>EUC0 x Volume – EUC1 x Volume (energy type changed and its unit cost reduced)</b>  <i>In the first full year of the project operation, EUC0 = unit cost of energy type without project, EUC1= unit cost of energy type with project</i>
Others, please state: Maintenance costs	591,770.83	<i>Maintenance annual cost before project minus after project</i> 622,916.66 – 31,145.83 = 591,770.83 EUR
<b>Total savings</b>	1,034,866.83	

#### 6. Financing structure

In this part, the municipality indicates how it plans to secure financing for its project. The financing structure can consist of several financing sources and their combination. For instance, municipality may contribute with its own municipal budget, receive part of the funds in form of a grant and for the remaining funds apply for a commercial loan. It is useful to know whether under current legislation the municipality is allowed to attract combined investment from different stakeholders.

From Kutaisi IFA we can see that the municipality is ready to cover up to 25% of the total investment costs from its own resources (municipal budget), it expects to obtain a grant (15% of the costs) and seeks commercial financing via a bank loan covering up to 60% of total investment costs.

Total investment (€)	Own resources (excluding grants received) in %	Other resources		
		Loan: 60 %	Grant: 15 %	Other project participants (third party financing) in %
<b>2,876,532.86</b>  <i>See 3. Investments by cost categories – Total Investment</i>	Up to 25%			

<i>Please, specify below the grant and third party financing and explain which organisational structure is anticipated among the project participants, including their respective roles, responsibilities and corresponding contracts or agreements.</i>	
Municipality, a COMO signatory, intends to apply for a grant financing to green donors, such as Winrock International under USAID Enhancing Capacity for Low Emission Development Strategies (EC-LEDS). Mayors who are signatories of the Covenant of Mayors shall have priority for assistance to implement low emission development projects. Municipality takes responsibility to use this grant as a contribution to its street lighting project. It is a flagship U.S. government-led effort that assists countries in developing and implementing LEDS. The program enhances partner country efforts by: 1) providing targeted technical assistance; and 2) building a shared global knowledge base on LEDS.	
Does the current legal and regulatory framework allow such an organisational and implementation structure?	YES

### 7. Assumed financing conditions

In this part, the municipality informs about the loan conditions it is seeking from a financial institution.

Kutaisi municipality seeks a loan financing with up to 3% interest rate and quite a short loan maturity (tenor) - three years. Kutaisi can afford short tenor loan having project with 2.8 simple payback period (SPP) (see I14 cell in the Excel sheet - Kutaisi cash-flow calculation form). These financial indicators are very attractive for most of the financiers.

Interest Rate	Up to 3%
Disbursement fee	1%
Loan Maturity in years	3
Grace Period in days	200
Please tick the type of loan anticipated in terms of principal repayments of debt	
X	Annuity <i>Repayment of the loan is based on fixed payment at fixed intervals during a fixed period of time</i>
O	Linear repayment of debt <i>Repayment of the loan is in equal amounts</i>

### 8. General assumptions for financial calculations

These two assumptions are necessary to calculate the financial indicators (see Kutaisi Excel cash flow calculation for appropriate formulas):

- **Technical project life-time in years** to identify time period for financial calculation of investment's viability.
- **Local currency exchange rate to EUR** (at the date of the IFA preparation) to transfer amounts calculated in local currency into EUR.

Technical project life time is the life time of the new technology the city is purchasing. For example, technical project life time of the LED technology in Kutaisi case is 15-20 years but for the purpose of cash-flow calculations we opted for 8 years. The reason for that is that the NEFCO maximum loan tenor discussed during the matchmaking meetings was 8 years. Technical project life time should always be longer than calculated simple payback period otherwise the project cash generation will stop before the payback period comes to an end. Thus project will not be able to pay back the money invested. In Kutaisi case, the city has enough time for paying back the loan principal as well as interests to financier.

Technical project life-time	8
Exchange Rate	2.4

## 9. Basic financial results for investment period

Here the municipality presents the main financial indicators of the project:

- **Simple pay- back period (SPP)\* in years:** SPP should be shorter than the project life time. The shorter the SPP the better.
- **Net Present Value (NPV) in €:** NPV is a difference between the present value of cash inflows and the present value of cash outflows. It is discounted value of the money (investment). 100 Euro in 2012 > 100 Euro in 2014. The higher the value the better.
- **Internal Rate of Return (IRR) in %:** IRR = Value of Credit Interest when NPV=0. IRR is needed for calculation of optimal (max.) credit interest applicable for project financing. IRR has to be higher than inflation rate (10%). The higher the value the better.

For sustainable energy projects, NPV/SPP/IRR are based on energy savings. These figures have to be calculated in a dedicated Excel sheet for a cash-flow calculation before the IFA preparation. The financial indicators for the Kutaisi project were calculated for 8 years loan tenor. SPP, NPV and IRR can be seen in Annex A (Cash flow\_Kutaisi\_street\_lighting > Excel).

Most of the pilot cities were able to gather first-hand data but did not have capacity to carry out the cash-flow calculations (in Excel), risk and sensitivity analysis. It is recommended that city financial officers are always involved in the IFA preparation, together with city energy managers to facilitate this process.

Simple pay- back period (SPP)* in years	2.8
Net Present Value (NPV)** in €	4,387,914 for 3% interest rate 3,549,776 for 6% interest rate
Internal Rate of Return (IRR)*** in %	32

\* When calculating SPPs, divide total investment by total financial savings resulting from the investment, without considering interest cost in the operating period

## 10. Cash flow

Project cash flow, calculation of financial indicators as well as sensitivity analysis are presented in Annex A (Cash flow\_Kutaisi\_street\_lighting > Excel). These calculations need to be ready before municipality starts to fill out the IFA form.

To calculate the cash-flow for your project you need to do the following:

- **First step:** calculate total investment costs based on the equipment, materials, construction and project preparation, plus operation & maintenance, VAT and overhead. All items prices should be after tax. See Annex A (IFA\_Kutaisi\_street lighting > Word)
- **Second step:** calculate all the costs before and after the project implementation.

For Kutaisi street lighting project the costs are: the cost of consumed electricity plus lighting system maintenance costs.

Electricity cost before	Maintenance cost before	Electricity cost after	Maintenance cost after	Savings / Cash Flow
				-
				2,876,532.86
776,000.00	622,916.67	332,904.00	31,145.83	1,034,866.83
776,000.00	622,916.67	332,904.00	31,145.83	1,034,866.83
776,000.00	622,916.67	332,904.00	31,145.83	1,034,866.83
776,000.00	622,916.67	332,904.00	31,145.83	1,034,866.83
776,000.00	622,916.67	332,904.00	31,145.83	1,034,866.83
776,000.00	622,916.67	332,904.00	31,145.83	1,034,866.83
776,000.00	622,916.67	332,904.00	31,145.83	1,034,866.83
776,000.00	622,916.67	332,904.00	31,145.83	1,034,866.83

Total cost before the project: EUR 699,456.33 (776,000 + 622,916.67)

Total cost after the project: EUR 364,049.83 (332,904 + 31,145.83)

Total savings per year: EUR 1,034,866.83 (699,456.33 - 364,049.83)

Consequently, to identify the cash flow for each year, total costs after the project are deducted from the total costs before the project for the same year. For Kutaisi, the cash flow is positive and amounts to EUR 1,034,866.

### 11. Key parameters with high influence on financial results

After analysing project costs, financial savings and financial indicators, key parameters with high influence on financial results can be identified.

Three key parameters that can influence project results are:

- Increasing investment costs due to inflation.
- Increasing price of energy resources.
- Failure to obtain the expected savings, etc..

Kutaisi identified these key parameters:

- Investment costs.
- Electricity costs.
- Maintenance costs.

Changes in each parameter will result in a change of all financial indicators. These changes are analysed in a sensitivity analysis (see Part 12 of the IFA form here below).

### 12. Sensitivity analysis

The goal of a sensitivity analysis is to identify key parameters with high influence – positive and negative - on financial results. Then, the cities calculate changes in financial indicators resulting from the change of each of the key parameters (e.g. increase / decrease of the cost on equipment, materials and or on energy, etc.). Sensitivity calculations can be followed in Annex A (Cash flow\_Kutaisi\_street\_lighting > Excel). The original values of the three main financial indicators of the Kutasi project are:

Simple pay- back period (SPP)* in years	2.8
Net Present Value (NPV)** in €	4,387,914 for 3% interest rate 3,549,776 for 6% interest rate
Internal Rate of Return (IRR)*** in %	32

Firstly, a parameter 'amount of investment' was increased by 20% and then appropriate SPP, IRR and NPV were calculated as well as their deviation delta from original amounts.

SPP	IRR, 8 y	NPV 3%, 8y
20.00	-22.34	-13.11

Secondly, electricity cost was increased by 10% in year 1 to 4 and by more than 10% in years 5 to 8. Then appropriate SPP, IRR and NPV were calculated as well as their deviation delta from original amounts.

SPP	IRR, 8 y	NPV 3%, 8y
4.11	7.00	10.76

Thirdly, maintenance costs were increased by 20% and then appropriate SPP, IRR and NPV were calculated as well as their deviation delta from original amounts.

SPP	IRR, 8 y	NPV 3%, 8y
10.26	14.74	18.93

Sensitivity analysis shows that NPV is sensitive to investment amount increase and decrease by 13.11%. SPP is also sensitive to investment amount increase and getting longer (worsened) by 20 %. IRR is sensitive to investment amount increase and decrease (worsened) by 22.34 %. All three indicators - SPP, NPV and IRR - are comparably insignificantly sensitive to changes in key parameters. Consequently, municipality should make sure that investment costs do not increase.

### *13. Risk assessment*

In this part of IFA, municipality assesses main risks that can jeopardise the achievement of the forecasted project results. These are usually related to financial, technology and political or regulatory changes. Assessment of those risks should be done by experienced specialists (outsources, if necessary) who can analyse the risks, for example via statistics data. This would enable the project owner to implement the risk mitigation measures when necessary.

### *14. Further comments and explanations*

Any comment useful for project investment evaluation is welcomed here such as information on expected legislative and regulatory changes or municipality budget management, etc..

### C. Project summary

In this final part of IFA all significant data gathered in previous chapters and with appropriate chapter references, are shown in clear and concise table. They include a short project description, total investment costs, project life-time, financial structure, financial parameters, environmental parameters and risks. At a glance, financiers have a quick overview of the project rationale and key financial indicators.

<b>Short Project description</b>	<i>Replacement of 12,076 old bulb with modern LED lights.</i>			
<b>Total investment in €</b>	2,876,532.86			
<b>Technical project life-time in years</b>	8			
<b>Intended financing structure See Section 6 - "Financing structure"</b>	<i>Own resources: 25%</i>	<i>Loan: 60 %</i>	<i>Grant: 15 %</i>	<i>Other: %</i>
<b>Financial parameters See Section 9 – "Basic financial results for investment period"</b>	<i>Anticipated total savings:</i>	<i>1,034,866.83</i>	<i>€ /year</i>	
	<i>Simple pay-back period:</i>	<i>2.7</i>	<i>years</i>	
	<i>Net Present Value:</i>	<i>4,387,913.74</i>	<i>€</i>	
	<i>Internal rate of return:</i>	<i>32</i>	<i>%</i>	
<b>Environmental parameters See Section 2 – "Project investment components"</b>	<i>Anticipated energy reduction :</i>	<i>6,646,524</i>	<i>KWh/year</i>	
	<i>Anticipated CO<sub>2</sub> reduction:</i>	<i>924</i>	<i>tons/year</i>	
<b>Expected Project Risks See Section 13 – "Risk assessment"</b>	<i>Financial Risks</i>	<i>X Low</i>	<i>O Medium</i>	<i>O High</i>
	<i>Technology Risks</i>	<i>X Low</i>	<i>O Medium</i>	<i>O High</i>
	<i>Political and Regulatory Risks</i>	<i>X Low</i>	<i>O Medium</i>	<i>O High</i>

## Conclusion

COMO EAST experts who supported Covenant pilot cities with the development of IFAs and cash-flow forms draw several **recommendations for the Covenant signatories**:

### 1. Skills and capacities of the municipalities need to be reinforced

In particular, smaller municipalities do not have capacities to develop IFAs and run cash-flow calculations for their energy efficiency projects. Often, energy managers do not regularly collaborate with the city economic and/or financial department and they are not aware of the existing financing opportunities. Further personalised technical assistance programmes are necessary to build the skills of the municipal staff that will stay within the municipal administration.

### 2. Municipalities should prepare IFAs for all their projects.

It is extremely important to calculate the main financial indicators (e.g. total investment, energy savings, CO<sub>2</sub> reduction, Simple pay-back period, Net Present Value, etc.) and identify main social, economic and environmental benefits for every SEAP measure.

This helps cities to prioritize their SEAP measures and allocate the budget and external financial resources that are available. The result is the prioritization of measures based on concrete indicators and existing financial opportunities.

Then, the city should decide which financial sources are the most appropriate. Municipal budget or grants should be used for unprofitable (e.g. social) projects, preparatory studies (energy audits, environmental impact assessment, etc.), hiring of experts which are not attractive for private investors and financing institutions. Profitable projects with quick return on investment can be financed by IFIs or commercial banks. A combination of several funding sources is the most common solution. Ideally, SEAP needs to be transformed into a **long-term multi-annual financial plan**.

### 3. Smaller projects should be bundled into bigger investment packages

Bigger investments are more attractive for IFIs and donors. The project consolidation can be coordinated by the regions or national authorities (Coordinators) who can provide assistance to municipalities on its territory. This approach also allows for pooling of expertise and efficient use of human and financial resources related to project design and implementation.

### 4. Municipalities have to be pro-active and promote their IFAs

Municipalities have the possibility to finance their projects via loans or innovative financing schemes in cooperation with private partners. If they wish to benefit from grants, technical assistance, loans or guarantees provided by IFIs and other financing institutions and donors, they have to keep themselves updated about the new opportunities and pro-actively promote their priority projects towards potential financiers. Political support and strong leadership of the city mayor is crucial.

### 5. Municipalities should cooperate and benefit from existing networking opportunities

COMO East and national city networks provide a unique platform for horizontal cooperation between municipalities, especially those which implement similar projects, and potential financiers. This was the case in Georgia where most of the pilot cities have been implementing street lighting projects. During the trainings, they had the possibility to exchange information on energy efficient technologies, financing, project bundling possibilities and more.



## **ANNEXES IN SEPARATE FILES**

### **ANNEX A: Initial Financial Appraisal (IFA) and Cash-flow Forms:**

- IFA form template (Word - English and Russian version)
- Cash flow calculation sheet template (Excel – English version)
- Example of the city of Kutaisi (Georgia): Energy efficient street lighting
- Example of the city of Konotop (Ukraine): Energy refurbishment of public buildings

### **ANNEX B: Summary of the Covenant pilot cities' projects & key indicators**

### **ANNEX C: International Financial Institutions and donors active in Ukraine & Georgia**

**Further information:**  
**[www.soglasheniemerov.eu](http://www.soglasheniemerov.eu)**