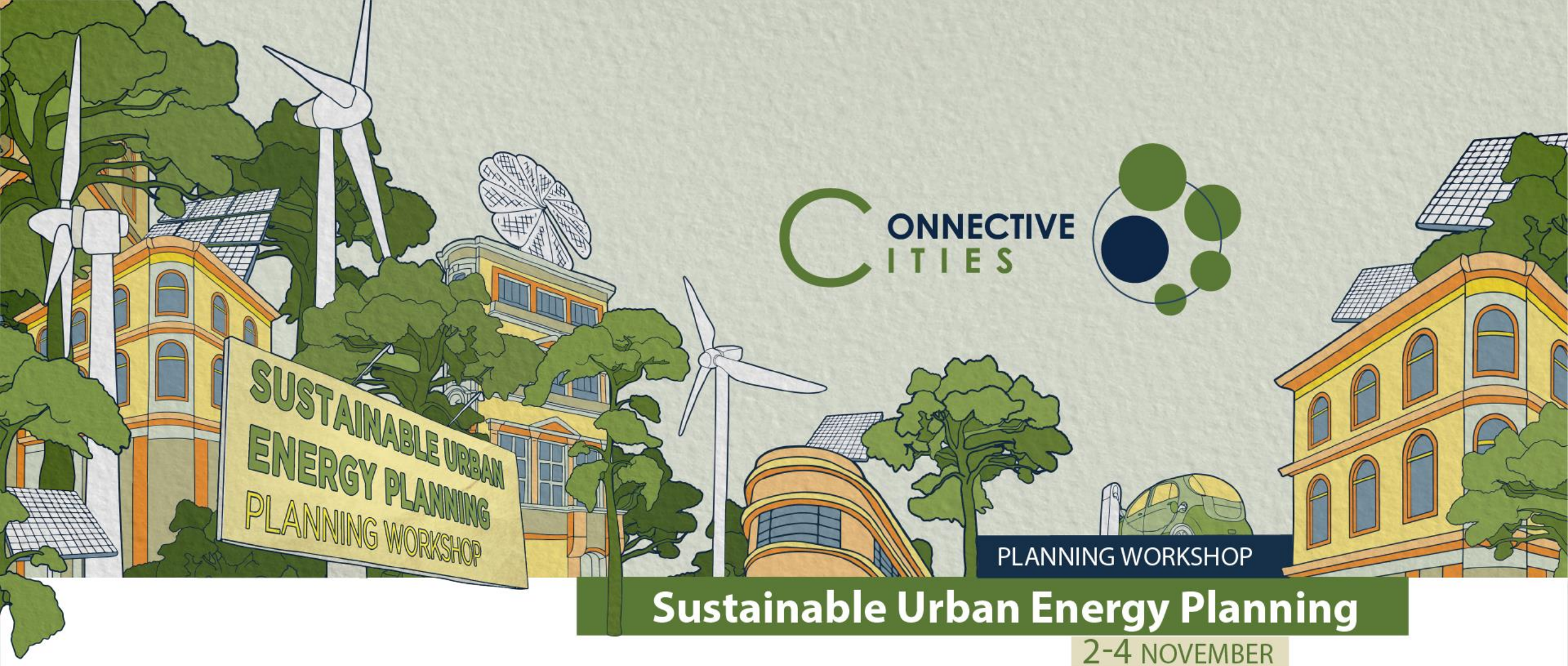


CONNECTIVE CITIES

PLANNING WORKSHOP

Sustainable Urban Energy Planning

2-4 NOVEMBER

Partners of Connective Cities

Deutscher Städtetag

ENGAGEMENT GLOBAL
Service für Entwicklungsinitiativen

with its SERVICE AGENCY COMMUNITIES IN ONE WORLD

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Commissioned by

Federal Ministry for Economic Cooperation and Development

Agenda

3 November

Tuesday | Times in CET

WEBINAR 2 | **ENERGY EFFICIENCY AND RENEWABLE ENERGY ON A MUNICIPAL LEVEL**

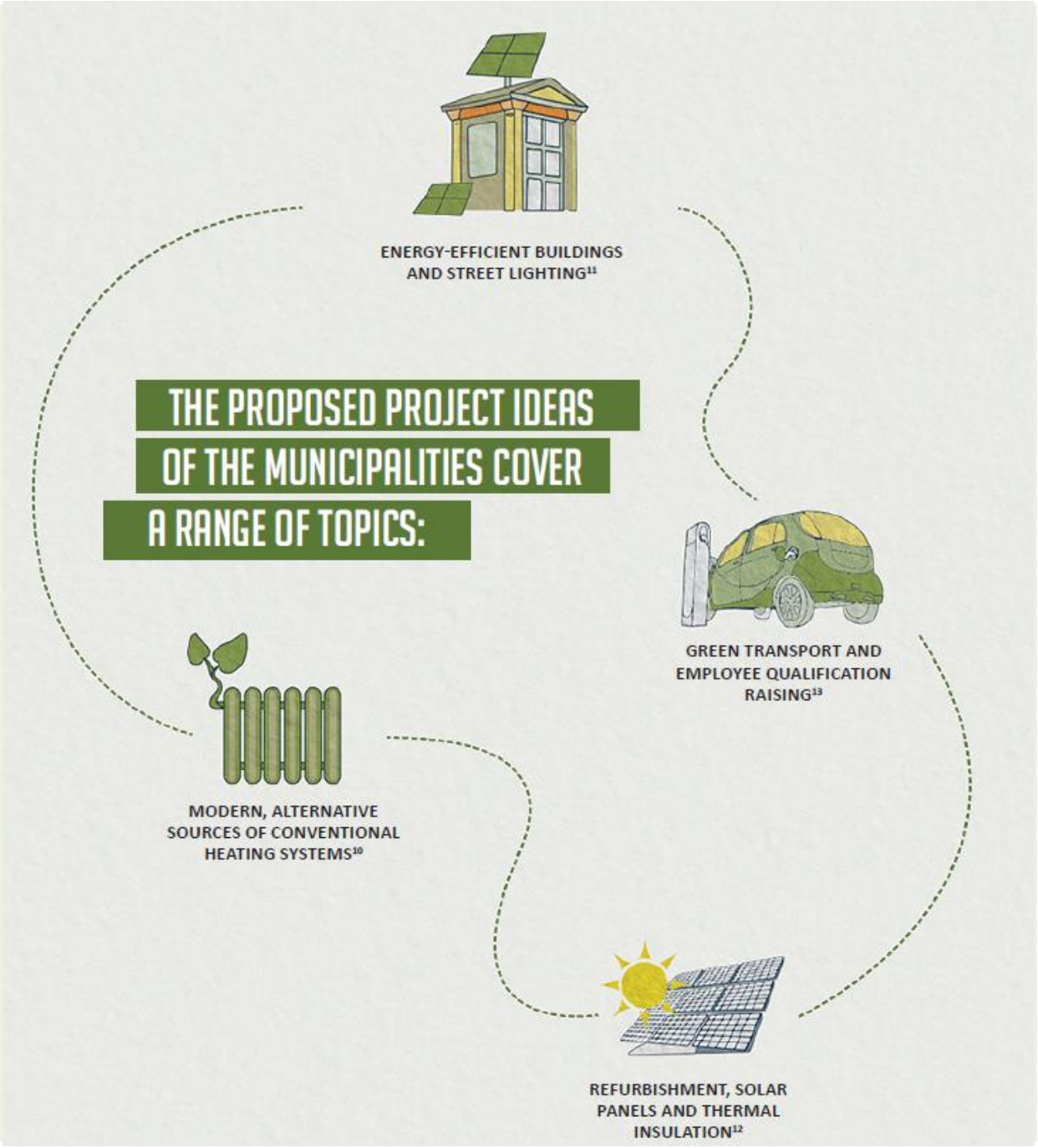
10.00 – 11.00	**SUMMARY OF THE PREVIOUS DAY** *(key topics/learning/implications - 5 minutes)* Moderator/Facilitator Ms. Ekaterine Mikadze / Ms. Irina Mezurnishvili **KEYNOTE 3: ENERGY EFFICIENCY ON MUNICIPAL LEVEL** *(buildings, transport, heating and cooling systems presentation 40 minutes, Q&A 10 minutes)* **Mr. Giorgi Abulashvili** Director & Founder Partner at Energy Efficiency Center Georgia
11.00 – 13.00	**PEER-TO-PEER CONSULTATION** Peer exchange between the municipalities in Germany and the region participating in the good practice session Representatives of the German Cities: **Dr. Christian Göpfert** Head of Climate and Sustainability Unit City of Würzburg **Ms. Nour Nabil Alkhatib** Urban Planner / building licensing department City of Amman **Ms. Anna Samwel** Head of WECF South Caucasus

Findings of the Pre-workshop Interviews

Held 27-30 September 2021

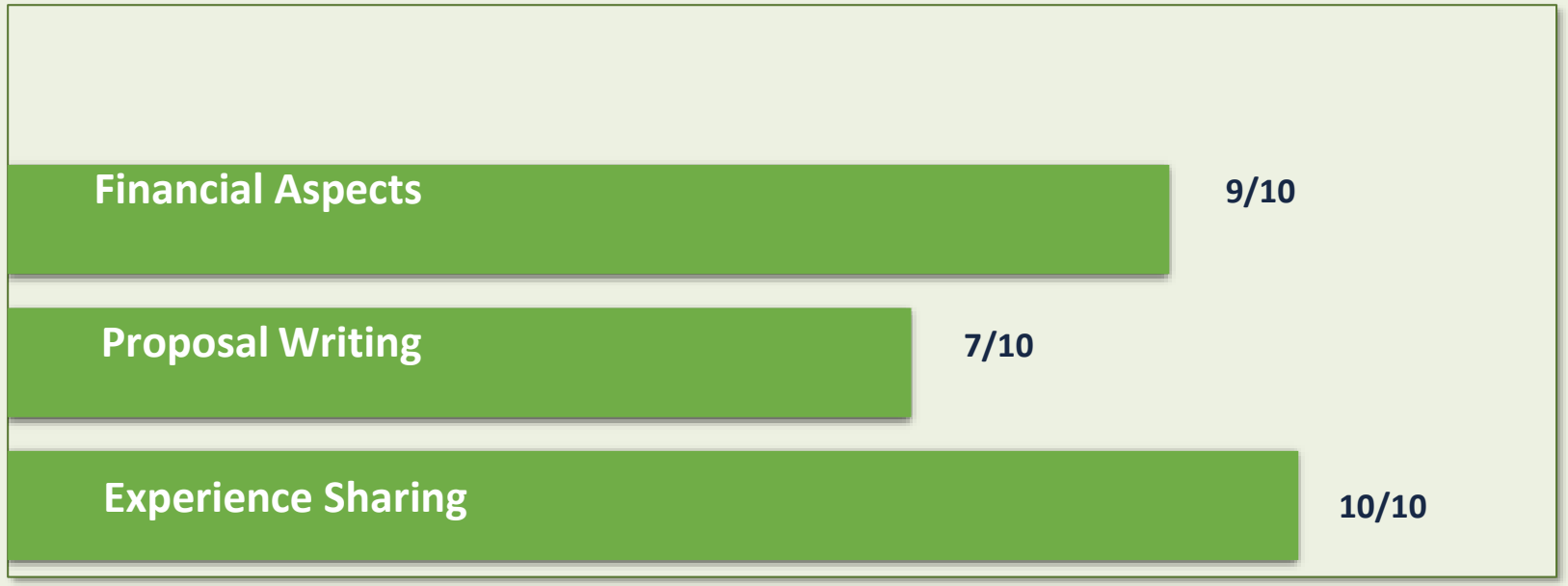
Project Ideas

- Different stages of the project development
- Various areas/topics of the project ideas



Overall Summary

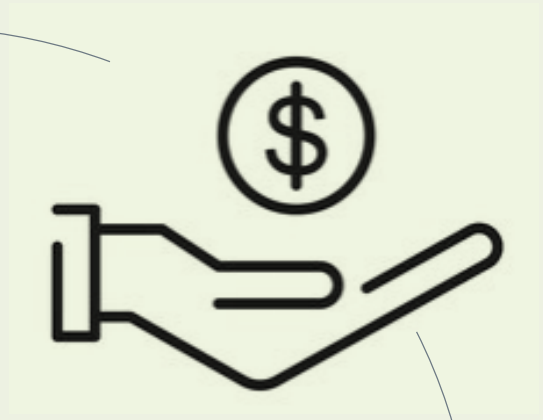
Outstanding Needs According to the Participating Municipalities1



[1] *Source: Individual 1-hour video interviews conducted by the 'Solutions 2.0' team in September – October, 2021*

Interview Findings 1

Financial Aspects



- Lack of knowledge on the funding opportunities or potential donors linked with climate finance
- Most of the project ideas lack financial (and technical) feasibility studies
- Barriers to existing facilities:
  - Low level of fiscal decentralization
  - Financial/budget planning
  - Creditworthiness
  - Unfavorable conditions from commercial banks (high interest rate, short-term maturity)

Interview Findings 2

Proposal Writing

- Need to enhance knowledge in project proposal writing persists
- Most of the municipalities lack knowledge on quantifying the impacts of projects in terms of CO2 reduction, health benefits, amount of financial resources that might be saved
- Accounting for gender-specific impacts of the projects is often missing
- Assessment of potential risks to the project implementation is rare

Interview Findings 3

Need for Experience Sharing

- There is a need to exchange with other municipalities that have successfully implemented energy efficiency projects, also in Eastern Europe
- Need for more connected networks is prevalent
- There is a lack of knowledge and resources to use communication tools

Keynote Presentations

CONNECTIVE CITIES

Mr. Giorgi Abulashvili

Director EEC Georgia

Keynote Speaker

Sustainable Urban Energy Planning in Southeast Europe (SEE)

Planning Workshop
Connective Cities

November 3, 2021

Technologies in Focus

Modernization of the system of centralized district heating boiler house №35 – Oleksandriia, Ukraine

Modernisation of the system of centralized district heating boiler house №35 with re-equipment of the gas boiler house and complete replacement of heating network.

Installation of the 5GDHC (5 Generation District Heating and Cooling system) – Kamenica, Kosovo

Usage of innovative technologies to increase the energy efficiency for space heating in residential and business sector.

Ensuring energy-efficient performance of the PTWM-50 boiler – Brovary, Ukraine

Project Idea is to bring the characteristics of the boiler to modern standards ensuring the possibility of operation on the load of the boiler from 20 to 100%.

Construction of a boiler house operating on pre-RDF fuel – Slonim, Belarus

Modernization of the existing boiler house to use pre-RDF fuel produced at the municipal waste sorting station.

Modernization to ensure energy efficiency of public buildings – Pinsk, Belarus

Thermal modernization of 35 public buildings in the city of Pinsk, including 28 kindergartens, 6 schools and 1 hospital.

Energy Efficient Concept of Rustavi Municipality – Rustavi, Georgia

Main goal is rapid and sustainable development of Rustavi energy efficient infrastructure

Supporting usage of electrical vehicle and reducing emissions – Kutaisi, Georgia

Promoting usage of electrical cars in the city and emission free means of transportation and placing 5 electrical fast chargers in the city which will promote and stimulate usage of electrical cars.

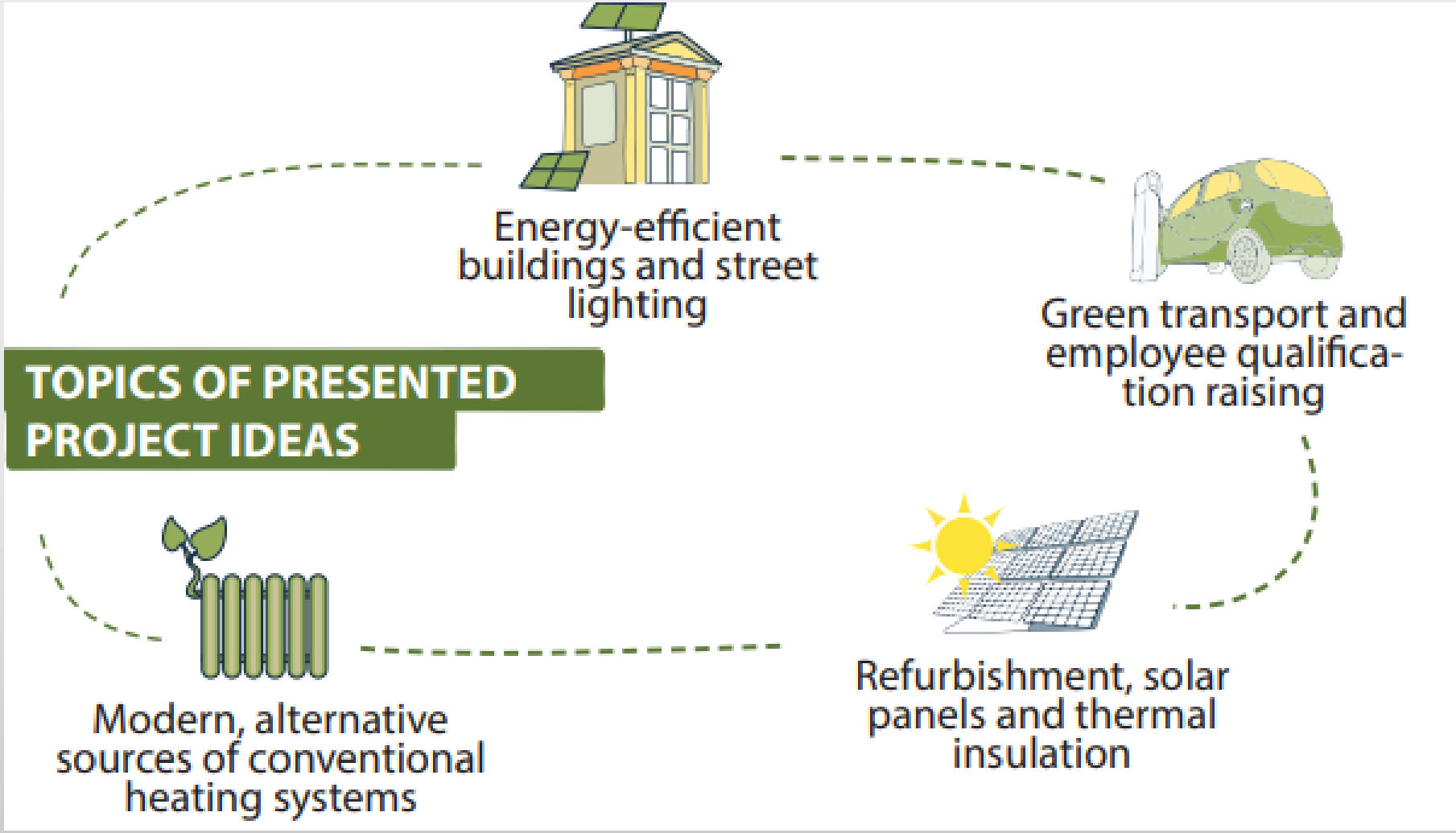
Development of alternative economic activities through energy crops cultivation – Vozdvyzhevskaya, Ukraine

Project entails growing energy plants for the purpose of heating public buildings and obtaining commercial benefits.

Transformation of municipal (public) building(s) into "green buildings" – Gori, Georgia

Project is to equip public buildings with “green’ features, such as installing energy-efficient lighting and appliances, water-saving plumbing, installing solar panels and modernizing ventilation systems with energy efficient heating and cooling functions

Technologies in Focus



Planning of Municipal EE&RE Projects

Step 1: Preparation for Energy Audit (EA) / Feasibility study (FS)

Result of Step 1:

• Scope of work (f.e. boiler house No 2 including district heating network), ToR for EA/FS • Selected Energy Auditor

Step 2: Elaboration of an Energy Audit / Feasibility Study

Result of Step 2:

Energy Audit / Feasibility Study Report

Step 3: Selection of the refurbishment measures

Result of Step 3:

Selected refurbishment measures (f.e. replacement of a gas boiler by a biomass boiler)

Step 4: Project design of selected refurbishment measures

Result of Step 4:

Project design for each of the refurbishment measure / Summary report (description of the measures, investment &operational costs, savings…)

Step 5: Authority approvals and procurement

Result of Step 5:

• Authority approvals • Procurement documents

Step 6: Implementation and site supervision

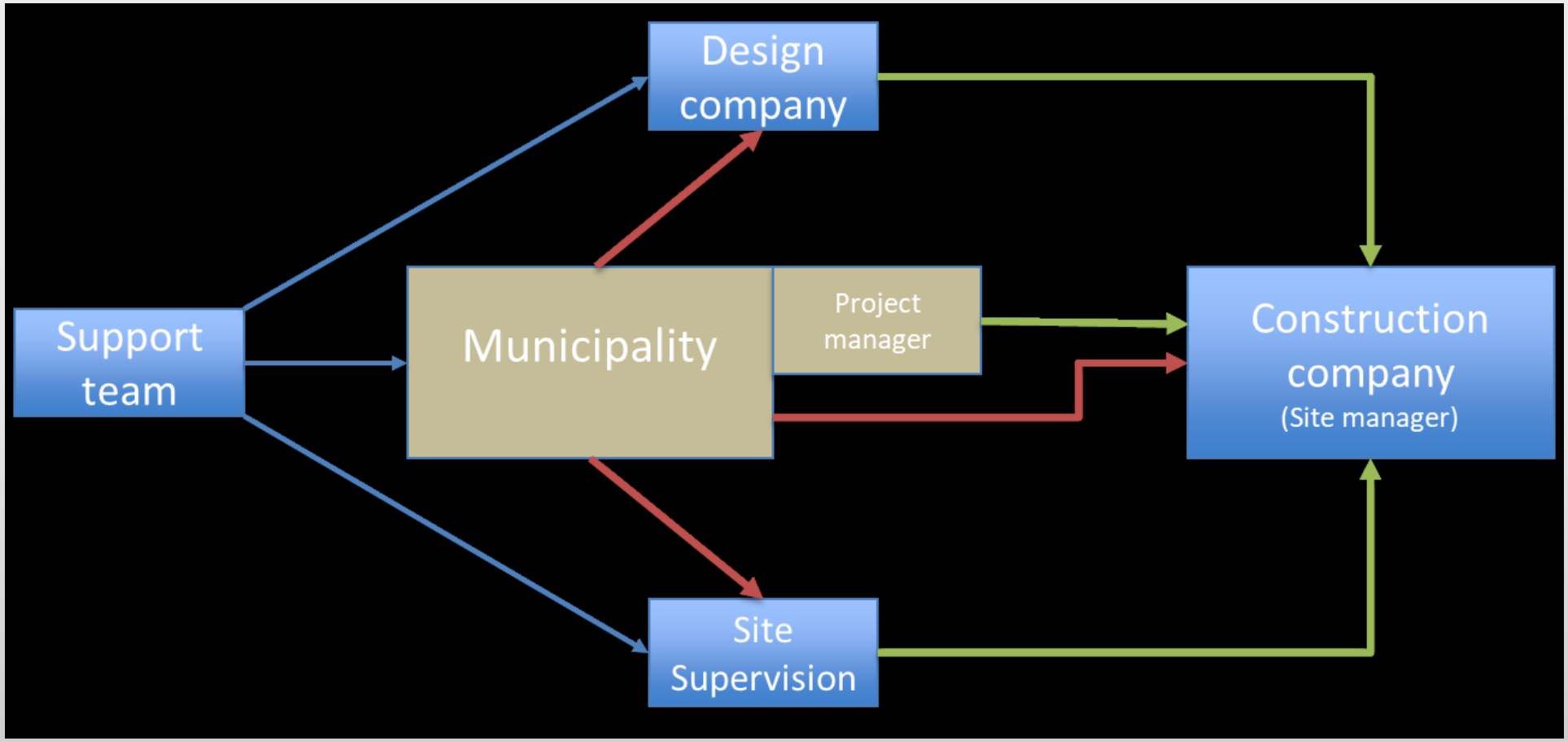
Result of Step 6:

• Implemented refurbishment projects according to the project design • Final acceptance including a list of deficiencies/defects

Step 7: Operation and maintenance & Monitoring of results

Result of Step 7: • Actual energy savings in MWh • Energy performance benchmarks

Roles and responsibilities of the main stakeholders



Roles and responsibilities of the main stakeholders

Responsibilities of the municipality :

1. Full financial responsibility that the project is implemented in accordance with the contact and the technical design.
2. Appointing a project manager and establish a clear decision-making structure for the project. The project manager is the representative of the municipality for the refurbishment project. The project manager coordinates the project implementation on behalf of the municipality.
3. Contracting of the construction company, technical design company, site supervisor.

Roles and responsibilities of the main stakeholders

Responsibilities of the project manager:

1. Provide all relevant documents to site supervisor/technical design company (technical design, contract, guidelines, BoQ, etc.).
2. Organise a kick-off meeting with all stakeholders prior to the construction works to discuss the implementation procedures such as: Implementation plan, technical design, installation standards, critical quality issues, weekly meeting on site, reporting procedures, etc.
3. The project manager as the representative of the municipality has to organise and participating in regular meetings at the construction site.
4. Preparation of a minute of the meetings and dissemination to all stakeholders.
5. The project manager keeps the support team informed about the progress of the construction works
6. Participating in the final acceptance procedure: a. The construction company announce the completion of the works;

b. Site supervisor and project manager are checking the works final report + list of defects;

c. Construction Company corrects the identified defects;

d. Final check by the site supervisor and project manager;

e. Final acceptance of the works by the municipality.

Roles and responsibilities of the main stakeholders

Responsibilities of the technical designer/company **:**

1. Adapt the design in case of unforeseen works / realistic conditions of the object at the construction works phase.
2. Ensure that the construction company implements the works according to the technical design (by conducting site visits, participation in meetings).
3. Provide requested checks and provide expertise for the municipality (i.e. check of unforeseen works).
4. Participation in regular meeting on the construction site (as requested by the project manager).

Roles and responsibilities of the main stakeholders

Responsibilities of the site supervisor :

1. Fully familiar with the technical design documents and the construction contract (technical drawings, BoQ, contract).
2. Elaborate a project implementation plan with all stakeholders.
3. Ensure that the works and materials comply with the technical design/authority approvals/agreed procedures and relevant standards and norms (identification of construction defects, checking the quality of materials, etc.).
4. Monitoring and pre-approving of installation practices at the beginning of the works (i.e. organise a site meeting for installation an example window or the installation of the insulation onto the first facade to check the installation practice). The aim is to make the construction company aware of the quality requirements and to avoid construction defects.
5. Checking invoices (incl. supporting documents) of the construction company.
6. Checks and provide expertise for the municipality (i.e. check of unforeseen works).
7. Participation in the meetings at the construction site.
8. Preparation of a site supervision report (usually weekly) based on a template provided by the support team. Documentation of the construction works (photo documentation), collection of certificates, confirmations, etc.
9. Assessment of the construction works after the construction company has announced the completion of the works (identification of defects, incl. coordination of the correction of construction defects); preparation of a completion report.

Roles and responsibilities of the main stakeholders

Responsibilities of the construction company:

1. The construction company has to implement the project according to the contract (incl. technical design).
2. Appointing a site manager as a representative of the construction company on site.
3. Participation in site supervision meetings (usually weekly).
4. Immediate information of all stakeholders in case of additional works, construction defects, delays in the implementation schedule or any other event that has an impact on the budget, time schedule or quality of the project.
5. Construction site records (log book) for each day (number of workers on site, construction activities, weather conditions in case of extreme situations i.e. heavy rain, important incidents, etc.

Roles and responsibilities of the main stakeholders

Responsibilities of the TA team :

1. General support as requested by the municipality (i.e. providing templates for ToR site supervisor, reporting template for site supervisor, etc.).

2. Conduct site visits to monitor the progress and to check the quality of the construction works (preparation of site supervision report, dissemination of reports to all stakeholders).

3. Participate in meetings as requested by the municipality.

Measurement and Verification

Calculation of savings

The savings of each subproject have to be calculated by comparing the energy consumption before and after the project implementation.

BASELINE

BUT the situation before is often not comparable with the situation after the project (no lighting, different light intensity, etc.) establishment of a "**baseline"** is needed to have comparable conditions before and after the project implementation. The baseline usually represents the calculated (theoretical) energy consumption before the project implementation considering the same service level as after the project implementation (i.e. same light intensity).

Measurement and Verification

Baseline for Street lighting

Parameter	Unit	Baseline	After implementation	Savings
Electricity consumption per year	MWh/a			
Electricity costs per year	Euro			
Operation time of the street lighting system	h			
CO2 emission per year[1]	tCO2/a			

Measurement and Verification

Baseline for Building EE Project

Parameter	Unit	Baseline	After implementation	Savings
Heat consumption per year	MWh/a			
Heat energy costs per year				
Electricity consumption per year	MWh/a			
Electricity costs per year				
CO2 emission per year[1]	tCO2/a			

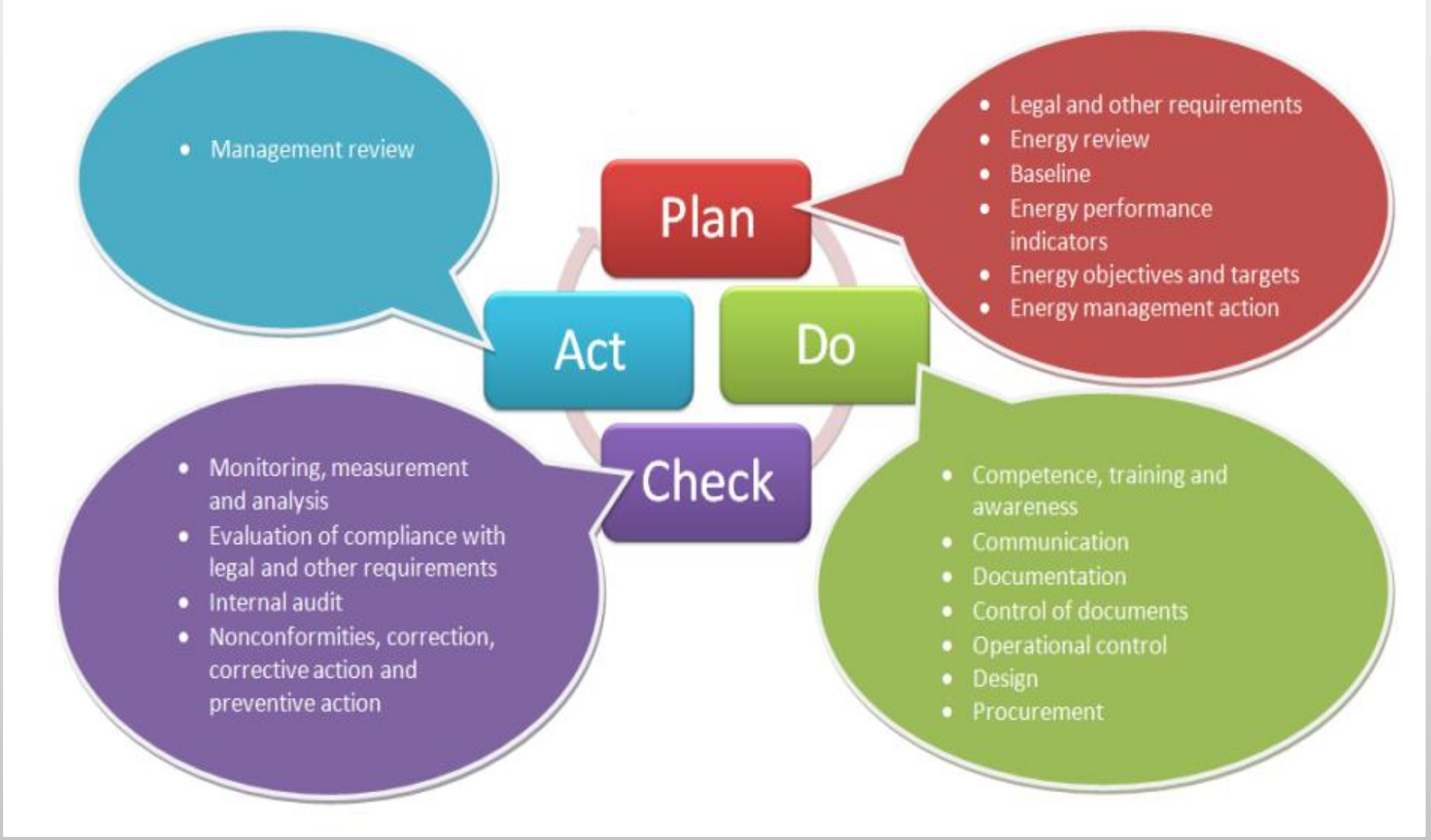
Measurement and Verification

Baseline for DH

Parameter	Unit	Baseline	After implementation	Savings
District heating system (consumers):				
Number of consumers	#			
Heat load of consumers	kW			
Heat consumption per year	MWh/a			
Boiler house:				
Total heat produced per year (biomass + natural gas)	MWh/a			
Heat produced per year (biomass boiler)	MWh/a			
Heat produced per year (natural gas boiler)	MWh/a			
Fuel consumption biomass	t			
Fuel consumption natural gas	m^3			

What is Needed???

Municipal Energy Management



THANKS

George Abulashvili

eecgeo@eecgeo.org

www.eecgeo.org

Any questions?

Please type your questions in the chat.

Peer Exchange with International Municipal Representatives and Gender Expert

City of Würzburg

Dr. Christian Göpfert

Head of Climate and Sustainability Unit

City of Amman

Ms. Nour Al-Khatib

Urban Planner / Building licensing department

Gender Expert

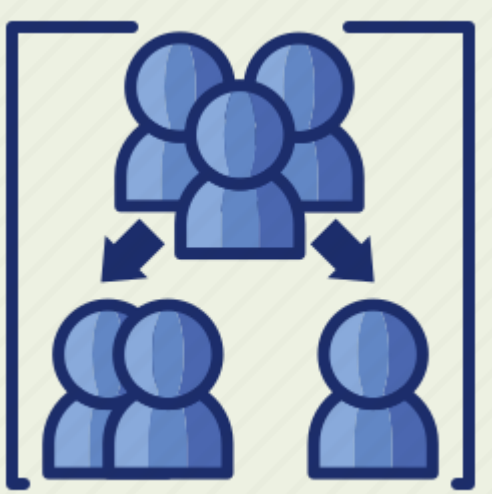
Ms. Anna Samwel

Head of Branch office

WECF International

Breakout Room Session

- We will divide into two groups
- Time: **90 minutes**
- Discussion: Peer Exchange



- Working on **Miro** Board: https://miro.com/app/board/o9J_lnmHFYI=/

Breakout Room I

Rustavi, Georgia

Gori, Georgia

Brovary, Ukraine

Boratyn, Ukraine

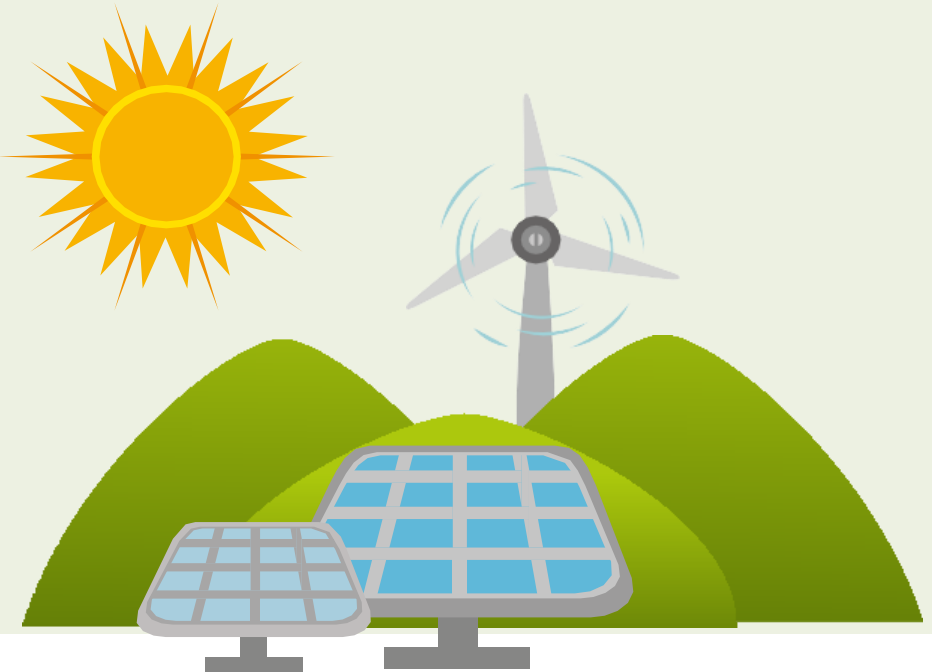
Breakout Room II

Kamenica, Kosovo

Oleksandriia, Ukraine

Kutaisi, Georgia

Slonim, Belarus



Day III of Planning Workshop

See you tomorrow

we will start at 10:00 CET

BBB Link in the Agenda
https://community.connective-cities.net/en/node/952

CONNECTIVE CITIES

Thank You!

Vielen Dank für Ihre Aufmerksamkeit!