## Summary of conclusions, recommendations and lessons learnt

The Removing Barriers to Promote and Support Energy Management Systems in Municipalities throughout Serbia (EMIS) Project has managed to generate energy savings of 1,310 TJ and CO2 emission reductions of 123,379 tons, calculated over 15 years of lifetime of the measures implemented in a total of 8 funding calls. Total investment into energy efficiency in municipal buildings during the lifetime of the project was US$ 15.0 million.

The introduction of energy management and EMIS at local self-governments has led to a total of 55 municipalities and cities starting the implementation of EMS and EMIS during the course of the project. The EMIS software now covers more than 9,400 buildings and 9,000 points of street lighting, thereby giving decision makers and energy managers in towns and municipalities valuable information about energy consumption and CO2 emissions in their buildings. During the course of the project 137 out of 173 municipalities have signed the Energy Charter (which is almost 80% of all Serbian municipalities) and 125 persons received training for energy management in municipalities.

The Project Team identified further opportunities for renovating public buildings during the course of the Project. The elaboration of an investment study for energy efficiency renovation of 28 large public buildings of the central government was supported, which led to a EUR 40 million loan signed between the Government of Serbia and the Council of Europe Development Bank (CEB). Additionally, a concept note for the Green Climate Fund (GCF) has been prepared for financing the renovation of government heritage and public buildings with the aim of reaching Near Zero Energy Buildings (NZEB) status with the renovations of these buildings.

A detailed analysis of all findings of the Terminal Evaluation is included in Chapter 4, with a more extensive summary in section 5.2.

There are a number of corrective actions to be suggested based on the experience and lessons learnt of the Removing Barriers to Promote and Support Energy Management Systems in Municipalities throughout Serbia Project for future projects. These are as follows:

* For future project designs a thorough analysis of the financial performance of different energy efficiency measures should be carried out. Based on this analysis, maximum grant/subsidy levels should be defined before project start. The ProDoc required a maximum GEF contribution of 20% grant funding, but allowed the combination of GEF grant funding with other grant funding without defining an upper limit. In the end, the majority of projects received grant funding between 65% to 70% without any analysis of the financial performance of the energy efficiency measures included in the applications.
* Private sector approaches such as ESCOs in the case of energy efficiency should play a stronger role in project design, thereby supporting transformational change. Grant support will still be necessary for certain activities in the future, however, the target of market-based solutions involving private sector should be seen as a key driver for securing sustainability and replicability. These approaches should play a more prominent role in project design.
* Assessment of financial viability, independent evaluation on funding level required
* The Project had a strong focus on implementing the EMIS software in municipalities and providing training mostly on data collection and data entry as well as training energy managers. Interviews with various energy managers in municipalities led to the conclusion that a coaching support would have been helpful for the majority of energy managers. Going through the training is one thing, applying the know-how acquired in reality is another thing. Support from experienced energy managers in form of coaching could have been helpful in further improving the performance of energy managers.
* The ProDoc has focused strongly on energy managers as the key addressees for energy management activities. Project implementation showed that decision makers and end users also play an important role in the implementation of energy management systems and specific training and capacity building needs to be provided to these groups. Also, reporting functions in software should be able to support the different information needs of these different groups.
* In the project design a help desk was mentioned, but its importance has been underestimated. Implementing a software system with a large number of municipalities leads to numerous questions on various details. Providing efficient support in answering these questions and solving issues is an important factor in securing an improved data quality in the software.
* Implementing a project with that many stakeholders (in the end more than 50 municipalities participated) requires extensive capacity plus excellent know-how within the PMU. Sufficient staffing is required to handle that work load and to allow sufficient time to tackle strategic issues (e.g. financial viability of energy efficiency measures, suggestions for moving from a heavily grant supported system towards a more market-oriented support system, etc.).
* The ProDoc was not clear on the methodology of measuring actual savings in energy consumption and GHG emissions. The requirement to generate ‘one-year verifiable monitoring data' was included, but no methodology on how to collect and analyze data was mentioned. Further clarity and guidance at project start on how to monitor energy savings and GHG emission reductions would be helpful, especially taking into account potential differences between theoretical calculations and actual data monitored.
* For energy efficiency projects it is recommended to add an additional component/activity looking specifically at differences between theoretical calculations and actual results based on monitoring with the aim of developing a better model on projecting savings. This will be key for ESCO arrangements, where contracts are based on theoretical calculations.
* The Serbian EMIS project has successfully proven that a regional approach to solutions can be very successful. The Project helped to further develop the EMIS software and contributed towards further dissemination of the program in the region. This has a positive impact on the sustainability of activities in one country as well as the replicability in the region.
* Project design, especially the Project Results Framework and the M&E system should include interim targets and milestones, as these are helping project management in checking progress and taking steps of adaptive management, if necessary.

There are a number of actions, which should be followed up to achieve sustainable benefits from the Project (for full version of recommendations, please see section 5.4):

* During the 5 years of the Project, the Project Team has gained extensive experience in energy management of public buildings and the application of the EMIS software. This experience is to a certain extent reflected in all materials and information prepared under the EMIS project, however, a comprehensive lessons learnt study is missing. This should be prepared by the Project Team within the time left until the termination of the Project.
* The handover protocol to transfer EMIS from UNDP has been prepared as a draft and was agreed upon with the former NDP. The protocol needs to be re-discussed with the MoME and finalized before termination of the Project. This activity is to be led by the Project Team.
* The Project has seen a number of funding calls with high levels of grant support. The standard grant level in budgetary fund calls was a 70% contribution, this could go up to 100% for financially weak municipalities (there is an exception on street lighting, which is eligible for 20% grant funding). There is no evidence that analyses were carried out to investigate the funding levels required for energy efficiency investments in municipal public buildings, depending on the type of measures carried out. This is a shortcoming and should be considered in future activities both by the MoME and UNDP.
* Different energy efficiency measures have different payback periods. Putting all measures into one basket and applying a 70% grant funding is leading to missed opportunities, as measures with a better financial viability will receive higher funding levels than required. This leads to non-optimal spending of public funds, which could be used to finance additional measures. Also, providing grant funding for measures close to financial viability reduces the potential for private sector (through ESCOs for example) to pick up these opportunities.
* Stakeholders provided feedback that extremely high grant funding levels (up to 100%) are counter-productive for a number of reasons, such as little motivation to optimize investments into building refurbishment, increasing reluctance of applicants to accept lower grant funding levels, or private sector participation (e.g. through ESCOs) being crowded out. This should be considered by the Government of Serbia in future support schemes. High grant funding levels (percentage of grant funding to be decided) should only be given to municipalities in a difficult financial situation.
* More than 30 municipalities have developed municipal EE plans, however, due to municipal elections in 2020, only a small number of plans were officially adopted. Further support shall be given to municipalities to proceed with the adoption. As time with in the remaining lifetime of the project will be too short for the Project Team to carry out this role, this additional support should be managed by the MoME in cooperation with the SCTM.
* The Help Desk has been an extremely important support to municipalities in taking their first steps with the EMIS software. As the EMIS software should be applied in more municipalities, it is key that the Help Desk is being sustained. To support the sustainability of the Help Desk, an MoU has been signed between the MoME and the Faculty of Mechanical Engineering aiming at continuing the practice of students being assigned as interns to the Help Desk. To further increase the sustainability, it is recommended to assign a person of MoME staff with the responsibility of managing the Help Desk. This would specifically include the organization of trainings for junior interns and ensuring that information and experience gained by senior interns is kept within the Help Desk team.
* The activities of UNDP and the MoME to expand energy management and the application of the EMIS software to other public buildings should be continued and even intensified. The experience gained in the Project is of key importance to propose and structure support schemes for the rehabilitation of other public buildings. The loan agreement signed between the Government of Serbia and the CEB is a first success, the planned EMIS II project and the GCF application are important activities to apply lessons learnt of the EMIS Project.
* The development of the EMIS software as a tool for energy management in public buildings in the region is a very special success story. The close cooperation of UNDP country offices in the region, where all partners are contributing towards the improvement of the software, is unique, should be maintained and – if possible – even extended. The continuous improvement mechanism with cost sharing between different stakeholders is leading to a much better result than if one country would proceed with developing a software solution. The further application of the EMIS software in other countries in the region should be pursued by UNDP.
* The EMIS software and energy management in general have proven as very effective tools for municipalities to manage their energy consumption and identify improvements within their building stock. Currently only municipalities over 20,000 inhabitants are obliged to introduce an energy management system. It is suggested that this limit is gradually reduced with a medium term target of all municipalities in Serbia applying energy management. When doing this, the limited capacity of smaller municipalities needs to be taken into consideration. Also for smaller municipalities, the EMIS software is an easy first step to collect data on their public buildings and is an excellent first step towards energy management.