United Nations Development Programme

Government of North Macedonia

**Final Project Evaluation: “Tackling Air Pollution in the City of Skopje”**

**(Project number 00109164)**

**Final Evaluation Report**

by:

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# **Glossary**

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| --- | --- |
| Air pollution | Title of the project: “Tackling Air Pollution in the City of Skopje” |
| BMCPI | Title of the Project. “Building Municipal Capacities for Project Implementation” |
| BRD | Bureau for Regional Development |
| CO | Country Office |
| EBRD | European Bank for Reconstruction and Development |
| EU | European Union |
| FA | Functional Analyses |
| FE | Final Evaluation |
| FER | Final Evaluation Report |
| GDU | Goce Delcev University – Shtip |
| GEEF | Green Economy Financing Facility |
| IR | Inception report |
| IT | Information Technology |
| MDI | Municipal Development Index  |
| MISA | Ministry of Information Society and Administration  |
| MK | Republic of North Macedonia |
| MLSG | Ministry of Local Self-Government  |
| MoEPP | Ministry of Environment and Physical Planning |
| NGO | No Governmental Organization |
| OECD DAC  | Development Assistance Committee (DAC) of the Organization for Economic Co-operation and Development (OECD)  |
| PRODOC | Project Document |
| Q | Quarter (of year) |
| REEP | Regional Energy Efficiency Programme |
| SDG | Sustainable Development Goals |
| SEK | Swedish Krona |
| SIDA | Swedish Agency for Development and Cooperation |
| TDF | Technical Documentation Fund |
| ToR | Terms of Reference |
| UNDAF | United Nations Development Assistance Framework |
| UNDG | United Nations Sustainable Development Group |
| UNDP | United Nations Development Programme |
| USAID | United States Agency for International Development |
| USD | United States Dollars |
| ZELS | Association of the Units of Local Self-Government  |

## Executive summary (4 pages)

The final evaluation of the project “Tackling Air Pollution in the City of Skopje” has a twofold objective: 1. Assessing the current relevance, efficiency, effectiveness, impact and sustainability of the project, with particular attention to understanding and documenting lessons learned and cross-cutting issues, particularly gender; 2. Identifying helpful knowledge elements to be used for designing future interventions for tackling air pollution in the country.

## Project information table

|  |  |
| --- | --- |
| **Project 1 Title:** | ***Tackling Air Pollution in the City of Skopje*** |
| **Project number** | 00109164 | **PAC meeting date:**  | 11/12/2019 |
| **Implementing Partner** | UNDP | **Start Date** | 12/12/2019 |
| **Project number** | 00109164 | **Planned closing date:** | 31/12/2021 |
| **Country:** | North Macedonia  | **Date project manager hired:** | 15/04/2020 |
| **Region:** | RBEC | **Inception Workshop date:** |  7/6/2021 |
| **Focal Area:** | Energy, Environment and Disaster Risk | **Midterm Review date:** | N/A |
| **Contributing Outcome** | Outcome 3. By 2025, people in North Macedonia benefit from ambitious climate action, sustainably managed natural resources and well-preserved biodiversity through good environmental governance and disaster resilient communities. |
| **Gender marker** | 2 | **If revised, proposed closing date:** | 31 August 2022 |
| **Project Financing:** | **USD** | **SEK (UN Exchange rate for November 2019 1USD = 9.724 SEK)** |
| **[1] Donor (Swedish government):** | 2,056,766.76 | 20,000,000.00 |
| **[2] UNDP contribution:** | 65,000.00 | 632,060.00 |
| **PROJECT TOTAL COSTS [1 + 2]** | **2,056,766.76** | **20,632,060.00** |

## Project Description

The “Tackling Air Pollution in the City of Skopje” was designed to demonstrate a multi-pronged intervention to tackle air pollution in the City of Skopje linked to the residential sector since air pollution is a significant cause of premature death and disease and is the single most important environmental health risk in Europe, causing around 400,000 premature deaths yearly.

Its objective is to establish a fully functional platform that brings all traditional and non-traditional partners to work together to address the issue. The project has four main components: Component 1: Develop a comprehensive monitoring system for the pilot area and a coordination platform to tackle air pollution; Component 2: Implement regulatory changes necessary to transition towards a lower emission household energy system; Component 3: Demonstration of measures that address the causes of pollution for household heating, and Component 4: Build public awareness.

The project enhances the coordination among all the responsible actors to ensure a “whole of government” and “whole of society” response to the air pollution challenge. The Ministry of Environment and Physical Planning and the City of Skopje are the main project partners and beneficiaries. Still, the project peruses the involvement of all relevant stakeholders who can contribute to mitigating the problem. The mobilising capacity of academia and civil society organisations is tapped to devise solutions and help change public behaviours.

## Findings

## Relevance

The project's relevance, already high in the formulation phase due to the high pollution level in Skopje, has increased in recent months due to the international crisis and the increase in energy and fuel prices. The project is designed to support the advancement of the country's EU accession agenda and is aligned to and will use locally owned systems to develop sustainable outcomes with strong local ownership.

The project properly focuses on the causal factors (lack of a monitoring system, effective inter-sectoral coordination mechanisms, insufficient legislative framework, lack of evidence of the effectiveness of pollution reduction measures in households, low awareness and widespread polluting behaviours). It contributes to achieving the national priorities and the outcomes set in the UNDP Country Project Document 2016-2020 signed by the Macedonian Government. The stakeholders involved in the project have been well identified: ministries, municipalities, academia, auditors, and households (focusing on the most vulnerable).

The role of CSOs is limited, and the design has not sufficiently considered the need for more substantive support in inter-sectoral articulation. Another limitation identified by several of the interviewed stakeholders has been the non-inclusion of solar-based heating sources since the conditions were not favourable at the time of the design.

## Efficiency

Despite the complications caused by COVID-19, the overall performance is good. In June 2022, approximately 91% of the project time, the budget execution is 71%. The project team plan foresees 95%-100% of execution in the available time. The institutional change in the city of Skopje has made coordination and communication with the new municipal authorities challenging during the first semester of 2022. The costs of the project activities and products have been in line with national standards.

The decision to support the most vulnerable households with interventions limited to thermal insulation (windows) and heating systems has allowed extending the number of beneficiaries cost-efficiently. The enthusiastic, motivated and qualified team of UNDP and the implementation mechanisms proved efficient, ensuring a constant and attentive follow-up of the activities with the stakeholders involved.

## Effectiveness

The project shows relevant progress towards the achievement of the outputs. The most significant are the Monitoring System, the excellent web-based platform and heating surveys (C1), the correspondent tables for the rulebook on Labelling of Energy-Related Products to the template given by the Secretariat for European Affairs (C2), the measures addressing the causes of pollution for 120 household heating and the revision of Subsidy models (C3), the marketing survey and capacity/gap assessments to design and implement training and awareness-raising activities (C4). Apportionment study is the first scientific study in the country, and in general, the project is based on a solid partnership with science. The project also sought to primarily support households from different vulnerable groups like low-income households, persons with special needs, persons with disabilities, single-parent families and others.

Improvements in heating systems have made it possible to reduce pollution in households, demonstrating a low-emission district concept to contribute to medium-term changes in how air pollution is tackled in the country (C3). Nevertheless, the effects of components 1, 2 and 4 are still incipient or partial. The web platform (C1) is used only by university researchers but not by governments, CSOs, citizens and the private sector. Progress in the corresponding tables but not towards legislative changes (C2). No evidence (behavioural change survey not implemented) of the effectiveness of the communication strategy, but increased participants to calls and decreased scepticism.

## Impact

Significant steps forward have been achieved, but the project only partially established a fully functional platform that brings all traditional and non-traditional partners to work together, the limitations in the legal framework remain, and, above all, funds for the public sector to implement a plan based on the excellent products (monitoring system and subsidy program for low-emission energy-efficient districts) are minimal, with little inter-institutional coordination and weak municipal technical and financial capacities. CSOs are still facing challenges in participating in a meaningful dialogue with the Government to identify solutions and implement appropriate actions and measures.

Increased media coverage of air pollution can be linked to the training sessions for media and the public call to tackle air pollution. More than 15 companies were involved in the training session. Partial and anecdotal evidence of the changes in the behaviours of citizens. Significant challenges in the coming winter due to rising electricity prices could hurt the overall impact of the project. The institutional ownership of the two main project partners and beneficiaries, the MEPP and the City of Skopje, is partial. Some challenges emerged due to the recent changes in municipal authorities.

## Sustainability/Ownership

The overall and long-term sustainability of the project faces challenges due to the budgetary constraints of the public sector, which hinder the dissemination and replicability of the project's excellent results in the national territory. The limited role of civil society organisations in the project limits the long-term effects and sustainability. The same applies to the private sector, which was considered in the research for the retailers of heating devices and training for them to offer more EE products. The short time available for the project implementation and the difficulties caused by COVID have made it challenging to involve these two important stakeholders.

## Gender perspective

Even if the project does not have a relevant gender approach, in the implementation, the gender perspective has been positively considered, especially in the participation of women: women participated very actively in the working groups and technical teams (C1) and the selection criteria, oriented to support the most vulnerable population, included prioritisation of female-headed households (C3). All institutions have and apply gender and inclusion policies.

## Lessons learned

Since international factors can affect energy prices, consider diversification of sources and self-production energy measures, such as solar energy and solar panel heating systems. Targeting target groups towards the most vulnerable sectors of the population is a promising practice to be developed in future interventions. Changes of authority are often obstacles to project continuity and sustainability. The PT's positive articulation and communication with the municipal authorities could start as early as during the election campaign with the candidates to minimise the handover time.

## Recommendations

## Relevance

For future projects, foresee a more active role of the CSOs, especially in promoting their role in the articulation with the public sector. Evaluate the possibility of creating a complementary project planning and monitoring mechanism (Technical Committee) with a more active role for the target institutions and SCOs. Provide for the identification of alternatives to electric heating systems (biomass, photovoltaic energy) to minimise possible negative impacts caused by the cost of electricity. Carry out a gender analysis and thus strengthen the gender approach. The same is true for the population that lives in a situation of greater vulnerability.

## Efficiency

Ensure constant monitoring of the activities that remain to be completed in the scheduled times (C 3). Properly consider climatic factors in the programming to measure pollution due to home heating during the summer. Pay attention to planning to prevent delays and bottlenecks for the implementation of the activities, to observe and measure the results and effects of the implemented activities before the end of the project.

## Effectiveness

Strengthen the participation of citizens, government institutions, the private sector and CSOs in the web platform, spreading its use in social networks or providing specific activities and workshops. Support the articulation in existing/new coordination spaces between institutions and CSOs. Maintain and enhance the partnership with academia and science to enable a robust and comprehensive knowledge base for the informed design of policies and measures for tackling air pollution.

## Impact

For future projects, extend the coverage of the subsidy model to other vulnerable municipalities, linking such initiatives to national policies promoted by the Ministry of the Environment with other funds, especially from the European Union, to achieve more impact and sustainability. Consider working with the Parliament and National Commissions on Energy and Environment to encourage the discussion and approval of new regulations and legislative changes. Once the impact of COVID-19 has ended or is limited, evaluate the possibility of working with schools and children and adolescents to sensitise them, incorporating the project issues into the educational curriculum.

## Sustainability/Ownership

Encourage the municipal appropriation and diffusion of the technologies and policies of the project. To increase the financial capacities of the municipality of Aerodrom directly supported (C3) and of the possible municipalities supported with future projects, favour the appropriation of such municipalities to the benefits of projects that improve the municipal capacities of access to European, national (also of the private sector) and other international funds, as promoted by BMCPI project. Influencing municipal environmental policies by replicating and institutionalising the subsidy model (and others, such as tax incentives, loans with low-interest rates, cash or in-kind subsidies) in coordination with the Ministry of the Environment, the academy, the CSOs and the private sector.

## Gender perspective

Based on the positive experience of targeting component 3, continue targeting this and other future interventions towards the most vulnerable population groups, including low-income women. Develop a gender analysis, with the participation of the target groups and beneficiaries, before the presentation of new proposals or as the initial activity of a new project, in such a way that the design of the intervention may have such an approach explicitly reflected in outputs, activities, and budget.

## **INTRODUCTION**

The present Final Evaluation Report (FER), prepared after the phase of analysis of the primary and secondary data collected before and during the field phase, presents the description of the Swedish Agency for Development and Cooperation (Sida) funded United Nations Development Programme (UNDP) Project “Tackling Air Pollution in the City of Skopje” Project, the scope and objective of the evaluation, evaluation approach and methods, the data analysis, the findings, conclusions of the evaluation as well as the recommendations and lessons learned, considering cross-cutting issues[[1]](#footnote-2).

The final evaluation of the project has a twofold objective. The first is to assess the current relevance of the project, the efficiency of its implementation, the effectiveness in achieving the expected outputs and outcomes, the impact such outputs have achieved or are achieving for the different target groups and beneficiaries, and the sustainability of the project once completed. In the evaluation, particular attention has been devoted to understanding and documenting lessons learned and cross-cutting issues, particularly gender.

The second, in the framework of a learning perspective that characterises the evaluation, is to identify helpful knowledge elements to be used for designing future interventions for tackling air pollution in the country, based on the experience gained during the implementation of the current project, considering the changes in the context, whether legislative (e.g. legal reforms favouring the installation of solar panels for electricity production) or economic (e.g. rising fuel and electricity prices due to international factors) or and cultural (awareness of the effects of pollution on households), in particular from studies, behavioural change communication campaigns and practices developed in households through subsidies to improve thermal insulation conditions and the switch to more environmentally friendly heating systems.

## **Projects description**

## Context and challenges

Air pollution is a significant cause of premature death and disease and is the single most important environmental health risk in Europe, causing around 400,000 premature deaths yearly. The report released in June 2019 by the United Nations Environment Program and prepared in cooperation with the World Health Organization confirms that the population in the western Balkans is exposed to some of the highest concentrations of air pollution in Europe, up to five times higher than the national and the EU guideline levels. Moreover, the three cities – Skopje, Bitola, and Tetovo – were ranked in 2017 as among the top ten most polluted in Europe, with conditions worsening tangibly and measurably over the past five years.

Several underlying factors have led to this current situation which needs to be addressed to tackle air pollution from domestic heating sources. These include the following:

* **Inadequate monitoring of air quality and potential sources of pollution**. Though initial studies have been carried out and the general sources of pollution have been identified, Skopje lacks a comprehensive monitoring system that informs policymakers, private sectors, investors, and the public to understand the “real costs” of pollution. As mentioned in previous studies, reliable air quality monitoring data was unavailable to exhaustively complete the source appointment studies, and measurements did not fulfil the minimum data coverage requested by legislation, resulting in the unavailability of reliable annual average concentrations.
* **Insufficient coordination amongst stakeholders**. Several stakeholders are involved or could be involved in addressing this issue, including the local government, national government, various donor organisations, and community groups. There were no effective platforms for coordinated action at the project's beginning.
* **Inadequate regulatory framework**. Notably, this is related to standards for heating units to ensure they are less polluting or more efficient – which would comply with the EU directive on eco-design. It also relates to the regulatory framework governing the district heating use and distribution, which is insufficiently developed to encourage the use of the district heating grid.
* **Lack of successful examples that demonstrate results**. This relates to a lack of neighbourhoods - or building-level models of switching to district heating systems or improving the end-use efficiency of buildings.
* Many **inefficient buildings** with no or limited insulation and few workable schemes available to owners to finance or implement retrofitting. This results in more fuel (wood, plastics) being burned to heat space with little comfort.
* **Limited availability of efficient heating technologies**. While the district heating system is primarily available in Skopje, in some parts of the city, it is too expensive to connect. In these cases, it is necessary to have efficient wood furnace technology available at a reasonable cost and work with district heating providers to improve affordability and residential uptake.
* Related to this, as described above, **inefficient wood-burning stoves** are used for heating predominantly. These should be phased out of the market entirely.
* And similarly, there is **low awareness** among the retailers of the vital role they can play in the low-carbon economy chain and the contribution to behavioural change by offering smart and affordable packages to households (focusing on low-income ones) to speed up the process of replacement of old inefficient stoves.
* **Low awareness** about the sources and effects of air pollution among specific citizens relates to the impact of inefficient burning on health and the environment and the possibilities for more cost-effective heating sources/stoves.
* **Widespread polluting behaviours** such as open burning of wood and plastics, as well as illegal /logging

## Project Approach and Objective

The “Tackling Air Pollution in the City of Skopje” project aims to demonstrate a multi-pronged intervention to tackle air pollution in the City of Skopje linked to the residential sector. Its objective is to establish a fully functional platform that brings all traditional and non-traditional partners to work together to address the issue.

The project has four main components: Component 1: Develop a comprehensive monitoring system for the pilot area and a coordination platform to tackle air pollution; Component 2: Implement regulatory changes necessary to transition towards a lower emission household energy system; Component 3: Demonstration of measures that address the causes of pollution for household heating, and Component 4: Build public awareness.

The project enhances the coordination among all the responsible actors to ensure a “whole of government” and “whole of society” response to the air pollution challenge. The Ministry of Environment and Physical Planning and the City of Skopje are the main project partners and beneficiaries. Still, the project peruses the involvement of all relevant stakeholders who can contribute to mitigating the problem. The mobilising capacity of academia and civil society organisations is tapped to devise solutions and help change public behaviours.

The project is designed to support the advancement of the country’s EU accession agenda and is aligned to and will use locally-owned systems to develop sustainable outcomes with strong local ownership. At the same time, the project facilitates access to knowledge and experience from EU member states and advanced economies worldwide.

The system thinking method is applied in designing the interventions, with the citizens in the centre of the solution (human-centred design). The system-solving approach aims to explore a roadmap that:

* Have identified specific target groups
* It is focused on the local level - designing and testing local actions specific to the municipality or neighbourhood in Skopje Valley.
* It relies on non-traditional forms of partnerships with the private sector and academia.
* Involves every single institution that has roles and responsibilities in addressing the system
* It is focused on changing citizens’ behaviours (incentives vs normative)

The project team is set to utilise the capacity and the network of Skopje Lab – the City of Skopje Innovation Lab, established in 2017 by the City of Skopje and UNDP as an experimental space for co-designing and testing new approaches for solving Skopje’s significant urban challenges.

It aims to bring about change in the behaviour of people and the use of energy in Skopje through a comprehensive approach involving:

* Effective and inclusive monitoring/understanding of the sources of pollution.
* Changes in the regulatory framework to bring about changes in behaviour amongst market operators and consumers.
* Investments in interventions that will reduce energy consumption and pollution – including particulate matter, CO, and GHGs.
* Communications/awareness-raising activities ensure public buy-in and a better understanding of adjusting programs to achieve lasting impacts.

The project also seeks to engage NGOs through a competitive open call for grants or services:

* NGO that would work with the potential beneficiary households in Lisice.
* NGO for awareness-raising/advocacy activities.
* NGO for events organisation (hackathon and data visualisation).

Additionally, for the energy audits, efforts are being made to closely collaborate with the Association of Energy Auditors as a specialised association of citizens.

The intended project outputs and results will contribute to achieving the national priorities and the outcomes set in the UNDP Country Project Document 2016-2020 signed by the Macedonian Government. It will also contribute to the advancement of the following SDGs targets 3.9, 7.1, 9.4, 11.6, and 13.2.

## Expected Results and Key Outcomes

The project comprises four main components with sub-components and activities described below. The entire Project Document containing all necessary details will be shared with the selected expert.

**Component 1: Develop a comprehensive monitoring system for the pilot area and a coordination platform to tackle air pollution**

***Sub-component 1.1: Development of a comprehensive* monitoring system for the pilot area is achieved by upgrading the current network, developing an online platform to collect and visualise data, and repeating the heating study.**

Activity A 1.1.1 Improvements to the existing monitoring system to measure air pollution by extending the network of monitoring stations and setting up an IoT and machine learning-based IT platform

A 1.1.2 Develop a monitoring system and an online platform for collecting and visualising data.

A 1.1.3 Continued monitoring of the contributions to air pollution by repeating the heating study at the end of the project to include both small companies and households

***Sub-component 1.2 Modelling of air pollution sources* through a source apportionment study**

A 1.2.1 Source apportionment modelling - Identify specific geographical areas where investing in mitigation measures will have the most significant impact.

***Sub-component 1.3 Implement a coordination platform to create synergies and linkages with other initiatives to inform a long-term action plan*.**

A 1.3.1 Learning exchange and linkages with other initiatives to inform a long-term plan of action -, Convening stakeholders, donors and relevant actors to implement necessary changes identified.

**Outcome level (1):**

The monitoring and modelling activities will provide the basis for an informed plan of action, coordinated by UNDP, which will act as an enabler of a coordination platform that links together multiple stakeholders, **convening donors, government actors, CSOs, and private sector stakeholders to implement necessary changes identified** through the source apportionment studies, other relevant studies/plans and community-based activities. The online platform will facilitate dialogue between the Government, civil society as a representative of citizens, private sector in **identifying the bottlenecks and seeking consensual solutions that will tackle the problems in the medium and long term**.

**Component 2: Implement regulatory changes necessary to transition towards a lower emission household energy system**

A 2.1.1 Assistance to support legislation changes - eco-design adoption and implementation to eliminate poorly performing wood stoves / solid fuel heaters

A 2.1.2 Assistance to support legislation changes - waste management (promote recycling of plastic)

A 2.1.3. Regulatory impact assessment - cost-benefit, social, environmental, and gender impact for regulatory changes

**Outcomes level (2):**

Supporting the Government in **transposing the relevant pieces of secondary legislation for solid fuel heaters will reduce air pollution by forcing market operators to place new efficient stoves in the market** (phasing out the inefficient ones).

**Component 3: Demonstration of measures that address the causes of pollution for household heating to show proof of concept**

A 3.1.1. Establish partnerships with all relevant stakeholders from the private and civic sectors and formalise the partnership with the Municipality of Aerodrom.

A 3.1.2 Selection of intervention neighbourhood

A 3.1.3. Energy audits and co-design of energy-efficient measures, less-polluting heating systems, and yard/area improvements with selected stakeholders

A 3.1.4 Financing of interventions: subsidy for thermal rehabilitation for individual houses combined with redesign/installation of new heating elements, rubbish removal and vacation, arrangements where needed (cofounded -from 30% to 70% of the total value- for a maximum of 10,000 USD for household)

A 3.1.5 Redesign the municipal subsidy model for the most vulnerable categories of the population.

The key expected results of Component 3 are:

* Functional model for the building of low-emission districts and later low-carbon cities.
* Subsidy model for low-income families to replace the current first-come-first-served models of the city and municipalities, which does not give desired results and cannot be used by low-income families
* Model for provision of subsidies for better-off families to replace their inefficient stoves with solar systems or other less-polluting technologies through empowering retailers to design and offer affordable and attractive packages.

**Outcome level (3):**

**A subsidy program for low-emission energy-efficient districts** to reduce emissions through energy-efficiency improvements in residential buildings and households in the targeted area (implementing thermal rehabilitation, efficient heating, and sustainable waste management solutions focusing on a specific geographical area to encourage a "district-wide" concept of emission reduction activities and therefore (a) reduce the energy consumption and pollution in a noticeable geographic area and (b) increase the awareness-raising impact of the interventions) **will demonstrate a low-emission district concept to contribute to medium-term changes in the way the air pollution is tackled in the country**.

**Component 4: Build public awareness**

A 4.1. Identification of target audiences, barriers and level of awareness, and desired attitude change

A 4.2. Co-design and implementation of behavioural-changing activities with the interested stakeholders

A 4.3 Transfer of Swedish outstanding residential low-emissions and sustainable living practices in the country.

**Outcome level (4):**

**Raising the awareness among the public** about the sources and effects of air pollution and the knowledge of the effective means to tackle the problem, increase the capacity of media to inform/raise awareness, **and CSOs** to participate in a meaningful dialogue **with the Government** **to identify solutions and implement appropriate actions and measure**, bringing best models (Swedish practices) among key stakeholders.

**Partnerships**: UN System (including UNDP projects “Resilient Skopje: Scaling-up for Sustainability, Innovation and Climate Change” and “If we were counting” funded through the City Experiment Fund), Swedish Environmental Protection Agency, EBRD, GEFF (Green Economy Financing Facility)/REEP (Regional Energy Efficiency Programme) Plus, USAID (United States Agency for International Development).

The **assumptions** of the Project Document (PRODOC) are related to the political and financial will of the government, the role of the Ministry of Environment and Physical Planning to monitor and make data available, the interest of the City of Skopje end municipalities, CSOs, national and local institutions, and governments, as well as the private sector interest.

The **risks** preidentified in the PRODOC are political, electoral, institutional weakness, public perception, and corruption. Such risks are addressed throughout the project in coordination with the principal stakeholders and communication activities. Other risks, such as the pandemic COVID-19 or international conflicts that could affect health, mobility, and the cost of heating fuels, were not foreseen as potential risks.

These activities and results must be accomplished within a Sida budget of USD 2,056,766.76 and an additional UNDP co-funding of USD 65,000.

## Main stakeholders

According to the ToR, the evaluation process includes the participation of the following stakeholders:

* Ministry of Environment and Physical Planning
* Ministry of Economy
* Ministry of Labour and Social Policy
* City of Skopje/Municipalities of Skopje agglomeration
* Intergovernmental Group on Air Pollution
* CSOs
* University “Goce Delcev”, Shtip
* Academia
* Private sector
* Energy Auditors/Association of Energy Auditors
* Donors
* Households

## Projects implementation structure

The Project team is integrated by the project manager, the project assistant, the Communication Officer and the Chief Technical Advisor. The project team is supported by the Programme Officer in charge of the Energy, Environment and Disaster Risk Reduction Portfolio, the Programme and Monitoring & Evaluation Associate, The Procurement Associate and The Programme Finance Associate.

The Project Manager ensures the results (outputs) specified in the project document are to the required quality standard and within the specified time and cost constraints. The Project Assistant is responsible for the project administrative support (finance, procurement and general administration). The Communication Officer supports the implementation of the public awareness and communication activities, ensures visibility, cultivates good working relationships with participating organisations and entities and ensures a regular exchange of information among all project partners. The Chief Technical Advisor provides technical support to the project team and partners, communicates regularly with the relevant stakeholders and beneficiaries, provides advice, and facilitates their involvement.

The Programme Officer in charge of the Energy, Environment and Disaster Risk Reduction Portfolio play a critical role in the project as the key focal point for coordination between the Project, UNDP, SIDA and the national partner authorities and other key Project stakeholders. She provides strategic guidance, policy advice and technical input essential to deliver development results, create synergies with other complementary interventions, oversees the project implementation, monitors and reports to the donor, reviews and approves the TOR (programmatic aspects), serves as a Chair of the Evaluation Committee and facilitates decision making.

Programme and Monitoring & Evaluation Associate ensures effective implementation of UNDP monitoring and evaluation policies; the alignment of the project with the UNDP monitoring framework; the introduction of monitoring and evaluation tools to enable data collection and analysis and will support the regular project reporting.

The UNDP Operations team (Operations Manager, Procurement Associate and Programme Finance Associate) provides administrative support in procurement, operations management, human resources, financial management, and other required administrative support.

## Project timing and milestones

|  |  |
| --- | --- |
| Milestone | Date |
| Project Document Signature Date | 12/12/2019 |
| Project start date | 01/01/2020 |
| Planned Closing Date of the Project | 31/12/2021 |
| Actual Closing date of the project | 31/8/2022 |
| Project Inception Workshop | 7/6/2022 |
| Duration of FE | June – July 2022 |
| Date of full FE completion | 20/7/2022 |

## **Evaluation scope and objectives**

According to the UNEG Norms and Standards for Evaluation[[2]](#footnote-3), an evaluation is “an assessment, conducted as systematically and impartially as possible, of an activity, project, program, strategy, policy, topic, theme, sector, operational area or institutional performance. It analyses the level of achievement of both expected and unexpected results by examining the results chain, processes, contextual factors, and causality, using appropriate criteria such as relevance, coherence, effectiveness, efficiency, impact, and sustainability. An evaluation should provide credible, useful, evidence-based information that enables the timely incorporation of its findings, recommendations, and lessons into the decision-making processes of organisations and stakeholders”.

More specifically, the Final Evaluation (FE) focused on but did not limit the following primary goals:

* To assess the Relevance, Impact, Effectiveness, Efficiency, Sustainability, and Gender perspective against the project’s results framework.
* Assess the utility and effects of supporting the intended purpose and objectives.
* To assess the capacity and potential of project stakeholders to absorb, upscale, and sustain project results.
* To assess the level of involvement of local stakeholders in the project and their understanding, including financial and other commitments towards achieving the sustainability of project interventions.
* To analyse lessons learned that can inform future responses and possible follow-up actions.

|  |  |
| --- | --- |
| Criteria | Definition and central questions |
| Relevance | The extent to which the provided support and the outcomes are suited to local and national needs, development priorities and organisational policies, including project design/formulation (result framework) and its adaptation to the changes over time.Central questions:* Is the project still relevant, and has it been well designed to address the current challenges that institutions and households face about air pollution due to inefficient and highly polluting heating systems?
* What room for improvement is there for future design projects to be implemented on the same issue?
 |
| Efficiency | The extent to which results were delivered with the least costly resources possible, including the project implementation and adaptative management assessment.Central questions:* What is the project's implementation level, considering the complications caused by COVID-19 and the change of authorities in Skopje?
* Are the costs of the activities in line with national standards, and have the resources been used in the best way to benefit the target population?

  |
| Effectiveness | The extent to which the products (outputs) and effects (outcomes) of the provided support were achieved or how likely they will be achievedCentral questions:* Is the project achieving the expected products and services with the required quality?
* Is the coordination platform to guide public policies to tackle air pollution functioning?
* Are the effects generated by the project effectively contributing to the reduction of polluting factors in households?
* Is the project contributing to unintended negative or positive effects?
 |
| Impact | Considering the causal factors and preconditions, the extent of the project's long-term (positive or negative) effectsCentral question:* Is the project generating the expected long-term effects on the target groups, such as behavioural change and diffusion of environmentally friendly heating systems by the population, the private sector and institutions?
 |
| Sustainability/Ownership | The likely ability of an intervention to continue to deliver benefits for an extended period after completion, particularly the improvement of the capacity and potential of project stakeholders for the project sustainability and their commitment (including financial)Central questions:* Do the beneficiaries and the target groups (institutions, universities, municipalities of Skopje) have the technical and financial capacities to sustain, disseminate and scale up the project results?
* Have civil society and private sector actors been involved promptly in the project?
 |
| Gender perspective and other cross-cutting issues | The extent to which the project has been formulated and implemented takes into account the different needs and characteristics of population living in vulnerable situations, particularly the women, their degree of participation in decision-making, and the impact of the projects on women's empowerment and gender equality.Central questions:* Has the project been designed and implemented promptly to respond to the needs of the most vulnerable groups, such as women, people with disabilities and those living in extreme poverty and exclusion?
* Are these groups participating adequately and receiving the expected benefits?
 |

The FE methodology follows the OECD DAC evaluation criteria[[3]](#footnote-4) and UNDG Guidance[[4]](#footnote-5) and has been conducted by the principles outlined in the UNEG “Ethical Guidelines for Evaluation”[[5]](#footnote-6). The Evaluation Team (ET) used gender-sensitive methodologies and tools to ensure the incorporation of cross-cutting issues, particularly gender equality and women's empowerment, in the FER.

## **Key players**

The FE has been developed by a team composed of one national evaluation expert and one international team leader. The national evaluation expert worked under the guidance of and support of the lead international evaluation expert at all evaluation stages. The team adopted a participatory approach and a close engagement with UNDP staff at project, country, and regional levels and stakeholders with project responsibilities, facilitating the participation of all other stakeholders in respect of ethical standards (local and national authorities, experts and consultants, academia, projects beneficiaries, householders, NGOs).

## **Methodology**

## Approach

The FE assessed the achievement of the project's results through a participatory, results-oriented methodology implemented within the established standards.

The findings are based on the evaluation team's triangulation of quantitative and qualitative data from primary (interviews) and secondary sources (documents, reports, studies, surveys) collected during the inception and field phase.

The Project Team (PT) has been consulted and involved throughout the evaluation process. The PT facilitated the understanding of the dynamics, challenges, and opportunities that arose during the implementation, which was particularly useful given the constraints and the limitations to the evaluability (time, language spoken by different stakeholders, and conditions faced by the experts). By the consumptive and participatory approach of the evaluation, the project teams shared project documents, participated in the definition of the methodology and supported the evaluation team from the revision and identification of the stakeholders to the organisation of agendas. The PT support in the realisation of the survey to beneficiaries of subsidies (C3) was remarkable. The survey allowed the ET to collect evidence and have a preliminary analysis to know and quantify the beneficiaries' contributions.

The project was evaluated to assess its Relevance, Impact, Effectiveness, Efficiency, Sustainability/ownership, Impact and Gender perspective against the project-level result framework:

* **Relevance**. The extent to which the provided support and the outcomes are suited to local and national needs, development priorities and organisational policies, including project design/formulation (result framework/log frame) and its adaptation to the changes over time.
* **Efficiency**. The extent to which results were delivered with the least costly resources possible, including the project implementation and adaptative management assessment.
* **Effectiveness**. The extent to which the products (outputs) and effects (outcomes) of the provided support were achieved or how likely they will be achieved.
* **Sustainability/Ownership**. The likely ability of an intervention to continue to deliver benefits for an extended period after completion, particularly the improvement of the capacity and potential of project stakeholders for the project sustainability and their commitment (including financial)
* **Impact.** Considering the causal factors and preconditions, the extent of the project's long-term (positive or negative) effects.
* **Gender perspective**. The extent to which the project has been formulated and implemented takes into account the different needs and characteristics of women and men, their degree of participation in decision-making, and the impact of the projects on women's empowerment and gender equality.

The evaluation also assessed **lessons learned** (positive or negative) or promising practices to provide empirical evidence to inform future responses and possible follow-up actions.

Findings present the strengths and weaknesses of each criterion, as identified by the evaluation questions (Annex 4: Evaluation Matrix). For the defined purposes of the evaluation, the ET rated each criterion and question according to a rating scale: Serious problems, Problems, Satisfactory and Very Satisfactory.

The conclusions reshape the findings from a more strategic and less punctual point of view to elaborate and present the recommendations in line with the expectations of the evaluation as indicated in the ToR: “The evaluation shall document the learning achievements and positive examples and provide recommendations to enable UNDP and Sida on possible follow-up interventions. The evaluation also highlights areas where the project performed less effectively than anticipated, the rationale behind that, and the related recommendations to be considered in similar future interventions”, including lessons learned. Lessons learned can be positive or negative and can relate to any of the elements and criteria considered in the evaluation: relevance, efficiency, effectiveness, effectiveness, sustainability, gender approach, including implementation mechanisms and management.

The project assessment, the rates of the six criteria, and lessons learned in chapter **5. Findings and lessons learned**. The conclusions and recommendations are presented I chapter **6. Conclusions and recommendations**.

## Data analysis

The FE was developed following four evaluation methods.

1. The **documentation review** of the project-related documents (see Annex 3. List of available documents) started during the Inception Phase and continued during the field and reporting phases. It permitted the identification of the relevant aspects of the project, guided the evaluation design, and guaranteed a reliable official source of information (including indicators and progress reports), complementing the data collected through interviews and a household survey.
2. The **evaluation matrix** (Annex 4: Evaluation Matrix) with the primary evaluation questions and prepared according to the OECD-DAC evaluation criteria and the Indicative Evaluation Questions indicated in the ToR by the Evaluation Team, the UNDP, and the Project Teams, was the base for the interview the stakeholders and to analyse the documents. The evaluation matrix guided and informed the data analysis findings presented in **5. Finding and lessons learned**.
3. The list of stakeholders to interview was developed with the PT: **5** **face-to-face and 15 remote interviews** were conducted with key informants related to the Project (Annex 5: List of interviews). The international expert participated in all interviews except for the five face-to-face ones with the beneficiaries of the subsidies (C3) since the interviewees couldn’t express themselves in English, conducted exclusively by the national experts that participated in all interviews with the stakeholders.
4. A **survey** complemented the interviews with statistical data on beneficiaries’ information (The survey results are presented in Annex 6. Survey results). The project management agreed with the survey questions and supported its implementation by contracting a company to develop the survey with the Computer Assisted Telephone Interview technique. The main objective of the survey was to evaluate satisfaction with energy efficiency measures by grant beneficiaries Grant. Beneficiaries were divided into two groups depending on the grant call[[6]](#footnote-7) (first or second) to which they applied. The refusal rate was low, and most respondents were readily available by telephone and accepted participation in the survey. The project activities were evaluated through five short questions in terms of project implementation, measures satisfaction, electricity consumption/costs, sustainability maintenance and perception of one's own and family health after the changes in the home. The survey permitted to compare the answers of the respondents from the first (which received refurbishing, insulation, replacement of window, roof and heating technology) versus those from the second call(which received only window and heating technology replacement).

|  |  |
| --- | --- |
| Research instrument | Structured questionnaire with 5 evaluation questions plus additional independent variables |
| Average survey duration | 3.2 minutes |
| Respondent list | 129 contacts with phone numbers |
| Total sample size | 121 respondents |
| Total number of refusals | 8 contacts |
| Fieldwork duration | 25 - 27 June 2022 |
| Data analysis | Quantitative nominal data analysed using the grouping method (SPSS and Microsoft Excel) |

1. The information gathered through reviewing the primary and secondary sources (interviews and documentation) was organised and **classified** by the experts to extract helpful information responding to the evaluation questions by criteria. **Triangulation of Sources** has been an integral part of the analysis of the information collected, to substantiate the findings, used to check the reliability of evidence, assuring at the same time robustness and sufficient flexibility to highlight standard features and specific nuances that may apply to the same evaluation questions.

## Interviews

As a result of the project interventions and support, within the pilot area, in total, 129 households replaced their old and inefficient heating systems with new energy-efficient ones: heat pumps (5), inverters (108) or pellet stoves (37). Besides replacing the heating systems, the project supported several energy efficiency interventions, including installing a thermal façade, installing a roof with thermal insulation, and replacing windows, doors, and entry and balcony doors. In some cases, the new roof replaced the existing asbestos roof, which, besides the air pollution, additionally impaired health conditions. The project also sought to primarily support households from different vulnerable groups like low-income households, persons with special needs, persons with disabilities, single-parent families and others.

In cooperation with the project coordinator, the TE team selected 5 (five) beneficiary households to be visited and interviewed by the local evaluator, based on the following criteria:

* Diversity of interventions (to include households with different combinations of interventions).
* Representation of different vulnerable groups.
* Representation of households with varying shares in the overall energy efficiency investment.
* We are tackling additional health problems (asbestos exposure).

The evaluation team interviewed 22 stakeholders[[7]](#footnote-8), namely:

* The Donor (Sida)
* Implementation team (key UNDP Programme, Project, and Communications staff)
* Government representatives (Minister of Environment and Physical Planning, Energy Department (Ministry of Economy), Minister for Social Work and Policy)
* The City of Skopje, Municipality of Aerodrom
* Key project experts (study, Energy Auditor, Web platform, Coordination Platform

Beneficiaries (Householders)

The persons interviewed face-to-face by the national expert are the householders indicated in the table of interviewed people. Interviews with householders were also used to test the applicability of the survey.

The evaluation followed the United Nations Evaluation Group (UNEG) Ethical Guidelines for Evaluation[[8]](#footnote-9) and under the Do No Harm (DNH) approach, which provides professional standards and ethical and moral principles.

The UNDP Country Office supported the ET by providing information (sharing documents, meeting the ET, and participating in workshops and interviews), arranging interviews with stakeholders and the household survey, and timely commenting on the deliverables.

## Limitations

The relatively short timeline for the FE (6.5 weeks, from 6 of June to 20 of July 2022) did not represent severe limitations. Thanks to the constant and punctual support of the PT and the CO to the ET and the efficient interviews organisation provided by the PT, the ET managed to coordinate and implement all necessary activities quickly and efficiently.

The limitations due to possible language difficulties on the part of the stakeholders to be interviewed and for the documentary review also did not represent a problem, except on a couple of occasions, where the national expert facilitated the translation. The household interviews were developed in Macedonian by the national expert of the ET.

The COVID-19 pandemic did not determine any limitations to mobilisation, even if it still required caution and the application of prevention standards in conducting face-to-face interviews with the households.

## Findings and lessons learned

## Relevance. The extent to which the provided support and the outcomes are suited to local and national needs, development priorities and organizational policies, including project design/formulation (result framework/log frame) and its adaptation to the changes over time.

The information gathered through reviewing the primary and secondary sources (interviews and documentation) was organised and **classified** by the experts to extract helpful information responding to the evaluation questions by criteria. **Triangulation of Sources** has been an integral part of the analysis of the information collected, to substantiate the findings, used to check the reliability of evidence, assuring at the same time robustness and sufficient flexibility to highlight standard features and specific nuances that may apply to the same evaluation questions.

## Interviews

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* Diversity of interventions (to include households with different combinations of interventions).
* Representation of different vulnerable groups.
* Representation of households with varying shares in the overall energy efficiency investment.
* We are tackling additional health problems (asbestos exposure).

The evaluation team interviewed 22 stakeholders[[9]](#footnote-10), namely:

* The Donor (Sida)
* Implementation team (critical UNDP Programme, Project, and Communications staff)
* Government representatives (Minister of Environment and Physical Planning, Energy Department, Minister for Social Work and Policy)
* The city of Skopje, Municipality of Aerodrom
* Key project experts (study, Energy Auditor, Web platform, Coordination Platform

Beneficiaries (Householders)

The persons interviewed face-to-face by the national expert are the householders indicated in the table of interviewed people. Interviews with householders were also used to test the applicability of the survey.

The evaluation followed the United Nations Evaluation Group (UNEG) Ethical Guidelines for Evaluation[[10]](#footnote-11) and under the Do No Harm (DNH) approach, which provides professional standards and ethical and moral principles.

The project's relevance and timely, already high in the formulation phase due to the high pollution level in Skopje, further increased in recent months due to the international crisis and the rise in energy and fuel prices. The pandemic did not alleviate the project's relevance. On the contrary, the lockdowns entailed more heating for homes, and rising energy prices required cost-efficient heating solutions.

The project, through its four components, properly focuses on the causal factors of air pollution: lack of a monitoring system and effective inter-sectoral coordination mechanisms, insufficient legislative framework, lack of evidence of the effectiveness of pollution reduction measures in households, low awareness and widespread of polluting behaviours.

The expected project outputs and results can contribute to achieving the national priorities and the outcomes set in the UNDP Country Programme Document (CPD) 2016-2020 and the CPD 2021-2024, particularly to the Output 3.3 “Capacities at central and local levels are strengthened to prevent and respond to the air pollution threats and health consequences in most vulnerable communities”. It can also contribute to the advancement of the following SDGs targets 3.9, 7.1, 9.4, 11.6, and 13.2.

The target groups, especially the Municipality of Aerodrom, actively participated in elaborating the proposal. This represented an important factor for the project to respond to the needs of the municipality, rely on the sectoral expertise of municipal officials, and align with public policies and municipal plans. The project also capitalised on the capacity and the network of Skopje Lab — the City of Skopje Innovation Lab, established in 2017 by the City of Skopje and UNDP as an experimental space for co-designing and testing new approaches for solving Skopje's significant urban challenges. Finally, the project's design was informed by the UNDP study of household heating practices in Skopje (2017) and the EBRD-WB Report about biomass use for heating in Macedonia (2017). This enabled proper identification of the assumptions, which enhanced the prospects of achieving the expected effects.

The project document highlighted the role of a participatory approach in addressing air pollution. The Ministry of Environment and Physical Planning and the City of Skopje are the main project partners and beneficiaries. The other stakeholders involved in the project have been well identified: ministries, municipalities, academia, auditors, and households (whose targeting has been improved during implementation by focusing on the most vulnerable).

Almost all interviewed stakeholders confirmed the strong potential of the project for stakeholder engagement and permanent communication and exchanges with the project team regarding their interests and needs. A strong partnership has been established with the academic sector, whose knowledge products (primarily source apportionment modelling study) and monitoring results contributed significantly to the policy design, stakeholder engagement and awareness-raising activities in air pollution.

The project design has also included engaging CSOs through a competitive open call for grants or services - NGOs that would work with the potential beneficiary households, CSOs for awareness-raising/advocacy activities and events organisation. However, despite the sound plans for CSOs' engagement, as inferred from some interviews, the CSOs' role remains limited.

Although inter-sectoral work has been recognised as a critical success factor, the design and implementation phase has not sufficiently considered the need for more substantive support in inter-sectoral articulation.

The project focused on a sound technological solution (heating systems and energy efficiency measures) in the given local context. Several stakeholders identified a limitation related to the non-inclusion of PV systems. However, it should be noted that the framework conditions for PV technology uptake were highly unfavourable at the time of the project's design. The situation has recently improved with the new Rulebook for renewable energy sources and the recent increase in electricity prices.

At the national level, the objective to become an EU member is the main driving force for the project and an essential factor for the sustainability of project results. The project is designed to support the advancement of the country's EU accession agenda and is aligned to and will use locally owned systems to develop sustainable outcomes with strong local ownership.

Finally, it is convincingly demonstrated that the project has provided leverage for future larger-scale grant and loan packages available from the international donor communities and banks. Indeed, this should be combined with intensive work on enhancing the absorption capacity of institutions at the national and municipal levels. The project has also exhibited a strong synergetic potential with other ongoing projects in the country supported by Sweden's government agency for development cooperation (SIDA), the European Bank for Reconstruction and Development (EBRD), Green Economy Financing Facility, Unites States Agency for International Development (USAID), and several UNDP-supported projects.

The most positive elements in the design phase have been:

1. The relevance of the air pollution theme, the place of implementation and the strategy of the intervention, which has well combined the scientific knowledge aspects with the implementation of a very relevant subsidy system to guide policies, inform and sensitise the population and institutions, with support for legal reforms and the creation of an inter-institutional coordination platform that brings together the knowledge and practices developed by the different stakeholders in a participatory and transparent manner.

2. The role was given to the academy as a centre of knowledge production with a substantial social role for the energy and environmental sector.

3. The focus on institutional strengthening and institutionalisation of the practices developed with the project, in a local context with a view to the national.

The primary limitations encountered in the design of the project are:

1. The institutional weaknesses, in particular the non-functioning of the intersectoral group on air pollution, led by the Ministry of the Environment, which does not count on human resources to ensure adequate follow-up.

2. Although the Air Pollution project focuses on households to demonstrate measures to properly address the causes of pollution for household heating and not on public buildings, synergies could have been strengthened between the Air Pollution project and the second project funded by the Swedish cooperation that the UNDP has been implementing in the country, “Building Municipal Capacity for Project Implementation”, which supports municipalities to access international and national funds by strengthening their capacity to develop the technical documentation to access the calls. For instance, supporting the municipality of Aerodrom to increase its capacity to mobilise funds for the calls related to the transformation of the heating systems of public buildings and the production of solar energy, as, the municipality of Cair did.

3. Marginal role in the project of the Civil Society Organizations, very active in defence of environmental rights. CSO couldn’t position itself sufficiently in the decision-making and inter-institutional coordination mechanisms around the project, limiting its role to participation on the project board.

4. Limitation of the subsidies (C3) to the most performing and environmentally friendly heating systems, without including the use of solar energy to heat homes and produce electricity, also hampered by legislation that at the time of the project's preparation did not favour the industry as it is today.

## Efficiency. The extent to which results were delivered with the least costly resources possible, including the project implementation and adaptative management assessment.

Despite the complications caused by COVID-19, which difficulted the implementation of activities, particularly in households, the overall performance is good. The Project Team made a well-use of the 8-month extension, showing relevant progress in most activities.

Specifically, the FE team found that the project team displayed strong adaptive management by:

* Adjusting well to working under Covid-19 restrictions with the households and shifting communication and events to an online or hybrid format.
* Cancelling or postponing some tasks due to changes in the context. For example, the development of models for providing subsidies for better-off families was cancelled since other relevant projects in the country conducted similar analyses. The Call for the inclusion of CSO in the project activities is an example of postponement of a task due to the Covid-19 situation.
* Displaying flexibility and willingness to respond to requests from the stakeholders with emerging potential to contribute to the objectives and outcomes. Good examples include the consultation with the Ministry of Environment and Physical Planning to complement and coordinate their activities in the area of Air Pollution, with the Ministry of Economy and the Ministry of Environment and Physical Planning about pieces of legislation to be targeted by the project, with the Ministry of Economy and Ministry of labour and social affairs for selection criteria for beneficiary households, with the Municipality of Aerodrom and some beneficiary households for the implemented measures and the discussion with the Ministry of Environment and Physical Planning and City of Skopje to decide about several aspects of the coordination platform jointly.

The institutional change in the city of Skopje has made coordination and communication with the new municipal authorities challenging during the first semester of 2022, reducing the project's potential effectiveness and sustainability. However, the project team organised a presentation meeting with the new head manager of the environmental protection department and regular communication with the City of Skopje representatives.

The Project Board (PB) has been established to oversee the project implementation, provide overall strategic direction, play a critical role in reviewing the project progress, and approve annual project work and financial plans. The established managerial arrangements and frequency of PB meetings are adequate for the project's size and level of complexity. The same holds for the work planning and progress monitoring as they are results-based. The corresponding work plans and annual progress reports are elaborated in sufficient detail against the project’s results framework/ log frame.

In June 2022 (up to the second quarter -Q- of the year), approximately 91% of the project time, the budget execution is 71%. The remaining funds will be executed for upgrading the coordination platform, the purchase order (encumbrance), contracts and minor activities (C 2), purchasing of inverters, preparation of a draft action plan for the city of Skopje and its piloting through the coordination platform, study tour for Sweden, communication activities and final conference, as well as payment of salaries and office costs. The project team plan foresees 95%-100% of execution in the available time.

The costs of the project activities and products have been in line with national standards. The decision to support the most vulnerable households with interventions limited to thermal insulation (windows) and heating systems has allowed extending the number of beneficiaries cost-efficiently.

The dynamic, motivated and qualified team of UNDP and the implementation mechanisms proved to be efficient, ensuring a constant and attentive follow-up of the activities with the stakeholders involved, with some limitations in the more active participation of CSOs and target groups in the decision-making process.

## Effectiveness. The extent to which the products (outputs) and effects (outcomes) of the provided support were achieved or how likely they will be achieved.

The project shows relevant progress towards achieving the outputs under the four project components. The most significant project outputs are the Monitoring System (3 outdoor monitoring stations were placed in Lisice and five indoor monitoring devices), the excellent web-based platform and heating surveys that include households and small companies and the Source Apportionment Study and coordination platform to support the Intersectoral work on air pollution problem(C1), the correspondent tables (EU-MK form and MK-EU form) for the rulebook on Labelling of Energy-Related Products to the template given by the Secretariat for European Affairs (C2), the measures addressing the causes of pollution for 120 (2 calls x 60) household heating and the revision of Subsidy models (C3), and the marketing survey and capacity/gap assessments to design and implement training and awareness-raising activities (videos, public call/awards) (C4).

## Component 1. Develop a comprehensive monitoring system for the pilot area and a coordination platform to tackle air pollution

The outputs under the first component (C1) follow three lines:

***Sub-component 1.1: Development of a comprehensive* monitoring system for the pilot area is achieved by upgrading the current net**, which includes:

* **Air pollution monitoring systems** (Completed - successful achievements)
	+ 3 (three) outdoor monitoring stations were placed in Lisice in three different locations to measure the local air pollution from individual residential houses. The equipment allows real-time monitoring of air quality results and remote transfer of data.
	+ 5 (five) indoor monitoring devices were temporally installed at the selected households to measure the current indoor air quality. The households’ indoor air quality data, collected before and after the household energy efficiency interventions and change of the heating devices, are shared with the public to demonstrate the effectiveness of the households’ interventions (for the sake of evidence-based public awareness activities)

The project purchased the monitoring systems while Goce Delcev University – Shtip (GDU) is the responsible party for maintenance/management of the equipment, air quality monitoring, data collection and development of the reports/studies for the subject project.

* **Monitoring online platform[[11]](#footnote-12)** (Completion with minor shortcomings), aimed at awareness-raising, stakeholder coordination and citizen engagement. The platform presents the air pollution data and activities on air pollution reduction in the country, enables discussions about the possible solutions to the air pollution and other relevant issues, creates and communicates relevant events, enables pollution reporting and similar. Furthermore, the platform collects and visualises data from the real-time monitoring systems. It incorporates a customised dashboard for the presentation of the monitored sensor data. Also, the platform presents the monitoring data collected by GDU and the Ministry of Environment and Physical Planning (MoEPP). The public part of the platform has a responsive design, adapted both for mobile and desktop consumption.

Now, the platform is functional and in good shape. The project has provided 11 months of technical support and hosting services for 5 (five) years. GDU currently administers the platform, but a more sustainable solution shell is sought in 2022. Also, no evidence for the utilisation of a broad spectrum of target groups.

* **Heating study including small companies and households**  (Completed - successful achievements)
	+ Heating Survey for Micro and Small Businesses: A Heating Survey for Micro and Small Businesses /Companies/ Repair shops were conducted to include small businesses in the research. The survey included a sample of 1000 micro and small business entities located in Skopje, in the residential areas. With the collected data, the project obtained relevant information, which is used for the preparation of awareness-raising activities, preparation of different documents/models for the needs of the project, as well as for proper conducting of strategic planning and decision-making processes.
	+ Survey related to the household heating practices in the Skopje valley: The aim was to repeat the SkopjeSeZagreva study that was conducted in 2017 and assess the progress made in terms of implementation of the energy efficiency measures (e.g., replacement of old and inefficient heating stoves and windows, putting insulation and similar) within the residential houses/buildings. The survey also assessed citizens' awareness of the sources and effects of air pollution, their readiness to invest in heating devices and other energy efficiency measures and what influences their decision mainly while purchasing a heating device. The research was conducted through telephone interviews by using a structured questionnaire. It included 3,071 respondents/households.

***Sub-component 1.2 Modelling of air pollution sources* through a source apportionment study** (Completed - successful achievements).

The main goal of the study is to derive information about pollution sources and the amount they contribute to ambient air pollution levels as an essential tool in the design of air quality policies as required explicitly or implicitly for the implementation of the Air Quality Directives (Directive 2008/50/EC and Directive 2004/107/EC). The study was prepared by Goce Delcev University (GDU) – Shtip. The GDU team installed the monitoring equipment and conducted the measurements in several specific receptors/sampling points:

* Two sites within Skopje agglomeration, one urban background location (no direct exposure to significant sources) and one urban exposed as a representative, represent the mixture of sources in the area (traffic, residential heating and mixed industrial sources).
* Three temporary (at indicative level) monitoring sites to improve source impact zone delineation and increase data quality as input for RM development.

The study is the first scientifically based document of its kind in the country.

***Sub-component 1.3 Implement a coordination platform to create synergies and linkages with other initiatives to inform a long-term action plan*** (Basis established; further development is needed).

This coordination platform has the purpose of convening donors, government actors, CSOs and private sector stakeholders to implement necessary changes identified through the Source Apportionment study, other relevant studies/plans and community-based activities. The preparation of a conceptual design of the platform is ongoing with the involvement of the MoEPP and the City of Skopje to jointly decide on several aspects of the platform, including its sustainability and inclusion of the stakeholders and enabling their cohesion. The plan is, through this platform, to pilot the preparation of an action plan in a participatory manner and its progress monitoring. The city of Skopje is interested in serving as a piloting entity.

## Component 2. Implement regulatory changes necessary to transition towards a lower emission household energy system

The second component (C2) produces outputs in the form of **appropriate correspondent tables (EU-MK form and MK-EU form) for the rulebook on Labelling of Energy-Related Products** (Completed - successful achievements) to the template given by the Secretariat for European. The project team ensured the legislative/regulatory outputs were driven by the needs so that the scope was defined in coordination with the Ministry of Economy and the Ministry of Environment and Physical Planning.

## Component 3. Demonstration of measures that address the causes of pollution for household heating to show proof of concept

The third component (C3) demonstrated **proof of concept in 129 households** (Completed - successful achievements). The outputs are related to the following three areas:

1. Establishing a **functional model for building low-emission districts** (Completed - successful achievements).

The Call for Applications for households in Naselba Lisice to implement energy efficiency measures was open from the 24th of August until the 15th of September 2020. Out of 165 applications, an energy audit was conducted for the 60 pre-selected households:

* Group 1- 22 households (in socio-economic risk, with an annual income of up to 180,000.00 dinars (approximately 3500 USD)). The project covers 100% of the energy-efficiency interventions.
* Group 2 - 20 households: The project covers 70% of the energy-efficiency interventions.
* Group 3 - 17 households: The project covers 50% of the energy-efficiency interventions.
* Group 4 - 1 household: The project covers 30% of the energy-efficiency interventions.

Of the initially selected 60 households from the 1st Call, 54 households proceeded toward the interventions phase. As a result of the household's economic situation and the significant increase in the construction materials prices, several households decided to withdraw from the implementation process. Within the course of Q2 and early Q3 technical documentation was prepared for each household which was subject to further interventions, and the final round of the negotiation process was conducted. Based on the previously scheduled Energy Audits for each household, the detailed technical documentation elaborated on the planned interventions (roof/façade adaptation, replacement of old inefficient devices and replacement of old windows/entry doors). As of October 2021, a supervision company was selected, and site interventions started taking place at the first 11 households. The overall completion of the planned interventions in Lisice is still expected to be completed by June/July 2022. Within Q4 2021, all old and inefficient heating devices at the selected households within the 1st Call were replaced with new/energy-efficient ones.

Within the period from 17th of March – to 6th of April 2021, the 2nd Call was announced for financial support of Lisiche households to replace their firewood, charcoal, crude oil or waste heaters to reduce air pollution in Skopje. To ensure enough households submit their applications, a wider area within the Municipality was marked as the “intervention zone”, including Naselba Lisice, Todor Changov and Gorno Lisiche, without jeopardising the success of activities related to air quality monitoring. The call was communicated via online media, but at least 1000 application forms were distributed in the intervention zone. No co-financing options were included, i.e., the project covered the entire cost for granted interventions. Within the 2nd Call, the following interventions were included: replacing old inefficient windows/entry doors and replacing old, feeble heating devices. Out of the 91 applications received, a total of 74 applications were approved to proceed further with the financing of the energy efficiency interventions. After the initial screening process, which was carried out to confirm the household status, energy audit activities were conducted in 60 households. Within Q4 2021, all heating devices were replaced with new/energy-efficient ones. The replacement process of the old inefficient windows/entry doors is expected to be completed by the end of the project.

As a result of the project interventions and support, within the pilot area, in total, 129 households replaced their old and inefficient heating systems with new energy-efficient ones: heat pumps (5), inverters (108) or pellet stoves (37). In addition to this, because of the conducted energy audits, the project obtained relevant data for the quantities of reduced pollution/emission and information about the return of the energy efficiency investments.

1. **Developing a Subsidy model for low-income families** (Completed - successful achievements)

Subsidy models at national and local levels that contribute to environmental protection (including air pollution, energy efficiency and climate change) while simultaneously providing support to the most vulnerable categories of the population (low-income families) were developed. The current subsidy models were reviewed, and the gaps and challenges (including challenges on the end-user level) were identified. Comparative analyses of different subsidy models in the region and EU countries were also carried out to identify models/elements that can be utilised for developing the model(s). Before finalising the subject document related to the development of new subsidy models, a co-design workshop was organised on the 25th of November. It included more than 20 relevant stakeholders: representatives from several Municipalities (Tetovo, Gostivar, Bitola, Aerodrom, Kumanovo, Veles and Kavadarci), representatives from the Civil Sector, individuals who shared their stories (that they were not able to purchase inverters and apply for subsidies due to lack of funds), representatives from the Ministry of Environment and Physical Planning, Ministry of Finance, Ministry of Economy, Ministry of Labour and Social Policies and representatives from the City of Skopje, among others. A new innovative tool, Murals (digital workspaces for visual collaboration), was used to obtain simultaneous input from all co-design workshop participants.

1. **Developing models for providing subsidies for better-off families to replace inefficient stoves with more energy-efficient technologies, empowering retailers to design and offer affordable and attractive packages.**

During the preparation of the project “Green Finance Facility to Improve Air Quality and Combat Climate Change in North Macedonia”, led by UNDP in collaboration with IOM, UNECE and EBRD, two relevant studies addressing the issue of subsidies were prepared. Therefore, it was decided that there is no need to repeat the same type of analysis. The documents developed by the project mentioned above are:

* Life, health, well-being and the environment study: Behaviour Change Communication Strategy for UNDP North Macedonia.
* Study of the Rationale and Pricing for Performance-Based Payments and Technical Assistance for Energy Efficiency and Renewable Energy Solutions, North Macedonia.

These documents are valuable sources for developing further activities and projects related to air pollution.

## Component 4. Build public awareness

The fourth component (C4) - public awareness regarding the causes and effects of air pollution and strengthening of energy efficiency- delivered outputs from various communication and visibility activities. The most important outputs include:

1. **Marketing survey and co-design of awareness-raising activities** (Completed - successful achievements): Three surveys related to air pollution issues of three target groups were designed and conducted.
* The first target group were the citizens of Lisice. The survey used a quantitative face-to-face method with a representative random sample of 300 respondents.
* The second target group consisted of the civil society organisations that deal with air pollution-related issues, surveyed at the national level. Qualitative research was conducted, including 20 CSOs in three focus groups.
* The third target group comprised retailers and wholesalers of heating devices, also surveyed at the national level. The survey used the quantitative face-to-face method on a representative sample of 100 respondents.

With the collected data, the project obtained relevant information, which was used for the preparation of awareness-raising activities, preparation of different documents/models for the needs of the project, as well as to properly conduct strategic planning and decision-making processes in tackling air pollution and improving the knowledge and understanding of the potential sources of pollution and the effects of investments in interventions that will reduce energy consumption and air pollution.

1. **Capacity/gap assessments and capacity-building programs target three groups** (Completed - successful achievements)**:**
* CSO, a first training session with the participation of 20 CSOs: AIR QUALITY MONITORING AND ASSESSMENT: HOW TO IMPROVE AIR QUALITY MONITORING?
* Retailers of heating devices were developed, and a second training session with more than 15 participants: STRENGTHENING THE KNOWLEDGE OF RETAILERS AND SELLERS ABOUT THE FEATURES AND THE BENEFITS OF ENERGY EFFICIENT DEVICES AND HEATERS.
* Media workers (journalists), third training session, conducted on 27 April 2022, at the premises of the University Goce Delcev in Shtip.
1. **Building Public Awareness** (Completed - successful achievements)
* The Air Pollution Project was invited to join the #50ShadesOfAir campaign organised by the Embassy of Sweden in Skopje. The campaign included a travelling exhibition of 50 photographs (on regular public bus routes in the City of Skopje). The project covered the costs for the print-out of the travelling exhibition for the bus lines commuting to and from Lisice.
* A total of 6 (six) videos were produced to promote the activities conducted within the project, and many photos were taken. The first three videos (“How energy-efficient homes can save Skopje from air pollution”, “outdoor and indoor air quality monitoring in the pilot area of Lisiche”, and “How precise data can help reduce air pollution in Skopje”) provide an overview of the activities both of the project team, as well as the team from “Goce Delcev University” – Shtip. Videos 4 - 6 are interviews conducted with direct project beneficiaries, i.e. household members awarded project funds to increase the energy efficiency within their households. Within the videos, all 3 (three) women share their personal stories about the household state before the interventions. These planned activities should be conducted in their households, and the expected personal and environmental benefits following the implementation measures.
* New promotional videos are in the preparation pipeline and will reflect the “ongoing works” and “completion stages” at the households where the energy efficiency interventions are currently taking place. They are expected to be publicly shared by Q2 2022 and give more considerable input to the public awareness-raising campaign.
* Public call on the topic: Tackling air pollution - strengthening public awareness for problems and possible solutions. The general call had several criteria, including an original authorial work to raise public awareness on air quality and air pollution and to be published on a media registered in the country, traditional or online, from January 2020 to September 2021. Over 20 applications were received, including MTV, Vidi Vaka, Radio MOF, 360 Stepeni, Deutsche Welle, IRL, Meta etc. The following journalistic works received the top 3 awards:
	+ - 1st price – IRL, title: “Conspiracy against the air”, first episode from the “Redakcija” series.
		- 2nd price – Bojan Shasheski from Radio MOF, title: “Our children are victims of arsenic – the mining site “Lojane” is fatal for the inhabitants of the Lopkovo villages”.
		- 3rd price - Hristina Gjorgievska from “Vidi Vaka”, title: “The captured lungs of the city”.
		- In addition to the awarded journalists, special recognition was given to Mr Asdren Cheliku from MRTV for an innovative and creative book, which has an educational approach and contributes toward raising awareness among children regarding the importance of a healthy environment.

UNDP is exploring the possibilities to support this award for clean air and the environment in the following years.

In conclusion, the project delivered very satisfactory outputs. The FE team would particularly emphasise the Source Apportionment Study as the first scientific study in the country and, in general, the strong partnership with science the project has established. (Highlighted also by the Minister of Environment and Physical Planning). Also, the FE team acknowledges the support delivered to households from different vulnerable groups like low-income households, persons with special needs, persons with disabilities, single-parent families and others. In some cases, the new roof replaced the existing asbestos roof, which, besides the air pollution, additionally impaired health conditions.

The extent to which the project outputs were achieved was analysed and rated using the following colour-coding:

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| --- | --- |
| **Colour** | **Extent of the achievement of the outputs** |
| Green | Completed - successful achievements |
| Cyan | Completion with minor shortcomings |
| Yellow | Basis established; further development is needed |
| Red | Poor achievement |

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| **Component C1** |
| **Outcome.** The monitoring and modelling activities will provide the basis for an informed plan of action, as an enabler of a coordination platform that **links together multiple stakeholders to implement necessary changes** identified through the source apportionment studies, other relevant studies/plans and community-based activities. The online platform will **facilitate dialogue between the Government, civil society as a representative of citizens, private sector in identifying the bottlenecks and seeking consensual solutions** that will tackle the problems in the medium and long term. |
| **Outputs** |
| (1) Establishing a comprehensive Air pollution monitoring system for the pilot area |
| (2) Establishing a monitoring online platform |
| (3) Heating study including small companies and households |
| (4) Source Apportionment Study (Modelling of air pollution sources) |
| (5) Establishing an intersectoral coordination platform |

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| **Component C2** |
| **Outcome.** Supporting the Government in **transposing the relevant pieces of secondary legislation for solid fuel heaters will reduce air pollution by forcing market operators to place new efficient stoves in the market** (phasing out the inefficient ones). |
| **Outputs** |
| (1) Appropriate correspondent tables (EU-MK form and MK-EU form) for the rulebook on Labelling of Energy-Related Products to the template given by the Secretariat for European |
| **(2) Support to legislative priorities**  |

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| **Component C3** |
| **Outcome: A subsidy program for low-emission energy-efficient districts** to reduce emissions through energy-efficiency improvements in residential buildings and households in the targeted area **will demonstrate a low-emission district concept to contribute to medium-term changes in the way the air pollution is tackled in the country**. |
| **Outputs** |
| (1) Establishing a functional model for building low-emission districts.  |
| (2) Developing a Subsidy model for 129 low-income families  |
| (3) Developing models for providing subsidies for better-off families to replace inefficient stoves with more energy-efficient technologies |

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| **Component C3** |
| **Outcome: Raising the awareness among the public** about the sources and effects of air pollution and the knowledge of the effective means to tackle the problem, increase the capacity of media to inform/raise awareness, **and CSOs** to participate in a meaningful dialogue **with the Government** **to identify solutions and implement appropriate actions and measure**, bringing best models (Swedish practices) among key stakeholders. |
| **Outputs** |
| (1) Marketing survey and co-design of awareness-raising activities |
| (2) Capacity/gap assessments and capacity-building programs target three groups: |
| (3) Building Public Awareness  |

As to the outcomes, the improvements in heating systems have made it possible to reduce pollution in households, demonstrating a low-emission district concept to contribute to medium-term changes in the way air pollution is tackled in the country (C3). Nevertheless, the effects of components 1, 2 and 4 are still incipient or partial.

The web platform (C1) is used only by university researchers but not by governments, CSOs, citizens and the private sector. Progress in the corresponding tables, but not towards legislative changes (C2). No evidence (behavioural change survey not implemented) of the effectiveness of the communication strategy (videos, work with journalists), but positive elements (increased participants to calls, decreased scepticism).

## Impact. Considering the causal factors and preconditions, the extent of the project's long-term (positive or negative) effects.

Significant steps forward in the project have been achieved. However, the limited funds available to the municipalities for the environment sector limit the replicability and consolidation of the practices promoted by the project.

So, the long-term impact of the project is still incipient: the project only partially established a fully functional platform that brings all traditional and non-traditional partners to work together to address the issue, the limitations in the legal framework remain, and, above all, funds for the public sector to implement a plan based on the excellent products (Source Apportionment Study, monitoring system and subsidy program for low-emission energy-efficient districts) are minimal, with little inter-institutional coordination and weak municipal administrative, technical and financial capacities.

The project impacted several target groups through various activities. For example, based on the results from the assessment of the awareness/perception of the CSOs, a training session for 20 CSOs was organised. In addition, through a public call, four CSOs were selected that underwent a comprehensive capacity-building training programme month on behaviour-changing activities and will work with the project team until the end of the project on behaviour-changing experiments and policy briefs/recommendations for improvement of specific air pollution issues. However, not much evidence was found for real positive change in this target group – the CSOs are still facing challenges in participating in a meaningful dialogue with the Government to identify solutions and implement appropriate actions and measures.

The increased media coverage of air pollution indicates the media's positive impacts. This can be linked to the training sessions for media and the public call on tackling air pollution.

In line with some relevant priority actions from the Governmental Program, a Heating Survey for Micro and Small Businesses/Companies/Repair shops were conducted to gather knowledge for enforcement of legal changes, policy adjustments and other similar actions. However, the direct impact on this target group is not sufficiently clear. The positive impact on the retailers and installers is convincing, as the relevant training session attracted more than 15 participating companies.

To enhance the impact, representatives of all the target mentioned above groups are going to participate in the forthcoming study tour in Sweden.

The citizens found partial and anecdotal evidence of the changes in their behaviours (increased number of applicants to the subsidy program and increased trust). The situation will worsen as they are, facing and are likely to face significant challenges in the coming winter due to rising electricity and pellets prices, which could negatively affect the project's overall impact.

The institutional ownership of the two main project partners and beneficiaries, the MEPP and the City of Skopje, is partial. Some challenges emerged due to the recent changes in municipal authorities.

Regarding the Municipality of Aerodrom, the UNDP internal procedures are restrictive regarding the financial support and signing of the Memorandum of Understanding. However, the cooperation with the Municipality of Aerodrom is excellent; regardless, it is not formalised.

## Sustainability/Ownership. The likely ability of an intervention to continue to deliver benefits for an extended period after completion, particularly the improvement of the capacity and potential of project stakeholders for the project sustainability and their commitment (including financial)

The vast results of the project developing the air pollution monitoring systems, the likely progress in regulatory changes, the significant benefits achieved in the households of Naselba Lisice in the municipality of Aerodrom -thanks to the subsidy programme for implementing energy efficiency measures-, and the increased knowledge and confidence of the population involved, are highly likely to continue after the end of the project and represent an optimal starting point for future interventions.

However, the overall and long-term sustainability of the project faces challenges due to the budgetary constraints of the public sector, which hinder the dissemination and replicability of the project's excellent results in the national territory.

The limited role of civil society organisations in the project, limited to participation in the project board, but without an active role in the implementation and especially in the articulation of the platform and dialogue with the municipality of Aerodrom, limits the long-term effects and sustainability of the project. The same applies to the private sector, which was considered in the research for the retailers of heating devices and training for them to offer more EE products, even if in the project document, its role is considered necessary in the coordination platform and the partnership with the Municipality of Aerodrom for component 3. Based on the evidence collected during the evaluation, the short time available for the project implementation and the difficulties caused by COVID have made it challenging to involve these two important stakeholders.

It is expected that the operationalisation of the coordination platform and future similar interventions in other neighbourhoods or municipalities will depend on the availability of donor financing. In most donor programs, the air pollution area is among the top priorities. Therefore, the project's financial sustainability is likely despite limited national and municipal budgets.

Institutional and governance sustainability of the project is also likely. The project was undertaken to contribute to the alleviation of one of the hottest problems of Macedonian society, which, together with the need for adoption and alignment with EU standards, will be the primary driver for the development of relevant institutional and governance frameworks in national and local levels for the years to come. Therefore, it is expected that the national and local institutions and government frameworks for air pollution will be sustained and even strengthened during the country’s accession to the EU. However, the human resources part of the institutions has been fragile due to relatively high staff turnover.

The commitment by relevant stakeholders to air pollution mitigation has been stable over recent years. It is not expected that this would change in the near or medium-term future, ensuring thus likeliness of socio-economic sustainability. Also, no environmental factors could undermine the project results in the foreseeable future.

The benefits from the project support can be sustained and further reinforced by improving the knowledge management, maintaining and enhancing linkages and exchanges with other relevant platforms and information systems, harmonising and contributing to relevant national and local reporting requirements, as well as devising new projects based on the experience and knowledge gathered from this project.

## Gender perspective. The extent to which the project has been formulated and implemented considers the different needs and characteristics of women and men, their degree of participation in decision-making, and the impact of the projects on women's empowerment and gender equality.

Even if the project does not have a relevant gender approach in the design phase, with results, budget and activities oriented explicitly to women, in the implementation, the gender perspective has been considered, especially in the participation of women in the project activities at technical and beneficiary level, being women the ones who have a relevant role in the households. Specifically, under Component 1, women actively participated in the working groups and technical teams. In contrast, under Component 3, the selection criteria, oriented to support the most vulnerable population, included prioritising female-headed households (in addition to the most vulnerable people). The interviews have confirmed that the institutions are aware of the gender aspect and have and apply gender and inclusion policies.

On the negative side, the “so what” element is not sufficiently elaborated in most studies and research conducted under the project. For example, all completed surveys included questions related to gender. Still, in most cases, the results are simple, counting women-versus-men answers, without deeper analyses of the implications and reasonable recommendations for further actions. As a result, in most cases, the generated knowledge base is insufficient for going beyond declarative gender mainstreaming.

##  Lessons learned (positive or negative) or promising practices to provide empirical evidence that can inform future responses and possible follow-up actions.

The International events that modified energy prices did impact significatively the project results, affecting the effectiveness and sustainability of the heating systems improvements and, consequently, the potential long-term impact of the project. Various stakeholders pointed out that the increased energy price could contribute to a return to earlier heating systems based on burning wood. As pointed out in *4.1 Relevance*, at the time of project development, there were no favourable conditions for the use of solar energy; however, due to the experience gained in the implementation of the project and the new good sectoral regulations, which favour the use of solar energy, UNDP, SIDA, the City of Skopje and the ministries involved are considering promoting more solar heating systems in the future.

A particularly positive element of the project has been its capacity to adapt to the needs of the most vulnerable families, especially the poorest who use waste to heat themselves. This has been achieved by targeting the criteria for selecting the neediest families in the calls for component 3 subsidies. According to the stakeholder interviews and project monitoring documents, such measures have been well implemented and involve, as expected, the poorest families, cross-checking the social assistance data. Even if such data do not cover all the most vulnerable households, their use represents a relevant element to guarantee objectivity in applying the established criteria. Also, the sources consulted during the field phase of the assessment confirm the high coverage of the social assistance database, so the population eventually excluded does not represent a very relevant percentage.

The change of municipal authorities has complicated the continuity of coordination and communication between the PT and the sectoral officials and decision-makers in the first months of 2022. The interruption of communication may slow down the final stages of the project, consequently affecting its potential impact and sustainability. It is hoped that the steps forward that the PT is making, reactivating good coordination with the new authorities, will compensate for the difficulties of the last months and create the conditions to facilitate the institutionalisation and sustainability of the project's benefits.

As indicated by the survey of beneficiary households, besides economic constraints, misperceptions and low awareness of the population further prevent investment decisions or, in some cases, lead to the selection of sub-optimal technical solutions. For example, some households were hesitant to install invertors due to the expected rise in electricity prices. They insisted on installing a pellet stove, but now, facing the increasing pellet price, they regret their decision. Hence, an important lesson could be that organisation of tailor-made and very intensive awareness-raising events is a must before the Call for applications is released. When establishing a Call for applications, sufficient duration of the following phases should be envisaged: application phase, evaluation of the applications, negotiations with the pre-selected households and conducting the energy audit. Also, sufficient time for proper communication of the Call and time for providing additional information to the interested applicants must be foreseen.

Then, sufficient time for implementing intervention measures must be provided to ensure that the households will implement the activities they have committed to, so the construction companies can proceed with their work. One of the lessons learned from implementing the measures in Lisice is that the model applied is not the most suitable to be realised through donor projects with limited time and funding and could reach only a limited number of beneficiaries. However, the experience and knowledge gathered through this project could be an excellent starting base for a more systematic/programmatic approach combining various funding sources.

## Conclusions and recommendations

## Conclusions

## Relevance

## Rating scale: very satisfactory

The project's relevance, already high in the formulation phase due to the high pollution level in Skopje, has increased in recent months due to the international crisis and the increase in energy and fuel prices. The target groups, especially the municipality of Aerodrom, have actively participated in elaborating the proposal.

The project, through its four components, properly focuses on the causal factors: lack of a monitoring system and effective inter-sectoral coordination mechanisms, insufficient legislative framework, lack of evidence of the effectiveness of pollution reduction measures in households, low awareness and widespread of polluting behaviours.

The stakeholders involved in the project have been well identified: ministries, municipalities, academia, auditors, and households (whose targeting has been improved during implementation by focusing on the most vulnerable). However, the role of CSOs is limited, and the design has not sufficiently considered the need for more substantive support in inter-sectoral articulation.

Another limitation identified by several of the interviewed stakeholders has been the non-inclusion of solar-based heating sources since the conditions were not favourable at the time of the design.

The project is designed to support the advancement of the country's EU accession agenda and is aligned to and will use locally-owned systems to develop sustainable outcomes with strong local ownership.

The intended project outputs and results will contribute to achieving the national priorities and the outcomes set in the UNDP Country Project Document 2016-2020 signed by the Macedonian Government. It will also contribute to the advancement of the following SDGs targets 3.9, 7.1, 9.4, 11.6, and 13.2.

As access to international funds is one of the main problems faced by the municipality of Aerodrom, it is surprising that the municipality has not been linked to the BMCPI project, which SIDA also funds.

## Efficiency

## Rating scale: very satisfactory

Despite the complications caused by COVID-19, which complicated the implementation of activities, particularly with households, the overall performance is good. The Project Team well-used the eight-month extension, showing relevant progress in most of the activities. The institutional change in the city of Skopje has made coordination and communication with the new municipal authorities challenging during the first semester of 2022, reducing the project's potential effectiveness and sustainability.

In June 2022, approximately 91% of the project time, the budget execution is 71%. The project team plan foresees 95%-100% of execution in the available time.

The costs of the project activities and products have been in line with national standards. The decision to support the most vulnerable households with interventions limited to thermal insulation (windows) and heating systems has allowed extending the number of beneficiaries cost-efficiently.

The enthusiastic, motivated and qualified team of UNDP and the implementation mechanisms proved to be efficient, ensuring a constant and attentive follow-up of the activities with the stakeholders involved, with some limitations in the more active participation of CSOs and target groups in the decision-making process.

## Effectiveness

## Rating Scale (outputs): very satisfactory.

## Rating Scale (outcomes): satisfactory with problems C1, C2 and C4, very satisfactory C3

The project shows relevant progress towards the achievement of the outputs. The most significant are: the Monitoring System (three outdoor monitoring stations were placed in Lisice and five indoor monitoring devices), the excellent web-based platform and heating surveys that include households and small companies and the Source Apportionment Study and coordination platform to support the Intersectoral work on air pollution problem(C1), the correspondent tables (EU-MK form and MK-EU form) for the rulebook on Labelling of Energy-Related Products to the template given by the Secretariat for European Affairs (C2), the measures addressing the causes of pollution for 120 (2 calls x 60) household heating and the revision of Subsidy models (C3), and the marketing survey and capacity/gap assessments to design and implement training and awareness-raising activities (videos, public call/awards) (C4).

Apportionment study is the first scientific study in the country, and in general, the project is based on a solid partnership with science. The Minister particularly highlighted it.

The project also sought to primarily support households from different vulnerable groups like low-income households, persons with special needs, persons with disabilities, single-parent families and others. In some cases, the new roof replaced the existing asbestos roof, which, besides the air pollution, additionally impaired health conditions.

Improvements in heating systems have made it possible to reduce pollution in households, demonstrating a low-emission district concept to contribute to medium-term changes in how air pollution is tackled in the country (C3). Nevertheless, the effects of components 1, 2 and 4 are still incipient or partial.

The web platform (C1) is used only by university researchers but not by governments, CSOs, citizens and the private sector. Progress in the corresponding tables but not towards legislative changes (C2). No evidence (behavioural change survey not implemented) of the effectiveness of the communication strategy (videos, work with journalists), but positive elements (increased participants to calls, decreased scepticism).

## Impact

## Rating Scale: satisfactory with problems

Significant steps forward have been achieved. However, the limited funds available to the municipalities for the environment sector limit the replicability and consolidation of the practices promoted by the project.

So, the long-term impact of the project is still incipient: the project only partially established a fully functional platform that brings all traditional and non-traditional partners to work together to address the issue, the limitations in the legal framework remain, and, above all, funds for the public sector to implement a plan based on the excellent products (monitoring system and subsidy program for low-emission energy-efficient districts) are minimal, with little inter-institutional coordination and weak municipal technical and financial capacities. And CSOs are still facing challenges in participating in a meaningful dialogue with the Government to identify solutions and implement appropriate actions and measures.

Increased media coverage of air pollution can be linked to the training sessions for media and the public call to tackle air pollution.

The relevant training session's positive impact on the retailers and installers attracted more than 15 companies.

Partial and anecdotal evidence of the changes in the behaviours of citizens (increased the number of applicants to the subsidy program and increased their trust) that are facing and are likely to face significant challenges in the coming winter due to rising electricity prices, which could hurt the overall impact of the project.

The institutional ownership of the two main project partners and beneficiaries, the MEPP and the City of Skopje, is partial. Some challenges emerged due to the recent changes in municipal authorities.

## Sustainability/Ownership

## Rating Scale (population benefitted): Very Satisfactory

## Rating Scale (CSOs and institutions): Problems

The vast results of the project developing the air pollution monitoring systems, the likely progress in regulatory changes, the significant benefits achieved in the households of Naselba Lisice in the municipality of Aerodrom -thanks to the subsidy programme for implementing energy efficiency measures-, and the increased knowledge and confidence of the population involved, are highly likely to continue after the end of the project and represent an optimal starting point for future interventions.

However, the overall and long-term sustainability of the project faces challenges due to the budgetary constraints of the public sector, which hinder the dissemination and replicability of the project's excellent results in the national territory.

The limited role of civil society organisations in the project, limited to participation in the project board, but without an active role in the implementation and especially in the articulation of the platform and dialogue with the municipality of Aerodrom, limits the long-term effects and sustainability of the project. The same applies to the private sector, which was considered in the research for the retailers of heating devices and training for them to offer more EE products, even if in the project document, its role is considered necessary in the coordination platform and the partnership with the Municipality of Aerodrom for component 3. Based on the evidence collected during the evaluation, the short time available for the project implementation and the difficulties caused by COVID have made it challenging to involve these two important stakeholders.

## Gender perspective

## Rating Scale: satisfactory with problems

Even if the project does not have a relevant gender approach, with results, budget and activities oriented explicitly to women, in the implementation, the gender perspective has been considered, especially in the participation of women in the project activities at the technical and beneficiary level, being women the ones who have a relevant role in the households.

All institutions have and apply gender and inclusion policies.

Component 1: women participated very actively in the working groups and technical teams.

Component 3: the selection criteria, oriented to support the most vulnerable population, included prioritisation of female-headed households (in addition to the most vulnerable people)

## Lessons learned

Since international factors can affect energy prices, consider diversification of sources and self-production energy measures, such as solar energy and solar panel heating systems.

Targeting target groups towards the most vulnerable sectors of the population is a promising practice to be developed in future interventions.

Changes of authority are often obstacles to project continuity and sustainability. The PT's positive articulation and communication with the municipal authorities could start as early as during the election campaign with the candidates to minimise the handover time.

## Recommendations

## Relevance

For future projects, foresee a more active role of the CSOs, both in the implementation of the project and, above all, in promoting their role in the articulation with the public sector for the elaboration, implementation and follow-up of policies.

Evaluate the possibility of creating a complementary project planning and monitoring mechanism (Technical Committee) with a more active role for the target institutions and SCOs to favour their ownership, impact and sustainability.

Provide for the identification of alternatives to electric heating systems (biomass, photovoltaic energy) to minimise possible negative impacts caused by the cost of electricity.

Carry out a gender analysis to identify the particular needs of men and women and thus strengthen the gender approach, with different results, activities and budgets for men and women. The same is true for the population that lives in a situation of greater vulnerability.

## Efficiency

Ensure that the remaining funds are executed in the scheduled times, guaranteeing constant monitoring of the activities that remain to be completed (fundamentally component 3).

Properly consider climatic factors in the programming to measure pollution due to heating in homes during the summer, which is impossible.

Pay attention to planning to prevent delays and bottlenecks for the implementation of the activities, to observe and measure the results and effects of the implemented activities before the end of the project, e.g., providing more time for the verification phase of the requirements of the beneficiary population (C3)

## Effectiveness

Strengthen the participation of citizens, government institutions, the private sector and CSOs in the web platform, spreading its use in social networks or providing specific activities and workshops.

Starting from the high-quality products of knowledge developed, support the articulation in existing/new coordination spaces between institutions and CSOs, for a more active and impactful role of the civil society, binding coordination initiatives with other communication/advocacy initiatives, promoting interinstitutional forums and workshops, international exchanges (including with Sweden), or disseminating the results of studies, and surveys elaborated.

For future projects, evaluate the possibility of extending environmental policies. The subsidy model experimented well with the project, including other heating technologies based on solar energy and biomass, considering the increase in fuel and electricity prices.

Maintain and enhance the partnership with academia and science to enable a robust and comprehensive knowledge base for the informed design of policies and measures for tackling air pollution.

## Impact

For future projects, extend the coverage of the subsidy model positively experienced with the project to other municipalities in situations of environmental and energy vulnerability, linking such initiatives to national policies promoted by the Ministry of the Environment in a synergistic and coordinated manner with other funds of the international cooperation, especially from the European Union, to achieve more significant impact and conditions of sustainability.

Consider working with the Parliament and National Commissions on Energy and Environment to encourage the discussion and approval of new regulations and legislative changes promoted by this or further projects, elaborated with the participation of the CSOs and the municipalities and institutions involved.

Once the impact of COVID-19 has ended or is limited, evaluate the possibility of working with schools and children and adolescents to sensitise them (directly) and their families (indirectly) to the issues of the project, ideally incorporating the project issues into the educational curriculum with the Ministry of Education.

## Sustainability/Ownership

Encourage the municipal appropriation -through more active participation in the management (decision-making) and implementation of the project- and diffusion of the technologies and policies of the project.

To increase the financial capacities of the municipality of Aerodrom directly supported (C3) and of the possible municipalities supported with future projects, favour the appropriation of such municipalities to the benefits of projects that improve the municipal capacities of access to European, national (also of the private sector) and other international funds, as promoted by BMCPI project.

Influencing municipal environmental policies by replicating and institutionalising the subsidy model (and others, such as tax incentives, loans with low-interest rates, cash or in-kind subsidies) in coordination with the Ministry of the Environment, the academy, the CSOs and the private sector.

## Gender perspective

Based on the positive experience of targeting component 3, continue targeting this and other future interventions towards the most vulnerable population groups, including low-income women.

Develop a gender analysis, with the participation of the target groups and beneficiaries, before the presentation of new proposals or as the initial activity of a new project, in such a way that the design of the intervention may have such an approach explicitly reflected in outputs, activities, and budget.

## Annexes

Annex 1. Terms of Reference

Annex 2. Tackling Air Pollution: Expected Results (from PRODOC)

Annex 3. List of available documents

Annex 4. Evaluation Matrix

Annex 5. List of interviews

Annex 6: Survey results

## **Annex 3: List of documents**

**Air Pollution Project**

* Project Document and Project Budget
* Annual Progress Report for 2020 and Annual Work Plan 2021
* Annual Progress Report for 2021 and Annual Work Plan 2022
* Responsible Party Agreement with Goce Delcev University from Shtip – Project Document and Project Budget
* Progress reports from Goce Delcev University (financial and narrative)
* Survey on household heating practices 2021
* Development of the correspondence tables for the Rulebook on Labelling of Energy-Related Products
* Assessment of the awareness and knowledge of the retailers who are selling heating devices, the citizens of Lisiche, and the civil society organisations on air pollution issues
* Report from the energy efficiency research and heating practices of micro and small companies in Skopje
* Analysis of the possibilities for improvement of the existing and development of new models for air pollution reduction subsidies -how to create available contributions for socially/economically vulnerable categories of citizens
* Media monitoring report Tackling the air pollution in Skopje JUNE 2022
* Component 1
	+ Activity 1.1.1 & 1.1.2 & 1.1.3\_3 outdoor monitoring stations and online-coordination platform
	+ Activity 1.1.3 Repeating the SkopjeSeZagreva Heating Study
	+ Activity 1.1.3 SME heating study
	+ Amendment No. 3 to LoA GDU-final
	+ GDU Q4 report
	+ Letter of Agreement UNDP and GDU (Air Pollution)
	+ Source Apportionment Study
* Component 2
	+ Deliverable 1- 14 Corresponding tables EU-MK
	+ Deliverable 1- Corresponding tables EU-MK
	+ National legal prescription: Rulebook on the meaning of energy and other resources for energy producers
* Component 3
	+ Analysis of the possibilities for improvement of the existing and development of new models for air pollution reduction subsidies
* Component 4
	+ Activity 4.1\_Air Pollution Survey Citizens Lisice.
	+ Activity 4.1\_Air Pollution Survey companies
	+ Activity 4.1\_Intergral document, including the CSO part
	+ Activity 4.2\_CSO Call-FINAL
	+ Activity 4.3\_Draft Agenda Transfer of Swedish knowledge

##

## **Annex 4: Evaluation Matrix**

The evaluation matrices for the two projects are presented below. The questions have been elaborated based on those proposed in the ToR.

Abbreviations used in Methods for data analysis: **TS=** Triangulation of Sources; **TCA**= Triangulation, Comparative Analysis; **PTRA**= “Progress towards results analysis”

**Evaluation Matrix Air Pollution Project**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Criterium** | **#** | **Key questions** | **Specific sub- questions** | **Data source** | **Data collection methods/Tools** | **Indicator/success standards** | **Methods for data analysis** | **UNDP/Project Staff** | **Beneficiaries** | **Ministries** | **Intergovernmental Group on Air Pollution** | **Municipalities** | **CSOs** | **Academia/Engaged Experts** | **Private sector** | **Energy Auditors** | **Donors** |
|  **RELEVANCE** | 1 | To what extent the project was designed to respond to the emerging key needs of partners and beneficiaries? | To what extent the project was designed, to respond to the analysis made at the project design phase and (if relevant) to the changing context? | PRODOC, Planning document, Interviews | Document review, interviews  | Correspondence of the design with the identified needs and in context. | TS | x |   | x | x |   |   |   |   |   |   |
| 2 | To what extent did the project respond to the emerging key needs of partners and beneficiaries? | PRODOC, Planning document, Interviews | Document review, interviews | Correspondence of project adaptations to new needs of partners and beneficiaries | TS |   | x | x | x | x | x |   | x |   |   |
| 3 | Have the assumptions been well identified to achieve the expected effects?  | Did the project’s result framework/theory of change clearly articulate assumptions about why the project approach is expected to produce the desired change? | PRODOC, Framework, Planning document, Interviews | Document review, interviews | Proof that the resulting framework adequately incorporates the assumptions for the expected changes | TCA | x |   |   |   |   |   |   |   |   |   |
| 4 | Has the project shown itself to be well adapted to changes in context or programming?  | Have any changes been made to the project’s design during the implementation? If yes, did they lead to significant improvements? | PRODOC, Planning document, Annual reports, Interviews | Document review, interviews | Correspondence of design changes to new needs that have arisen during implementation | TCA | x |   |   |   |   |   |   |   |   |   |
| 5 | To what extent did the pandemic affect the relevance of the project to the beneficiaries? Did the modifications made to implementation in pandemic circumstances influence the relevance of the project to the beneficiaries? | PRODOC, Planning document, Annual reports, Interviews | Document review, interviews | Evidence of beneficiaries affected by COVID-19. Correspondence of design and implementation changes with new circumstances due to the pandemic | TCA | x | x | x | x | x |   |   |   |   |   |
|  **EFFICIENCY** | 8 | Has the project been implemented efficiently, with appropriate and functioning management tools? | To what extent did the project achieve the results in its proposed timeline? | Result Framework, Planning document, Annual reports, Indicators System, Interviews | Document review, interviews | Evidence that the time schedules have been respected and the activities have been implemented and the outputs achieved | TS | x | x | x | x | x | x |   | x |   |   |
| 9 | Have all implementing partners used human resources provisioned for this project to their maximum efficiency? | Result Framework, Annual reports, Indicators System, Interviews | Document review, interviews | Evidence of the efficient use of human resources in relation to costs, time and outputs. | TS | x |   | x | x |   | x |   |   |   |   |
| 10 | Overall, did the project’s management arrangements and implementation strategy provide value for money? Have resources been used efficiently? | Financial tables, Annual Reports, Interviews | Document review, interviews | Evidence of the efficient use of financial resources in relation to the quality of the outputs | TCA | x |   |   |   |   |   |   |   |   |   |
| 11 | Is there any duplication of efforts? Were coordination, management and financing arrangements clearly defined? | Planning document, Annual reports, Interviews | Document review, interviews | Evidence that management arrangements have not led to unnecessary duplications | TCA | x | x |   |   |   |   |   |   |   |   |
| 14 | How cost-effective is the component related to the implementation of a low emission district concept? What are the strengths and weaknesses of the concept? (\*) | Result Framework, Financial tables, Planning document, Annual reports, Indicators System, Interviews | Document review, interviews | Identification of strengths and weaknesses according to the cost-effective implementation of a low emission district concept | TCA | x | x | x |   | x |   | x |   |   |   |
| 16 | How has the COVID-19 pandemic been managed to facilitate efficiency and were there any lessons learned in relation to implementation mechanisms? | How the Covid-19 restrictions and protective measures affected the efficiency of the implementation? | Result Framework, Planning document, Annual reports, Indicators System, Interviews | Document review, interviews | Level of impact on efficiency due to pandemic COVID-19 | TCA | x | x | x | x | x | x | x | x | x |   |
| 18 |   | How well did the project collect and use data to monitor results? How timely was data collection? What challenged incurred and what lessons can be used for the future? | Monitor and Evaluation System, Indicators, Annual reports, Interviews | Document review, interviews | Level and quality of data production and evidence of potential problems occurred. | TS | x |   |   |   |   |   | x |   | x |   |
| 19 | What are the key lessons learnt on the implementation efficiency to be considered in a possible follow-up project phase? | Monitor and Evaluation System, Indicators, Annual reports, Interviews | Document review, interviews | Assessment of lessons learned regarding project efficiency | TCA | x |   |   |   |   |   |   |   |   |   |
|  **EFFECTIVENESS** | 21 | Is the project achieving the expected outcomes and coverage? | To what extent did the project achieve its intended objectives, particularly of the coordination platform to facilitate the dialogue between the Government, civil society as a representative of citizens? | Result Framework, Planning document, Annual reports, Monitoring System, Indicators System, Interviews | Document review, interviews, Survey | Evidence that the effectiveness indicators have been achieved with the expected quality | TCA, PTRA | x |   | x | x |   |   |   |   |   | x |
| 23 | How effective and clear the project’s targeting strategy was in terms of geographic and beneficiary targeting? | Annual reports, Indicator System, Interviews | Document review, interviews | Level of territorial and beneficiary coverage compared to the expected level | TCA, PTRA  | x |   | x | x | x |   |   |   |   |   |
| 30 | How have challenges, including the COVID-19 pandemic, been managed to enable the effectiveness of the project? | What challenges arose during implementation, and how did the Project Team respond to these challenges? | Annual reports, Indicator System, Interviews | Document review, interviews | Level of response given to the challenges raised during implementation | TCA | x |   |   |   |   |   |   |   |   |   |
| 31 | With the view to Covid-19 circumstances, to what extent the online activities conducted to respect the social distance, were effective, versus the classical face to face ones? What are the lessons learnt from the implementation that can be used for future possible crisis situations (e.g., pandemic, economic, security crisis)? | Monitor and Evaluation System, Indicators, Annual reports, Interviews | Document review, interviews | Level of implementation of activities under COVID-19, compared to pre-COVID-19 level | TCA | x |   |   |   |   |   |   |   |   | x |
| 32 | How the project has been coordinated with partners and other agencies | To what extent did the project complement work with different agencies, have a strategic coherence of approach? | UNDAF, Annual reports, Indicator System, Interviews | Document review, interviews | Coincidence of approach between the work of different agencies | TS | x |   | x | x |   |   |   |   |   |   |
| 33 | How effective was the cooperation among supporting and implementing partners?  | Annual reports, UN reports, Indicator System, Interviews | Document review, interviews | Evidence of effectiveness of cooperation with partners | TS | x |   | x | x |   |   |   |   |   |   |
| 34 | Were positive lessons learned or good practices identified in relation to effectiveness? | How novel or innovative was the project approach? Can lessons be drawn to inform similar approaches elsewhere and be considered for possible follow-up interventions? | Monitor and Evaluation System, Annual reports, Interviews | Document review, interviews | Evidence of lessons learned for replicability and scalability of the project | TCA | x |   |   |   |   |   |   |   |   |   |
| 35 | What good practices or successful experiences or transferable examples have been identified? | Monitor and Evaluation System, Annual reports, Interviews | Document review, interviews | Evidence of successful and transferable project practices | TCA | x |   |   |   |   |   |   |   |   |   |
|  **SUSTAINABILITY/ OWNERSHIP** | 37 | Are the project effects institutionally and financially sustainable? | To what extent the achieved results are likely to sustain over time? What are the factors that enable or impede the sustainability of the results? | PRODOC, Planning document, Annual reports, Monitoring and Evaluation System, Interviews | Document review, interviews, Survey | Level of match between the needs for sustainability and the response capacities of institutions/municipalities | TCA |   | x | x | x | x |   | x | x |   |   |
| 38 | What, if any, catalytic effects did the project have (financial and non-financial)? | Monitor and Evaluation System, Annual reports, Interviews | Document review, interviews | Identification of catalytic effects of the project | TS | x |   | x | x | x |   |   |   |   |   |
| 40 | To what extent has the project explored and taken advantage of co-funding from other sources? | Annual reports, Interviews | Document review, interviews | Identification of alternative sources of co-funding from other sources | TCA | x |   |   |   |   |   |   |   |   |   |
| 41 | Has the project achieved ownership, commitment and adequate articulation with other initiatives to enable its sustainability? | How strong the commitment of the beneficiaries and stakeholders is to sustain the results of the project? | Monitor and Evaluation System, Annual reports, Interviews | Document review, interviews | Alignment of the level of commitment of the beneficiaries and stakeholders with those necessary to guarantee the continuity of the project's effects. | TS | x | x | x | x | x |   |   |   |   |   |
| 42 | Has the ownership of actions been transferred to the targeted project audience? Do beneficiaries have the capacity to take over the results of the project, to maintain them and can they use the learning from the project in their future initiatives? | Monitor and Evaluation System, Annual reports, Interviews | Document review, interviews | Alignment of the level of ownership of beneficiaries and stakeholders with those necessary to ensure the continuity of the project's effects. | TS | x | x |   |   | x |   |   |   |   |   |
| 43 | How has the project strengthened the capacity of project stakeholders? | Monitor and Evaluation System, Annual reports, Interviews | Document review, interviews | Evidence of capacity building of stakeholders | TS | x | x | x | x | x | x |   |   |   |   |
| 44 | Has the project sought and achieved synergies with other projects (within and outside UNDP’s portfolio) and how has this impacted project sustainability? | UNDP portfolio, Annual reports, Interviews | Document review, interviews | Level of achievement of synergies with other projects for sustainability | TCA | x | x | x |   |   |   |   |   |   | x |
|  **IMPACT** | 49 | Is the project generating the expected impact? | What has been the positive and negative, intended, and unintended, long-term effects of this project? | Result Framework, Planning document, Annual reports, Monitoring System, Indicators System, Interviews | Document review, interviews | Evidence of long-term effects of the intervention, in line with expected outcomes | TCA, PTRA | x | x | x | x | x | x | x |   |   |   |
| 50 | What aspects can be improved so that the impact of the project or future similar projects can have a greater impact? | What follow-up projects/initiatives need to be considered to ensure enhanced impact, replication and/or scaling-up of project results? | PRODOC, Planning document, Annual reports, Monitoring and Evaluation System, Interviews | Document review, interviews | Identification of potential projects/initiatives  | TCA |   |   | x | x | x |   |   |   |   |   |
| 51 | What pre-conditions need to be met (e.g., among) stakeholders for better impact? | PRODOC, Planning document, Annual reports, Monitoring and Evaluation System, Interviews | Document review, interviews | Identification of pre-conditions to be met | TCA | x |   |   |   |   |   |   |   |   |   |
| 52 | Are there project components with more limited impact that should be re- evaluated/reconsidered/phased out in future interventions but rather implemented by relevant ministries/municipalities? (\*) | Monitor and Evaluation System, Annual reports, Interviews | Document review, interviews | Assessment of the impact of components and identification of those with lower impacts | TCA | x |   |   |   |   |   |   |   |   |   |
|  **GENDER** | 56 | Have gender aspects been duly considered in the design and implementation of the project? | To what extent were gender considerations mainstreamed throughout the project? Was gender mainstreaming underpinned by appropriate budget allocations specific to Gender Equality and Women’s Empowerment (GEWE)? | PRODOC, Planning document, Annual reports, Monitoring and Evaluation System, Interviews | Document review, interviews | Proof of gender mainstreaming in the project, including allocation of funds for GEWE | TCA | x |   | x | x | x | x |   |   |   |   |
| 57 | Was a gender-based needs analysis done to identify separate products and effects for men and women? (\*\*) | PRODOC, Planning document, Annual reports, Interviews | Document review, interviews | Existence of gender analysis  | TS |   |   |   |   |   |   |   |   |   |   |
| 58 | Have strategies been put in place to take such differences into account in implementation to maximize the potential effectiveness of the project? (\*\*) | PRODOC, Planning document, Annual reports, Interviews | Document review, interviews | Level of implementation of gender strategies | TS |   |   |   |   |   |   |   |   |   |   |
| 59 | How has the pandemic affected or hindered the participation and contribution of women and girls in this project in general? | Monitor and Evaluation System, Annual reports, Interviews | Document review, interviews | Level of impact on women's participation as an effect of the pandemic | TCA | x |   | x | x | x | x |   |   |   |   |
| 60 | Are there any gender mainstreaming lessons to be considered as part of a possible follow-up intervention in the key project areas? | Monitor and Evaluation System, Annual reports, Interviews | Document review, interviews | identification of lessons from gender mainstreaming | TCA | x |   | x | x | x |   |   |   |   |   |

## **Annex 5. List of Interviews**

|  |  |
| --- | --- |
| Person | Title |
| Mr. Sami Bushi | UNDP Programme and Monitoring & Evaluation Associate |
| Mr. Ivan Petrovski | Program Officer SIDA/Embassy of Sweden |
| Mrs. Anita Kodzoman | Programme Officer - Head of Energy, Environment and Disaster Risk Management Unit |
| Mrs. Aleksandra Dimova | UNDP Project Manager  |
| Mr. Naser Nuredini | Minister of Environment and Physical Planning |
| Mr. Nikola Naumoski | Chief of the Cabinet of the former Mayor of the City of Skopje Mr. Petre Shilegov |
| Ms. Valentina Stardelova | Head of Energy Department |
| Prof. Dejan Mirakovski | Team Leader for preparation of the Source Apportionment Study, and also Rector at the Goce Delchev University |
| Mr. Aleksandar Dedinec | Chief Technical Advisor of the Project, Macedonian Academy of Sciences and Arts |
| Mr. Davor Pehchevski  | Project Board Member |
| Ms. Jasminka Kapac  | Energy Auditor - Team Leader |
| Darko Chekerovski | Air Pollution Project Communication Officer |
| Bojan Djuricik | Web platform developer - cistvozduh.mk |
| Ms. Elena Doneva | Web administrator - cistvozduh.mk |
| Ms. Sofija Zafirovska | Project Focal Point with the Municipality of Aerodrom |
| Ms. Pavlina Zdravevska | Coordination Platform Consultant |
| Mr.Dushan Tomishikj | Advisior of the Minister for Social Work and Policy |
| Ms. Sandra Zarkovska | Daughter of the owner (Householder) |
| Mr. Boban Zarkovski | Owner (Householder) |
| Mr. Daniel Toshevski | Son of the owner (Householder) |
| Ms. Ljupka Todorova | Owner (Householder) |
| Ms. Borka Jordanova | Owner (Householder) |

## **Annex 6. Survey results**

**Air pollution Survey**

**(Beneficiaries of initiatives developed in the framework of Component 3)**

Indicative Questions (to be agreed with UNPD Project Staff):

1. How do you consider the project's improvements to your home?

1. Very positive
2. Positive
3. Scarce
4. None
5. Negative

2. Do you consider your home's air quality and general well-being?

1. Much improved
2. Improved
3. Improved a little
4. Not improved
5. Worsened

3. He believes that the health of those living in his household, thanks to the project, has:

1. Much improved
2. Improved
3. Improved a little
4. Not improved
5. Worsened

4. He believes that the costs for heating his home, thanks to the project, have:

1. Reduced a lot
2. Reduced
3. Lowered a little
4. About the same
5. Increased
6. Increased a lot

5. Can you keep the home improvements and heating system provided by the project working in the future?

1. Yes, with certainty
2. Probably
3. Difficult
4. Certainly not
5. Don't know
1. The Terms of Reference (ToR) for the FE are presented in Annex 1. Terms of Reference. [↑](#footnote-ref-2)
2. “UNEG Norms and Standards for Evaluation. Revised edition: June 2021”, section 4.4.3 “Evaluation inception report (in http://www.unevaluation.org/document/detail/1914) [↑](#footnote-ref-3)
3. https://www.oecd.org/dac/evaluation/daccriteriaforevaluatingdevelopmentassistance.htm [↑](#footnote-ref-4)
4. http://www.uneval.org/document/guidance-documents [↑](#footnote-ref-5)
5. http://www.unevaluation.org/document/detail/2866 [↑](#footnote-ref-6)
6. First call was announced in August 2020. Second call was announced in March 2021. [↑](#footnote-ref-7)
7. The complete list of people interviewed is available in Annex 5. List of Interviews [↑](#footnote-ref-8)
8. UNEG (2005). http://www.unevaluation.org/ethicalguidelines [↑](#footnote-ref-9)
9. The complete list of people interviewed is available in Annex 5. List of Interviews [↑](#footnote-ref-10)
10. UNEG (2005). http://www.unevaluation.org/ethicalguidelines [↑](#footnote-ref-11)
11. <https://cistvozduh.mk/> [↑](#footnote-ref-12)