



FINAL REPORT

Support to Energy Transition and Climate Change Mitigation in Libya

United Nations Development Programme – Libya



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Country	Libya
Project Title	Support to Energy Transition and Climate Change Mitigation in Libya
Contributing Agreement No.	NDICI-GEO-NEAR/2023/447-574
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Outputs	3.1 State, civil society and private sector capacities to mitigate climate change and foster green growth and renewable energy transition are enhanced 4.1. By 2025, all people in Libya, including the most vulnerable and marginalized, have increased resilience to the impacts of climate change, water scarcity, and environmental degradation.
Strategic Plan and/or CPD	
Outcomes	
Implementing Partner(s)	UNDP
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Revenue received	Total EU Contribution in EUR: 4,500,000 Total EU Contribution in USD: 4,772,250

ACRONYMS

CBD	UN Convention on Biological Diversity
DMN	Moroccan General Directorate of Meteorology
ECCM	Environment and Climate Change Mitigation in Libya
GECOL	Company of Electricity of Libya
GFMR	Global Flaring & Methane Reduction (World Bank)
GHG	Greenhouse Gases
IMEO	International Methane Emissions Observatory
LNMC	Libyan National Meteorological Center
MoE	Ministry of Environment
MoLG	Ministry of Local Government
MoA	Ministry of Agriculture
MRV	Monitoring, Reporting, and Verification
NDC	National Determined Contribution
NCCC	National Climate Change Committee
NCCD	National Committee to Combat Desertification
NESDB	National Economic and Social Development Board
NOC	the National Oil corporation
MARS	Methane Alert and Response System
OGMP	Oil and Gas Methane Partnership
O&G	Oil and Gas Sector
REAOL	Renewable Energy Authority of Libya
UN	United Nations
UNDP	United Nations Development Programme
UNSG	United Nations Secretary-General
UNSMIL	United Nations Support Mission in Libya
UNFCCC	UN Framework Convention on Climate Change
UNCCD	UN Convention to Combat Desertification
WMO	World Meteorological Organization

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Executive summary

This project brought together two mutually reinforcing programmes—the Support to Energy Transition (SET) and Climate Change Mitigation (CCM) programmes—designed to enable Libya to respond effectively to climate change while leveraging the opportunities of the global energy transition. Together, the programmes addressed both the drivers of greenhouse gas emissions and the impacts of climate change, through an integrated approach that combined policy reform, institutional capacity building, investment preparation, and community-level engagement.

The CCM programme focused on strengthening Libya's climate governance architecture across multiple levels. At the strategic level, it supported the development and validation of core national frameworks, including Libya's first Nationally Determined Contribution (NDC) and the National Drought Management Strategy and Action Plan. At the institutional level, it built critical national capacities, including the establishment of a Sustainability and Climate Change Unit within the Ministry of Local Government, enhanced weather monitoring and early warning capabilities at the Libyan National Meteorological Center, and the development of methane detection and response systems within the National Oil Corporation. At the local and grassroots level, the programme expanded climate awareness, mapped and convened civil society actors, supported municipalities to initiate Local Climate Action Plans, and delivered public education campaigns targeting women, youth, and educational institutions.

In parallel, the SET programme aligned closely with Libya's national energy transition agenda by addressing the policy, regulatory, and institutional barriers that have constrained clean energy development. Key contributions included technical support for drafting the Renewable Energy Law and the National Sustainable Energy Strategy 2035, which sets a target of achieving 22 percent renewable energy by 2035, as well as the development of the organizational framework for a future Public Utilities Regulatory Authority to support market liberalization and consumer protection. The programme also advanced energy efficiency reforms, renewable energy project preparation, and investment mobilisation for solar power.

The accomplishments of the two programmes included a range of mutually reinforcing achievements:

Strategic level

- Validation of the mitigation measures and carbon inventory of the NDC
- Validation of the National Drought Management Strategy and Action Plan
- Validation of six Minimum Energy Performance Standards (MEPS) including building codes approved by the High Committee for Standardization legal framework "General Regulations for Energy Efficiency"
- Supported Libya to accede to the NDC Partnership, the Climate Club and it obtained the first GEF financing since 2012 enabling Libya to access additional climate financing critical to sustainability.

- Created a partnership arrangement with the African Development Bank (AfDB), the Platform for Investment Support and Technical Assistance (PISTA), and GIZ, to leverage financial and technical support for Libya's clean energy transition
- Drafting Libya's Renewable Energy Law setting the goal of achieving 22% renewable energy by 2035

Meso (institutional) level

- To implement the MEPS, an E-platform were launched
- Establishment of a Methane Inventory Systematic Tool (MIST) system to document methane emissions in the oil and gas sector as well as Leak Detection and Repair (LDAR) detecting methane emissions on the ground and by satellite
- Established a Sustainability and Climate Change Unit within the Ministry of Local Government that will support the development and harmonisation of Local Climate Action Plans at the municipal level
- The provision of training on advanced weather prediction and monitoring capacity within the Libyan National Meteorological Center (LNMC)
- Over 200 Libyan policymakers, engineers, and energy planners participated in targeted training sessions, study tours, and technical workshops on renewable energy, energy efficiency, and market integration
- A solar feasibility study was completed for a 50 MW solar power plant in Tininai
- Development of technical specifications and tender documents for 220 kV and 400 kV power transformers to enable Libya's electricity grid to absorb solar power
- Development and training of Libya's steel company (LISCO) on how to decarbonize their production cycles
- Advocated and promoted women participation in the electricity sector as well as in the weather monitoring sector

Local level

- Conducted a baseline study of public perceptions on climate change reflective of the different ages, education, gender and geographic sectors of the national population
- Mapping of civil society engaged in climate change and the convening of three workshops bringing these actors together
- Development and dissemination of public education information, including in social media, on climate change and its impacts

Implementation was not without challenges. In early 2024, new government endorsement requirements temporarily halted activities, requiring extensive engagement with the Ministry of Planning and its Technical Advisory Committee. While this caused delays, the process ultimately strengthened institutional alignment and set an important precedent for future programming. Additional challenges—including frequent changes in government focal points and data-sharing constraints—were addressed through sustained engagement, trust-building, and adaptive implementation approaches. Diversifying project modalities helped maintain momentum and mitigate risk in a complex operating environment.

The success of the two programmatic streams built on UNDP's long-standing engagement and partnerships with stakeholders from the energy and environmental sectors. Collectively, the programmes contributed to two overall outcomes including:

- *Outcome 1: Strengthening institutional and policy frameworks for sustainable energy transition, including regulatory reforms, institutional capacity-building, and improved climate governance.*
- *Outcome 2: Enhancing local resilience to climate change impacts through pilot projects, renewable energy deployment, and community-based energy efficiency initiatives.*

The programme also contributed to the United Nations Sustainable Development Cooperation Framework (UNSDCF) 2023-2025, focusing on energy governance, climate adaptation, and sustainability, with specific contributions to SDGs 7 (Affordable and Clean Energy), 8 (Decent Work and Economic Growth), 11 (Sustainable Cities and Communities), 12 (Responsible Consumption and Production), 13 (Climate Action), 15 (Life on Land), 16 (Peace, Justice, and Strong Institutions), SDG5 (Gender equality) and 17 (Partnerships for the Goals).

Together, the SET and CCM programmes have established a credible foundation for Libya's transition toward a low-carbon, climate-resilient, and inclusive development pathway, providing a strong platform for scaling up implementation, mobilizing climate finance, and sustaining long-term impact.

1. Background

Libya is increasingly exposed to the impacts of climate change, which are already manifesting through rising temperatures, more frequent and intense heatwaves, increasing water stress, and heightened risks of flooding and desertification. Warming of the Mediterranean Sea, combined with sea-level rise, is expected to intensify coastal storms and flooding, while changes in precipitation patterns are likely to increase the frequency of extreme rainfall events in both coastal and desert regions. Projections indicate a significant rise in the number of extreme heat days, particularly in north-western Libya, posing growing risks to public health, infrastructure, and economic productivity.

At the same time, Libya's energy system remains heavily dependent on fossil fuels and is characterized by ageing, inefficient, and loss-prone infrastructure. Electricity generation relies almost entirely on oil and gas, while renewable energy contributes negligibly to the national grid. Highly subsidized energy prices distort market signals, discourage energy efficiency, and undermine the financial viability of renewable energy investments. These structural challenges are compounded by the absence of comprehensive policy and regulatory frameworks for energy efficiency and renewable energy, as well as weak institutional coordination and limited technical capacity across key energy and environmental institutions. Public awareness of climate and energy issues remains low, and the engagement of civil society—particularly women and youth—has historically been limited, reducing societal support for reform.

On the climate governance side, Libya has faced significant gaps in its ability to plan, report, and act on climate change. Until recently, the country lacked a validated national carbon inventory and had not finalized or submitted its Nationally Determined Contribution (NDC), constraining its engagement with international climate processes and access to climate finance. Methane emissions from the oil and gas sector are particularly high, driven by flaring, venting, and fugitive emissions, and exacerbated by the absence of systematic monitoring, reporting, and mitigation systems. At the same time, institutional and community-level capacities to adapt to escalating climate risks—including heat stress, drought, flooding, and land degradation—remain very limited.

Efforts to address these challenges are further complicated by fragmented governance arrangements, overlapping institutional mandates, and weak inter-agency coordination across the climate, energy, and local government sectors. Security and access constraints, including restrictions on international travel and field operations, have added operational complexity and limited opportunities for sustained in-country technical support.

Key Barriers Addressed by the Project

- Heavy dependence on fossil fuels and negligible contribution of renewable energy to the national electricity mix
- Ageing, inefficient, and high-loss electricity infrastructure
- Absence of comprehensive legal and regulatory frameworks for energy efficiency and renewable energy
- Long-standing fossil fuel subsidies that distort markets and discourage clean energy investment
- Weak institutional and technical capacity at national and local levels
- Lack of a validated national carbon inventory and incomplete climate commitments (NDC)
- High methane emissions from the oil and gas sector with limited monitoring and mitigation capacity
- Low public awareness and limited engagement of civil society, women, and youth
- Fragmented governance, overlapping mandates, and weak inter-agency coordination
- Limited private sector participation due to regulatory uncertainty and elevated risk perceptions

The following sections describe how the Climate Change Mitigation (CCM) and Support to Energy Transition (SET) programmes were designed and implemented to address these barriers, and present the results achieved across policy, institutional, and local levels.

2. Review of the Climate Change Mitigation (CCM) project

The Climate Change Mitigation (CCM) Project aimed to strengthen Libya's capacity to mitigate greenhouse gas emissions and place the country on a credible pathway toward low-carbon development. This objective was pursued through an integrated portfolio of interventions designed to build the institutional, technical, and governance foundations required for effective climate action across multiple levels of government, while fostering coordination among key national stakeholders.

At the policy level, the project focused on enhancing the capacity of the Ministry of Environment and the National Climate Change Committee to develop Libya's first Nationally Determined Contribution (NDC), strengthen national climate planning, and improve engagement with international climate processes and financing mechanisms. At the institutional and subnational levels, the project supported the development of climate response capacities within key institutions, including the Libyan National Meteorological Centre and the National Committee to Combat Desertification, as well as at the municipal level to strengthen preparedness for climate impacts.

In parallel, the project addressed a major source of national emissions by supporting the National Oil Corporation to measure, track, and reduce methane emissions in the oil and gas sector. Through improved emissions assessment, monitoring systems, and mitigation planning, the project sought to reduce fugitive emissions while aligning Libya's oil and gas sector with emerging international standards and regulatory requirements.

Collectively, these interventions were designed to enable Libya to meet its climate commitments, access international climate finance, and advance a coordinated, resilient, and low-carbon development trajectory.

The project involves three outputs each with a corresponding set of activities.

Table 1: Summary of the program's key activities:

Outputs	Activities
Output 1 - MoE and other stakeholders to actively participate in international climate processes, including developing a national climate strategy with broad public engagement supported.	Activity 1.1: Libya first carbon inventory and a system to continually update that inventory created.
	Activity 1.2 Libya compliance with its UNFCCC reporting obligations supported.
	Activity 1.3: Libya capacity to solicit and utilize international climate financing increased.

	Activity 1.4: Public awareness on climate change impacts targeting gender and youth increased.
Output 2: National and local institutions and systems to operate as a more integrated and resilient system to adapt to climate change impacts enabled.	Activity 2.1: Awareness and Enable Climate Smart Planning at the Municipal level created.
	Activity 2.2: Capacity of the Libyan National Meteorological Centre (LNMC) to monitor weather conditions, provide early warning and track climate change and engage with the international processes including the World Meteorological Organisation (WMO) enhanced.
	Activity 2.3: The efforts of the National Committee to combat Desertification (NCCD) are enhanced, and municipality efforts are supported.
Output 3: Libya National Oil & Gas sector with capacity to measure, track and reduce methane emissions are enabled.	Activity 3.1: Baseline at NOC and subsidiaries of methane emissions and a process to continually monitor and record methane emission data is established.
	Activity 3.2: Implementation of methane reduction efforts on leaks, flares and methane capture is supported.

Progress Review

Output 1: MoE and other stakeholders supported to actively participate in international climate processes, including development of a national climate strategy based on broad public engagement.

Activity 1.1 and 1.2 Libya first carbon inventory and a system to continually update that inventory created and Libya compliance with its UNFCCC reporting obligations supported.

Libya is the only member of the UNFCCC to submitted neither a carbon inventory nor an NDC. This is not only a major impediment to national action on climate change but it impedes their ability to access climate financing and support mechanisms. The last effort to complete the inventory by the UK in 2021 in preparation for COP 26 failed due to the reluctance of NCCC members to share data. Learning from this experience, UNDP invested more to develop its partnership with the MoE and the other NCCC members.

After hiring Gauss Inc. to lead the carbon inventory process, time was invested to ensure that the NCCC, a 14-member body that represented the main institutions in Libya, selected the right persons to work on the project. This group was composed of theseven sectors that were the main source of carbon emissions.

This included the NOC, GECOL, Ministry of Transportation, Agriculture, Industry, the Ministry of Local Government Solid Waste department and the Water and Wastewater Company. In consultation with the NCCC, Gauss also hired an expert from the National Climate Change Center, an NGO established two years prior that was to become a national center of excellence on the topic.



Figure 1: Carbon Inventory Meeting, Tunisia 11-16 January 2025

Two preparatory meetings were held with the NCCC on 18 September and 17 December 2024 prior to convening the physical training meeting. In preparation for the training meeting, which occurred from 11-16 January 2025, participants were given time and support to gather data from their own ministries as well as compile their mitigation efforts. Participants came prepared and presented their data and initiatives at the training meeting.

To address information management concerns, a non-disclosure agreement was signed between Gauss and the Ministry of Environment, with the proviso to share the information with UNDP. As there was only a few outstanding data gaps, Gauss compiled the inventory merging it with international data where needed. This allowed UNDP and Gauss to compile the national inventory using primarily national data for the years of 2017 and 2023. The data collected by the initial UK supported project was included. This data was compiled into the IPCC Carbon Inventory Software which includes the standardized data sets.

On 25 March 2025, GAUSS produced the first carbon inventory report. This then went through many revisions with each of the sectors providing additional inputs. This was validated by the sectors after extensive bilateral meetings. A NDC draft was then developed by GAUSS based on the desk review and based on the assumption that it would be a policy based NDC rather than one that included sectoral mitigation measures as this was considered too advanced for Libya. However, after review and discussion with the NCCC, it was decided to move ahead with a more robust NDC that included mitigation measures. As a result, an additional consultant, Dr. Samir Amous, was hired that specialised on mitigation measures and the NCCC directed its Executive Office to instruct each of the seven sectors to form a three-person team to develop and transmit the sectoral mitigation measures. This was done relatively quickly and models were then created based on the carbon inventory.

On 23 and 24 July 2025, a Workshop to Formulate National Determined Contribution Mitigation Efforts and Objectives was convened in Tripoli. Here the results of the carbon inventory were shown again as were the models of the mitigation measures. It was decided in this workshop that the overall national climate objective would be measured in carbon intensity rather than absolute emissions as current economic growth projections were high and often outpaced decarbonization efforts.



Figure 2: Workshop to validate the inventory and develop mitigation measures

During the next weeks, intensive bilateral work was undertaken with each of the sectors to more fully develop their mitigation measures, define their mitigation potential and define their conditional and unconditional costings. In addition, consultations occurred with GIZ to integrate the draft National Adaptation Plan into the NDC. During this time, UNDP also drafted the mitigation chapter for the Initial National Communication.



Figure 3: On 29 September 2025, EU Head of Cooperation gives opening speech at the NDC Validation of Mitigation Measures Workshop

Finally, on 29 September 2025, a validation of the mitigation measures and their corresponding targets was held in Tripoli with the NCCC and 100 other stakeholders. With the 55 mitigation measures validated, the full NDC, including the ICTU, could now be drafted. This was completed and it was reviewed by both Gauss, Samir, GIZ, and UNDP back offices to ensure quality. This was then re-circulated to the sectors for their final technical approval. The full NDC was officially communicated to the NCCC in December and it is now awaiting final authorisation from Libyan cabinet with final sign off by the Minister of Environment.

Activity 1.3: Increasing Libya's Access to Climate Financing

Since 2012, Libya has failed to access climate financing designated to it by the vertical climate funds. This is due to a lack of capacity and leadership but also due to irregularities in the handling of past financing, particularly from the GEF. As a result, Libya's access to international climate finance has been limited in

scale and largely confined to enabling and readiness-type support, rather than large-scale investment finance with engagement with major vertical climate funds, notably the Green Climate Fund (GCF), focused primarily on institutional capacity building, policy development, and foundational systems such as climate governance, planning, and reporting. While this support is essential, it has not yet translated into substantial project-level financing for mitigation or adaptation investments. The only substantive financing for one project came from the Adaptation Fund for a \$9-10 million project supported by UNOPS and IFAD to address climate-induced water scarcity and resilience challenges.

To address this issue, UNDP supported Libya to gain access to several climate financing mechanisms. The most important of these was acceding to the NDC Partnership. After supporting the designation of two focal points, UNDP supported Libya to gain access to the NDC Partnership participating in the onboarding workshop on 16 September 2025. A Request for Support Letter was subsequently drafted to hire an NDC coordinator to be embedded in the Ministry of Environment as well as funding the development of an NDC Implementation and Investment Plan. The RSL will be circulated upon submission of the NDC to the UNFCCC.

UNDP also assisted Libya to accede to the Climate Club. This mechanism supports the decarbonisation efforts of cement and steel industries. After working to clear irregularities, UNDP also received approval to manage the first GEF funding allocated to Libya since 2012. This financing will go towards a project to restore the Ubari Lakes in southern Libya. UNDP is also working on several other projects for the Adaptation Fund and GCF including supporting the advanced Readiness programme.

Activity 1.4: Increasing public awareness on climate change impacts particularly among women and youth

This was a very dynamic programme, entitled ECO-ACT, that aimed to educate the public on climate change and stimulate climate advocacy in civil society. The main objective was to empower civil society organizations (CSOs), youth, women, and academic institutions to act as catalysts for climate advocacy and action. The initiative aligned with the Libyan national authorities and strategies for climate mitigation and environmental protection. As this project was implemented during a period where there was government repression of civil society, care had to be taken in order not to endanger local partners. With the support of WeWorld, who was contracted for this project, implementation occurred between 15 November 2024 and 15 June 2025 with all deliverables achieved.

The ECO-ACT project successfully reached over 9,311 beneficiaries, exceeding original targets across its main components. The intervention engaged participants through surveys, outreach events, focus group discussions, and stakeholder workshops, while indirectly reaching thousands through awareness materials and public dissemination platforms.

The project was structured around three interrelated outputs: (1) conducting a comprehensive public perception survey on climate change, (2) organizing multi-stakeholder forums and awareness events, and (3) developing a detailed mapping of climate-relevant stakeholders in Libya, including mechanisms to

strengthen their engagement. These outputs were intended not only to inform programming but also to serve as tools for community engagement and institutional coordination.

1: Establishing a Baseline on Public Perceptions of Climate Change and Elevating Public Awareness

Understanding public perceptions of climate change helps gauge the level of knowledge, concern, and misconceptions about climate change within a population. This information can inform communication strategies and policy development. It can also encourage public engagement and foster greater participation in climate change as well as identify barriers. As such, the survey is both a sensitisation tool in itself and a way of cultivating dialogue and interest on the topic.

The national perception survey on climate change was designed through a participatory process in consultation with local experts, the Ministry of Local Governance (MoLG), and the Ministry of Environment (MoE). The tool was developed using KoboToolbox and piloted with field teams to ensure clarity and inclusiveness. It was then validated with institutional stakeholders to align the terminology and framing with national climate communication priorities.

The national climate survey reached 1,681 respondents (vs. a target of 1,155), with an additional 130 people involved in the piloting phase and 100 stakeholders receiving USBs with the survey results and materials. Of these 45% men and 55% women, with participants split between youth (15-30 years) and older adults (30+). The sample also captured rural–urban differences and educational background, providing a robust understanding of awareness and attitudes toward climate change across all of Libya.

The results showed a high degree of public concern on climate change, particularly in areas affected by



Figure 4: Results of survey can be found here

climate change impacts, as well as a high degree of agency to create change. Over 70% of participants indicated they were familiar with the term "climate change", although only 60.7% correctly understood it as being caused by human activities. When asked about climate change impacts, only 34% could identify its consequences for Libya, and just 17% were able to define how it affects daily life. In terms of perceived risks, men tended to associate climate change more with environmental degradation (43%), while women focused more on health impacts (33%). Despite limited technical understanding, there was strong consensus on the seriousness of climate change: 89.1% believe it is happening, and 65% perceive it as already affecting their local communities.

Moreover, 88% of respondents reported being concerned/very concerned about climate change, with anxiety levels particularly high among flood-affected populations.

The survey dashboard is publicly available and continues to serve as a reference for stakeholders and institutions.

2: Public education and awareness campaign on climate change

This project aimed to promote inclusive and participatory climate dialogue by engaging civil society, youth, and local authorities in three regions of Libya. This was done by convening five Focus Group Discussions (FGDs) in Tripoli, Al Baida, and Brak Al Shati, reaching a cumulative 155 participants and three community outreach events, designed to assess local awareness, identify climate priorities, and mobilize youth and grassroots stakeholders toward environmental action.



Figure 5: Focus group discussion at the Ministry of Local Governance



Figure 6: Focus group discussion at Al Baida



Figure 7: Focus group discussion at Brak Al Shati



Figure 8: Climate education at Al Founaj School

- **Tripoli FGDs (April 21 & May 4–5, 2025)**

Held respectively at the Ministry of Environment and the Ministry of Local Governance (34 participants), the Tripoli FGDs engaged 68 participants in structured discussion on climate governance.

- **Al Baida FGDs (March 23–24, 2025)**

Due to high demand and venue limitations, two back-to-back sessions were hosted at Al Huriya Association, gathering a total of 50 participants. Despite logistical disruptions—such as a last-minute venue change and Ramadan scheduling—the sessions enabled quality engagement, particularly on gender-inclusive approaches and environmental governance.

- **Brak Al Shati FGDs (April 27 and April 30, 2025)**

Two separate sessions were conducted in the South to reflect both academic and governmental perspectives.

- **Tripoli – _Al Fornaj School (April 30, 2025):**

Organized in partnership with the Environmental Sanitation Directorate – _MoLG, the Tripoli outreach event was held at Al Fornaj Primary School, with the participation of 120 students (from grades 5 and 6), teachers, and local facilitators



Figure 9: Climate education event at Al Wafa School

- **Brak Al Shati – _Al Wafa School (May 14, 2025):** In the South, the ECO-ACT team conducted an event at Al Wafa Basic School, with the participation of 50 children (boys and girls from grades 4–6).



Figure 10: Climate outreach event at Rouqaya Public Park

- **Al Baida – _Rouqaya Public Park (May 2, 2025):** This awareness session was held with 70 scouts and 9 supervisors (total: 79 participants) at Rouqaya Park, a prominent recreational area in Al Baida.

Three large-scale outreach campaigns were conducted between April and May 2025, combining school-based activities, public events, and community interactions. These events were designed and implemented by trained community mobilizers under the supervision of MIGRACE. Their role was to deliver interactive and age-appropriate awareness sessions on climate change and environmental protection using contextually relevant tools.

Tripoli – West Libya: Activities reached a total of 550 participants, targeting neighborhoods such as Hay Al-Andalus, Furnaj, and Souq Al-Jumaa. Locations included Al-Noor School, Al-Tahrir High School, Gargaresh Garden, and local youth centers. 45% of participants were school-age children and adolescents (10–17 years), and 55% were youth and adults (18–60 years).

Al Baida – East Libya: A total of 505 people were reached, particularly in Sidi Khreibish, Al-Shallala, and University Road. Activities were conducted in Omar Al-Mukhtar University, public squares like Al-Shohadaa, and the Al-Bayda Cultural Center. The demographic was evenly split between students (10–22 years) and general public/professionals (23–60 years).

Brak Al Shati – South Libya: The campaign in Brak reached 640 participants in Sidi Mahdi, the Industrial District, and Al-Nahda neighborhood. Events took place at schools, Brak central market, and the local community services center. Around 70% were local residents and 30% migrants. 40% were school-age youth (10–17 years), and 60% adults, market visitors, and local leaders (18–60 years).

The total reach of community mobilization events: ~1,695 individuals across all three regions from face-to-face meetings.

3: Stakeholder Mapping and Regional Workshops

The third output of the ECO-ACT project aimed to consolidate climate-related institutional engagement across Libya through stakeholder mapping and the facilitation of regional dialogue platforms. The process involved two main components:

Mapping and profiling of over 180 stakeholders, including CSOs, academic institutions, and government departments engaged in climate and environmental work.

Three regional workshops held in Tripoli, Al Baida, and Brak Al Shati, which served to discuss the stakeholders mapping findings, disseminate key project results (notably the national survey), and identify joint priorities for future collaboration. The events provided a rare opportunity for in-person engagement among actors who often operate in isolation due to geographic, political, or institutional fragmentation. Each workshop was tailored to regional dynamics and involved a mix of presentations, capacity-building, and peer dialogue.



Figure 11: Tripoli Regional Civil Society Workshop



Figure 12: Regional workshop for civil society in the east

Tripoli Regional Workshop –West Libya (May 20, 2025): The Tripoli workshop was held on May 20, 2025 at Makan Co-working Space, bringing together 9 participants representing environmental CSOs operating in western Libya.

Al Baida Regional Workshop – _East Libya (May 08, 2025): The regional workshop in Al Baida served both as a validation session for the stakeholder mapping database and a targeted capacity-building activity focused on KoboToolbox. The event gathered

16 participants, including members of Shatla Environmental Organization, Nama for Development and Culture, and other CSOs engaged in local environmental protection.



Figure 13: Regional workshop for civil society in the south

Brak Al Shati Regional Workshop – _South Libya (May 15, 2025):
The southern regional workshop was held on May 15, 2025 at the Municipality Hall of Brak Al Shati, reaching a total of 15 participants from a diverse group of actors including local CSOs, university staff, and municipal representatives.

Output 2. National and local institutions and systems to operate as a more integrated and resilient system to adapt to climate change impacts enabled

Activity 2.1: Awareness and Enable Climate Smart Planning at the Municipal level created.

Local governments are at the forefront of responding to and preparing their communities to address the myriad of challenges caused by climate change. Within the framework of national efforts to address the challenges of climate change, the United Nations Development Program (UNDP) in partnership with Local Governments for Sustainability (ICLEI), implementing training workshop to Ministry of Local Government and representative of municipality of Sabha, Benghazi, Misrata, Tripoli, Tobruk, ,Gharyan, Albida, El khoums, Zwara, and Ghat, and with representative from Ministry of Environment, Ministry of Agriculture,



Figure 14: Local Climate Action Planning workshop in Tripoli



Libyan National Center for Climate Change Studies, University of Tripoli, National Safety Authority, and Economic and Social Development Council.

On 11 and 12 May, the United Nations Development Programme (UNDP), in collaboration with Ministry of Local Government and the NGO ICLEI, conducted a workshop on Local Climate Action Planning. A total of 50 persons participated in the workshop, including participants from the Ministry of Local Government and selected municipal authorities from different regions of Libya (10 Municipalities) as well as representatives from national institutions.

The purpose of the workshop was to provide technical training on how to develop Local Climate Action Plans (LCAPs) in a manner that harmonizes these plans and integrates them into current and future development plans. This will help the MoLG and other national institutions to support these plans and it will allow for them to be bundled together to access international climate financing mechanisms such as the Adaptation Fund.

The first day featured a series of interactive sessions that discussed the importance of local climate planning, understanding the concepts of adaptation and mitigation of climate change, and reviewing climate data specific to Libya, presented by experts from the International Council for Local Environmental Initiatives (ICLEI) and the National Center for Meteorology. The first day also included a specialized session on preparing climate risk and vulnerability assessments (RVAs), followed by a group exercise in which attendees participated in identifying the most prominent climate risks at the local level and developing initial drafts of the assessment.

The second day focused on presenting national plans and policies that impact local climate action as well as focusing on the governance of local climate action planning. During this day, GIZ and Libyan experts presented their work on the National Adaptation Plan and other climate related policies.

At the conclusion of the workshop, the Ministry of Local Government announced that it had created a *Climate Change and Sustainable Development Division* which would be active at the municipal level across Libya. The purpose of this Division is to assist local governments to develop and implement local climate action plans. These plans will be aligned to national policies and objectives but be tailored to local conditions and needs.

Activity 2.2: Enhance the capacity of the Libyan National Meteorological Centre (LNMC) to monitor weather conditions, provide early warning and track climate change and engage with the international processes including the World Meteorological Organisation (WMO) enhanced.

The Libyan National Meteorological Centre (LNMC) holds a pivotal role in weather monitoring, early warning dissemination, and climate change tracking within Libya. This support is done to enable the LNMC to both predict and warn the public of sudden onset events and to collect and analyze data needed to

predict climate trends. All of these are important elements in developing an Early Warning System in Libya. To do so, UNDP provided a support package that included: i. capacity building ii. promotion of gender inclusivity iii. weather equipment.

To build its technical capacity, UNDP supported the partnership between the LNMC and the Moroccan Direction de la Météorologie Nationale (DMN).¹ This included facilitating three workshops between the two institutions wherein the Moroccan authorities showcased their meteorological capacities and early warning systems, sharing their skills and experience with their Libyan counterparts. Enhancing this partnership allows the Moroccan authorities, who have one of the most advanced meteorological capacities as well as early warning systems, to provide support and share skills with their Libyan counterparts.

1st Capacity-Building Workshop, 29 – 5 May 2024 at the Al-Mahari Hotel, Tripoli

This workshop trained 27 LNMC staff from Tripoli, Zuwara, Misurata, Benghazi and Sebha in the fields of meteorology and climate. The main objective was to enhance the LNMC's capabilities in weather and climate monitoring in line with WMO standards. The workshop program comprised field visits to Misurata Meteorological Station and Misurata Airport Aeronautical Station, as well as to the Meteorological Station of Al-Hadaba.

2nd Capacity-building Workshop, 21 – 25 July 2024 at the LNMC HQ, Tripoli

This workshop trained 30 LNMC staff from Tripoli, Garian, Sirte, Tobruk, Sabha and Kufra. The main objective was to enhance the LNMC's capabilities in early warning and drought monitoring. The program comprised presentations on weather forecasting, marine meteorology strategy, climate data management including data collection, archiving to presenting results to end-users in the form of statistics, graphic and satellite information.

¹ <https://www.marocmeteo.ma>

3rd Capacity-building Workshop, 18-28 February 2025 at the DMN in Casablanca, Morocco



Figure 15: Weather monitoring training in Morocco

This workshop trained 14 LNMC staff from Tripoli, Sirte, Benghazi and Sebha. This workshop provided on-the-job training in climate data stewardship, quality control, homogenization, data rescue & archiving, effective use of improved forecasting & information, enhancing the capacity in media and in the operating Python software.

Improving Women Participation in Weather Monitoring



Figure 16: Women empowerment event at the Libyan Meteorological Agency

From 2 – 5 December 2024, UNDP convened a capacity-building workshop for 35 female meteorologists at the UN compound in Janzour. The agenda and objectives of the workshop were developed by the trainees themselves in consultation with the WMO women's network and with female experts coming from the Moroccan General Directorate of Meteorology. The main objective of the workshop was to support the LNMC's ability to review the strategy for women's empowerment and provide training on early warning systems and

monitoring climate change. The workshop also aimed to review the LNMC's policy regarding equal opportunities between men and women in the field of work.

The workshop aimed to strengthen the collective efforts of the LNMC to ensure that women and men are equally represented, valued and rewarded. Feedback from participants showed that they felt safe and free to express their opinions openly and to learn from one another as to how they can more effectively progress in their work. The attendance of the UNDP Resident Representative in Libya during the Certificate Distribution Ceremony was a boost and encouragement for the workshop participants to move forward.

Provision of Weather Monitoring Equipment (with additional French funding)

As LNMC infrastructure suffered during the conflict, UNDP provided new automatic weather stations in 7 locations including Albayda, Sousa, Derna, Shahat, El Marj, Ghat and Obari. The weather stations provided

the capacity to determine not only basic weather indicators but also Frequency Domain Reflectometry (FDR) sensors capable of determining the composition of water content in the soil.

The company that provided the equipment, PULSONIC, also provided training for 10 persons to program, maintain and operate the equipment. The equipment was installed and are currently operating in the designated locations.

Activity 2.3: The efforts of the National Committee to combat Desertification (NCCD) are enhanced, and municipality efforts are supported.

Like the UNFCCC, UNCCD also requires member states to submit Strategies and Action Plans to Combat Desertification and to identify targets in achieving Land Degradation Neutrality. As a member of UNCCD, Libya formed a NCCD and submitted a Strategy to Combat Desertification in 2005. However, although it continued to provide reporting, the NCCD was not very active and had not updated its strategy.

The overall objective of the National Drought Management Strategy and Action Plan is to provide a comprehensive analysis of the trends in land degradation, update the LDN targets and provide an action plan of interventions, policies and projects to improve the situation. The Strategy will integrate climate change issues into a comprehensive national perspective to combat drought, desertification, climate change, and biodiversity restoration.

UNDP hired the Lebanese company Elard to support the implementation of the project. On 28 January, UNDP convened the kickoff meeting between Elard and NCCD. At the request of NCCD, Elard will now complete the Assessment Report before the Inception Workshop which should be held in April or May. Elard has circulated a questionnaire and request for information to NCCD members in order to solicit inputs into the Assessment Report which will provide the much of the content for the formulation of the Action Plan and Strategy.

After completing and validating an Assessment Report on the state of land degradation in Libya and after conducting extensive dialogues wherein national information and action plans to combat land degradation were collected, a draft DMS Strategy was developed. This draft was circulated to all NCCD members who provided their comments. These were then integrated into the current draft Strategy which is now ready for its final review during the validation meeting.



Figure 17: Final Drought Management Strategy Report

On 11 September, the validation workshop was held for the DMS in Tripoli. The DMS reframes drought not as an occasional disaster, but as a chronic, systemic hazard that demands proactive governance. It provides a comprehensive roadmap that lays out steps which Libya can take to more sustainably manage its natural resources while improving livelihoods and food security. It outlines measures such as drought-resistant crops, improved irrigation, and better land management—critical steps to safeguard the nation’s food supply. The strategy also introduces early warning systems, risk assessments as well as thresholds for declaring drought emergencies.

The report was formatted by UNDP and officially transmitted to the NCCD focal point. As there was a change in Minister and a subsequent change in focal points, UNDP continues to liaise with the new team to officially submit the DMS to the UNCCD.

Output 3. Libya National Oil & Gas sector with capacity to measure, track and reduce methane emissions are enabled.

Relative to other O&G producers, Libya has a very high level of methane emissions during O&G production. In 2022, Libya flared 5.4 billion cubic meters (Bcm) of natural gas, equivalent to \$622 million in lost value and 12 million Mt of CO₂e. Of this 65% came from venting methane, 25.9% from incomplete gas flaring and 8.4% from fugitive sources, mainly leaks.

Libya will no longer be able to maintain this level of methane emissions if it wants to continue exports of O&G to Europe after 2027. In 2024, the EU adopted the Methane Regulation which requires all EU companies and importers to be compliant in reducing methane levels including those that come upstream from exporting states. One of the main tools that the EU uses to assure upstream emission compliance is through its partnership with UNEP-IMEO. This program helps countries reach OGMP 2.0 compliance by improving its ability to report on methane emissions and respond to leaks. Compliance with OGMP 2.0 is the first step but additional measures will need to be taken in terms of regulatory alignment, legal verifications and certified methane reduction plans.

This project is the result of a long-developed partnership between UNDP and the NOC and the development of a joint concept note to address methane emissions in the oil and gas sector signed in April 2022. Given that over 80% of Libya oil and gas is exported to the EU and given that the EU adopted the 2024 Methane Regulation requiring upstream exporters to the EU to report on and reduce methane emissions, both the EU and the NOC had a mutual interest to collaborate on this project. The project “Supporting Activities for Methane Assessment and Mitigation in Libya” aims to bring the NOC to a level in range of OGMP 2.0 compliance.

In this system, there are five levels of reporting moving from generic emission estimates (Level 1) to being able to identify and measure emissions (Level 5). These measurements must include Upstream (exploration & production), Midstream (transport, processing, storage) and Downstream (distribution, refining, LNG, retail) with reporting on both NOC operated and non-NOC operated assets. This requires the NOC to build an integrated system including:

- Leak Detection and Repair (LDAR) programs
- Continuous monitoring sensors
- Aerial/satellite-based methane detection
- Transparent and Independent Verification
- Independently verified data
- Public Disclosure and Annual Reporting
- A Methane Reduction Plan with reduction targets aligned with the Global Methane Pledge of reducing emissions 30% by 2030

In response to the NOC request, the project was further amended to focus on establishing the foundations for Level 3 compliance, reducing methane intensity, and strategically setting the stage for progression to Level 5 compliance in the future. Given IMEO’s subject expertise and management of the OGMP 2.0, IMEO serves as a technical capacity implementing lead, leveraging its experience to support the project goals through capacity building, technical assistance on OGMP 2.0 reporting, and mitigation assessments. All activities undertaken by the involved partners are intentionally designed to be complementary, working collectively to advance methane emissions reductions. These efforts are carried out in close collaboration with, and are subject to, the active participation and commitment of the Libyan NOC. UNDP financed and supported the logistics of multiple training workshops which were substantively provided by the UNEP IMEO programme. UNEP-IMEO also developed several reports that were transmitted to the NOC.

Key achievements were as follows:

Methane Emissions Analysis: In the last quarter of 2024 and first quarter of 2025, a comprehensive methane emissions analysis was carried out, leveraging data from UNEP’s Methane Alert and Response System (MARS) and advanced atmospheric modelling. This analysis identified and prioritized high-emission point sources across key upstream oil and gas assets of the Libyan National Oil Corporation (NOC), creating a robust evidence base to guide mitigation planning and decision-making. The main findings were presented during the first technical training session with NOC, fostering direct engagement and technical dialogue. UNEP’s IMEO emphasized the urgency of follow-up action, encouraging NOC to incorporate the insights into its operational and investment strategies for methane reduction.

MARS Alerts and Rapid Response: Over 25 expert-validated MARS alerts were issued to Libyan stakeholders. These alerts communicated and traced through UNEP’s IMEO served to monitor mitigation progress while enhancing transparency and strengthening operational responsiveness within the NOC. To ensure that such alerts translate into tangible emissions reductions, it was strongly recommended that NOC Libya formally designate a dedicated MARS focal point. This role is critical to guarantee that notifications are systematically received, reviewed, and acted upon in a timely manner, thereby enabling more effective and coordinated methane mitigation efforts. By the close of this project, the Libyan NOC successfully designated a MARS focal point, marking an important step toward institutionalizing this process.

Through the MARS program, one methane leak in a storage facility Intisar D was identified and closed. This was leaking up to 2 tons of methane a day equivalent to 1,400,000 tonnes of CO₂ equivalent, per annum. Other leaks were already identified.

Training and Capacity Building for Engineers

17 December 2024: Preparatory meeting with NOC on developing the methane emission inventory (virtual)

24 March 2025 MIST Training, Tunisia: A highly impactful training workshop was delivered to over 35 engineers from the Libyan NOC and its subsidiaries, including 3 female professionals, marking a key milestone in building national capacity for methane emissions management. The training comprised two components: a general module focused on the science of methane emissions—covering sources, detection and quantification methodologies, and mitigation opportunities—and a specialized hands-on module led by Carbon Limits and the OGMP 2.0 team, which provided practical tools, guidance, and clearly defined action points to support the development of OGMP 2.0-compliant reporting within NOC. The workshop also featured the participation of International Oil Companies (IOCs) operating in Libya, who expressed strong support for the NOC’s methane reduction efforts, recognizing their pivotal role in aligning the broader sector with international best practices and accelerating progress along the OGMP 2.0 pathway.

LDAR Training, June 2025, Italy: UNDP and UNEP IMEO in collaboration with ENI, and Carbon Limits, delivered a three-day dedicated Leak Detection and Repair (LDAR) training for the Libyan NOC. This training was highly recognized by the EU and the Libyan NOC. Hosted at ENI's HQ in Milan and its operational site in Ravenna, the training combined technical classroom sessions on LDAR principles, methodologies, and tools with hands-on field demonstrations, equipping participants with practical skills to detect, quantify, and repair methane leaks. Eighteen nominated participants, including NOC's core OGMP 2.0 reporting team and HSE specialists from key departments—benefited from direct exposure to



Figure 18: LDAR Training at the ENI facility in Italy

international best practices. This capacity-building initiative marks a critical step for NOC in advancing toward OGMP 2.0 Levels 3–5 reporting, improving the quality of fugitive emission data, and reinforcing Libya's commitment to the Global Methane Pledge and alignment with the emerging EU methane regulations.

Key Reports

1. Initiation of Asset-Level Inventory and Completion of List of Assets Report: This report mapped the asset inventory of the NOC for future OGMP 2.0 reporting.

2. Feasibility Study Report: This feasibility analysis was conducted to evaluate the potential for Libya's NOC to achieve Level 5 compliance under the OGMP 2.0 framework. The study highlighted five core challenges to establishing robust Measurement, Reporting, and Verification (MRV) systems, ranging from the absence of local methane MRV regulations and limited local capacity, to security constraints and restrictions on MRV equipment imports. A phased roadmap was outlined, targeting OGMP 2.0 Level 5 reporting within three years and by January 2027 in line with the EU Methane Regulation. The findings underscored the importance of strong NOC leadership, structured MRV governance, and collaboration with international partners to mobilize funding, technology, and expertise. Recommendations emphasized securing high-level NOC endorsement, focusing initial compliance on EU-linked assets, and building a corporate MRV coordination team. This study serves as a foundation for the development of a more detailed action plan, including comprehensive stakeholder mapping in collaboration with the EU.

3. Techno-Economic Assessment Report: This report identified the potential for methane reduction opportunities at upstream facilities. It provides a preliminary techno-economic assessment of flaring and venting practices, possible abatement technologies, and commercialization pathways. While not developed into a full extended report due to time limitations, the reported offers an initial roadmap aligned with the NOC's "Think Tomorrow" strategy.

3. Review of the Support to Energy Transition (SET) Project

The overall objective of this project is to further the energy transition in a manner that lowers carbon intensity, improves resiliency and performance while lowering long term costs. In a country, such as Libya, where the prevailing social and rentier economy is based almost exclusively on the production and sale of fossil fuels, such a transition necessitates an integrated, whole of society approach. This whole of society approach is reflected by the three outputs of the project: i) energy sector gender responsive strategy and policy, ii) energy efficiency and iii) renewable energy.

The project involves three outputs as follows:

- Output 1. National energy sector gender responsive policies and strategies are developed, implemented and publicly supported.
- Output 2. National energy efficiency is improved across the lighting, building, cooling, heating, domestic appliance, industrial equipment, and heavy industry sectors.
- Output 3. Multiple large scale renewable energy projects are developed and financed to the construction ready stage in Libya.

Energy Transition	
Output 1 - National energy sector gender responsive policies and strategies are developed, implemented and publicly supported	Activity 1.1: Technical assistance, capacity building and outreach on national gender responsive energy policies, strategy, and reform implementation plans, at three levels of Libyan society is developed.
	Activity 1.2: Technical assistance and implementation of Restructuring and Utility Unbundling Reforms (The unbundling of accounts) to the General electricity company of Libya is delivered.
Output 2: National energy efficiency is improved across the lighting, building, cooling, heating, domestic appliance, industrial equipment, and heavy industry sectors.	Activity 2.1: Technical assistance, capacity building and outreach for gender responsive lighting energy efficiency standard is delivered.
	Activity 2.2: Technical assistance, capacity building and outreach for building sector energy gender responsive construction codes delivered.
	Activity 2.3: Technical assistance, capacity building and outreach for gender responsive air conditioner energy efficiency delivered.

	Activity 2.4: Technical assistance, capacity building and outreach on gender responsive domestic heating and appliances energy efficiency delivered.
Output 3: Multiple large-scale gender responsive Renewable Energy projects are developed and financed to the construction ready stage in Libya.	Activity 3.1: Technical assistance for 1 MW grid-connected PV solar power plant.
	Activity 3.2: Early project development for multiple gender responsive solar projects supported.

Progress Review

Output 1: National energy sector gender responsive policies and strategies are developed, implemented and publicly supported

Activity 1.1: Technical assistance, capacity building and outreach on national gender responsive energy policies, strategy, and reform implementation plans, at three levels of Libyan society is developed.

This activity was accomplished by delivering targeted technical assistance, policy advisory support, and outreach to strengthen national capacity for gender-responsive energy policy development and reform implementation across key public institutions and stakeholder platforms.

Policy Advisory and Institutional Capacity Support

Throughout the project, SETC provided technical and policy advisory support to national consultative and technical groups within the National Economic and Social Development Board (NESDB), Ministry of Planning, General Electricity Company of Libya (GECOL), Renewable Energy Authority of Libya (REAOL), and the Ministry of Oil and Gas. These engagements focused on strengthening strategic planning, regulatory frameworks, and investment preparation for renewable energy and energy efficiency, while systematically integrating gender and social inclusion considerations.

At NESDB, the project contributed analytical inputs to energy transition planning, including economic modelling and scenario analysis to assess the macroeconomic implications of renewable energy deployment and energy efficiency measures. This support informed national development discussions aligned with Libya Vision 2030, with attention to energy security, fiscal sustainability, and inclusive growth.

With the Ministry of Planning, the project supported national reporting and policy dialogue on sustainable energy, including technical contributions to Libya's second Voluntary National Review (VNR) on SDG 7

(Affordable and Clean Energy). This ensured that renewable energy, energy efficiency, and gender equality considerations were reflected in Libya's international reporting and domestic policy discussions. UNDP also supported a technical committee within the Ministry tasked with exploring economic alternatives in the electricity sector, including the preparation of a technical study assessing options to reduce fuel costs and reliance on oil-fired power generation.

At GECOL, SETC provided technical advisory support on enabling conditions for renewable energy integration into the national grid, including guidance on grid stability requirements and preparatory technical specifications and tender documentation for 220 kV and 400 kV power transformers. This support contributed to strengthening institutional readiness for future renewable energy investments rather than direct infrastructure implementation.

Strategic Policy Frameworks and Reform Support

A key contribution under this activity was technical support to the development of the National Sustainable Energy Strategy 2035, which sets a national target of achieving 22 percent renewable energy by 2035 and integrates energy efficiency and long-term sustainability considerations. The project also provided technical inputs to the drafting of the Renewable Energy Law, focusing on creating an enabling, transparent, and investor-oriented regulatory environment. Complementary analytical work included a study on options to reduce the national electricity fuel bill, supporting evidence-based policy discussions on cost-effective and sustainable energy alternatives.

Outreach, Advocacy, and Gender-Responsive Policy Dialogue.

At the outreach level, the project leveraged national and sector-wide platforms to promote gender-responsive energy transition policies. In January 2025, UNDP Libya served as the official Sustainability Partner at the Libya Energy & Economic Summit (LEES 2025), the country's largest energy forum, engaging over 1,500 senior policymakers, private sector leaders, and international stakeholders. Through the dedicated plenary session "*Empowering Women in Libya's Energy Sector Roundtable*," the project advanced dialogue on women's participation in the energy sector, gender-sensitive workforce development, and improved access to energy-related employment, entrepreneurship, and finance. This engagement reinforced the project's advisory role and elevated gender equality, climate, and sustainability considerations within national energy policy discussions.

In parallel, the project supported preparations for a national conference on *Just and Sustainable Energy Transition*, organized in collaboration with the Ministry of Oil and Gas and the Energy JEEL Initiative. The conference aims to promote gender-responsive transition strategies and responsible business practices in the oil and gas sector, aligned with international environmental and social standards.



Figure 19: Just and Sustainable Energy Transition – Tripoli, 24 September 2025

On 24 September 2025, in Tripoli, UNDP supported the organisation of a Just Energy Transition Conference for the oil and gas sector, in collaboration with the Libyan Ministry of Oil and Gas, the National Oil Corporation (NOC), and the Energy JEEL Initiative. The activity aimed to strengthen corporate responsibility for environmental protection and human rights in the context of energy transition, with particular attention to emerging international regulatory frameworks, including the UN Guiding Principles on Business and Human Rights (UNGPs) and the EU Corporate Sustainability Due

Diligence Directive (CSDDD). The conference provided a platform for dialogue between government institutions, national and international energy companies, civil society, and development partners on aligning Libya's oil and gas sector with international environmental, social, and climate standards, while supporting a just and inclusive transition.

The conference combined technical discussions, public awareness-raising, and capacity-building components. It introduced key requirements related to environmental and human rights due diligence, climate transition planning, and stakeholder engagement, while highlighting Libya's specific context as a conflict-affected country requiring heightened due diligence. Leveraging the Energy JEEL Initiative, the activity also engaged youth and women through advocacy and training sessions, including a virtual capacity-building programme for Energy JEEL ambassadors. The intervention contributed to strengthening national awareness, institutional capacity, and policy dialogue on responsible business practices, and laid the groundwork for integrating a just energy transition component into a future National Action Plan on Business and Human Rights, while reinforcing an enabling environment for sustainable investment, regulatory reform, and alignment with EU standards.

Activity 1.2: Technical assistance and implementation of Restructuring and Utility Unbundling Reforms (The unbundling of accounts) to the General electricity company of Libya is delivered.

Activity 1.2 sought to provide technical assistance to the General Electricity Company of Libya (GECOL) to support restructuring and utility unbundling reforms, with a particular focus on the unbundling of accounts as a foundational step toward improved governance, transparency, and efficiency in the electricity sector. While technical progress was made at the analytical and advisory level, several interrelated challenges significantly constrained the pace and scope of implementation.

A primary challenge was that GECOL does not have the legal mandate to implement full market restructuring or sector unbundling independently. While GECOL can undertake internal financial and accounting reforms, broader unbundling—such as legal separation of generation, transmission, and distribution, tariff reform, and market liberalization—requires high-level government decisions and enabling legislation. In particular, the absence of an operational Public Utilities Regulatory Authority (PURA) meant that critical regulatory functions, including tariff setting, licensing, and enforcement, could not be advanced in parallel. As a result, UNDP’s support necessarily focused on preparatory and foundational reforms within GECOL’s remit rather than full structural unbundling.

Implementing account unbundling required reliable financial data, cost allocation methodologies, and modern accounting systems capable of separating generation, transmission, and distribution costs. GECOL’s legacy financial systems are not fully aligned with international utility accounting standards, and historical data gaps limited the ability to produce fully cost-reflective accounts. UNDP’s technical assistance thus focused on diagnostic assessments, conceptual unbundling frameworks, and capacity building, rather than immediate operationalization of separate accounts.

Unbundling reforms demand specialized expertise in utility finance, regulatory economics, and corporate restructuring—skills that are limited within GECOL due to years of underinvestment in professional development. In addition, institutional resistance to change and concerns over job security created internal hesitancy around restructuring. UNDP addressed this by framing unbundling as a tool for improved governance and financial sustainability, rather than workforce reduction, and by prioritizing gradual capacity building over rapid institutional change.

Progress on unbundling is inherently linked to the establishment of an independent regulator. While the project developed the proposed organizational structure and functional mandate for the Public Utilities Regulatory Authority, the formal establishment and operationalization of the authority requires legislative approval and political consensus beyond the project’s control. This created a sequencing challenge: meaningful unbundling could not advance without a regulator, yet the regulator’s effectiveness depends on clearer separation of utility functions.

Utility restructuring and unbundling are multi-year reform processes, typically requiring sustained political commitment, phased implementation, and continuous technical support. The project’s limited timeframe constrained UNDP’s ability to move beyond preparatory work, diagnostics, and institutional design. As a result, achievements under Activity 1.2 are best understood as laying the groundwork for future reforms rather than delivering full unbundling outcomes.

Despite these constraints, UNDP’s support under Activity 1.2 made an important contribution by strengthening the technical foundations for future electricity sector reform. This included advancing internal financial transparency at GECOL, clarifying the institutional prerequisites for unbundling, and developing the organizational design for a future Public Utilities Regulatory Authority to oversee market liberalization, consumer protection, and energy efficiency enforcement. Addressing the remaining

challenges will require sustained political engagement, regulatory establishment, and multi-year technical assistance beyond the scope of the current project.

Output 2: National energy efficiency is improved across the lighting, building, cooling, heating, domestic appliance, industrial equipment, and heavy industry sectors.

Libya's energy sector has long been affected by structural inefficiencies, ageing infrastructure, and the absence of regulatory frameworks to promote energy-efficient technologies and practices. With electricity generation entirely dependent on fossil fuels, inefficient lighting, buildings, appliances, and industrial processes have driven excessive energy consumption, placing sustained pressure on the national grid and increasing fiscal and environmental costs. In response, the Support to Energy Transition (SET) Programme in Libya focused on advancing policy, regulatory, and institutional reforms to improve energy efficiency and support a more sustainable and cost-effective energy system.

A major milestone under the programme was the drafting and submission of Libya's first Minimum Energy Performance Standards (MEPS) for selected appliances and equipment. Six MEPS were prepared and adopted including:

- Minimum energy performance standards and labels for air conditioning systems.
- Minimum energy performance standards and labels for refrigerators.
- Minimum energy performance standards and labels for lighting devices.
- Minimum energy performance standards and labels for electric water heaters.
- Minimum energy performance, labelling and testing requirements for cooking appliances.
- Minimum energy performance standards and labels for washing machines.

The introduction of MEPS establishes a foundational regulatory framework for energy efficiency, enabling reductions in electricity demand and associated emissions, improving market accountability, and supporting Libya's international climate commitments. Over time, these standards are expected to deliver significant economic and social benefits by lowering energy costs and easing pressure on the power system.

Institutional capacity building was a core component of this reform effort. More than 200 policymakers, engineers, and energy planners from key national institutions participated in technical workshops, study tours, and training sessions covering renewable energy integration, energy efficiency policies, MEPS, energy labelling, and sustainable construction. These activities strengthened technical expertise and institutional readiness, equipping national stakeholders with the skills needed to design and implement energy efficiency measures as part of a broader energy transition strategy.



Figure 20: Validation meeting of the 6 MEPS

To operationalize the MEPS framework, an electronic platform for implementing the Minimum Energy Efficiency Standards and Labelling Programme was developed and officially launched on 15 September 2025. The launch ceremony—the first of its kind in Libya—brought together approximately 250 participants from government institutions, the private sector, and civil society. The event aimed to raise public and professional awareness of energy efficiency and energy sector reform, promote a culture of sustainability, and highlight Libya’s progress in advancing

modern energy initiatives.

To date, six energy efficiency standards have been formally approved by the Supreme Committee for Standardization. By establishing these standards, the programme has supported Libya’s alignment with international best practices, improved consumer access to energy-efficient products, and contributed to reducing demand pressures on the national electricity grid.

Activity 2.1: Technical assistance, capacity building and outreach for gender responsive lighting energy efficiency standard is delivered.

The combined implementation of institutional strengthening and targeted technical training under Activity 2.1 directly contributed to the project objective of establishing a gender-responsive, standards-based framework for improving energy efficiency in Libya’s lighting and appliance sectors.

At the institutional level, the project initiated and supported the establishment of the National Committee for Energy Efficiency, providing Libya with a formal inter-institutional platform mandated to lead the development of energy efficiency standards and energy labels. This mechanism strengthened coordination among key stakeholders and ensured that inclusive and gender-responsive considerations were systematically embedded in policy discussions. In parallel, the project supported the preparation and adoption of the General Regulations for Energy Efficiency, establishing the legal foundation required to introduce, enforce, and sustain Minimum Energy Performance Standards (MEPS) and labelling schemes. Together, these measures created the enabling governance and regulatory environment necessary for effective implementation.

At the technical level, the project delivered a sequence of complementary capacity-building activities that translated this institutional and legal framework into practical implementation capacity.

In March 2024, a dedicated training programme on gender-responsive MEPS and labelling for LED and other lighting products strengthened national expertise in standards development, product testing, and compliance mechanisms. The training addressed both policy and technical dimensions, including definitions and typologies of energy efficiency standards and labels, the economic and social rationale for their adoption, baseline market assessments for lighting products, and practical guidance on implementing and enforcing MEPS and labelling schemes.

This foundational training was reinforced through an advanced four-day MEPS and energy labelling workshop held in Tunis in August 2024, which further strengthened technical capacity across key national institutions, including NESDB, GECOL, and REAOL. Over 30 national experts were trained on international best practices in energy labelling, performance testing methodologies, and monitoring, verification, and enforcement (MVE) systems. This sequenced approach ensured continuity between policy design and technical execution, enabling participants to move from conceptual understanding to applied regulatory readiness.

Collectively, these activities strengthened Libya's institutional architecture, legal framework, and human capacity to develop and implement gender-responsive energy efficiency standards for lighting and appliances. By linking governance reforms with hands-on technical training, the project laid a durable foundation for reducing electricity demand, improving consumer access to efficient products, and supporting a more inclusive and sustainable energy transition.

Activity 2.2: Technical assistance, capacity building and outreach for building sector energy gender responsive construction codes delivered

Under this activity, the SET project provided targeted technical assistance and capacity building to initiate the development of Libya's first Energy Efficiency Building Code, addressing a long-standing regulatory gap in the construction sector and aligning building practices with national energy transition objectives. The activity was designed to strengthen institutional capacity, raise awareness among key stakeholders, and embed gender-responsive and climate-appropriate considerations into future construction standards.

Energy Efficiency Building Code Workshop (Tunis, March 2024)

In March 2024, a three-day technical workshop was convened in Tunis, bringing together government officials, construction sector stakeholders, architects, engineers, and energy experts. The workshop served as the primary capacity-building and consultative platform to support the activity's objectives. Participants were introduced to core principles of energy-efficient building design, drawing on regional and international best practices and case studies from comparable climatic contexts. Particular emphasis was placed on how energy-efficient construction improves thermal comfort, reduces household energy costs, and delivers social benefits, including improved living conditions for women and vulnerable groups.

The workshop facilitated structured technical discussions on the key components of a national Energy Efficiency Building Code, including the development of mandatory minimum standards, the definition of climate zone-specific efficiency requirements, and the identification of practical monitoring and enforcement mechanisms. These discussions enabled participants to translate international standards into a framework suited to Libya's climatic, institutional, and socio-economic context.

As a direct outcome of the workshop, a policy working group was established to advance the drafting and finalisation of the national Energy Efficiency Building Code. This group provides an institutional mechanism for continued collaboration, ensuring that technical guidance, regulatory design, and gender-responsive considerations are integrated into the code development process.

Through this activity, the project laid the foundation for a regulatory framework that will introduce minimum energy efficiency requirements for new buildings, provide clear technical guidance to architects and engineers, and support compliance through defined monitoring and enforcement provisions. By initiating the development of Libya's first energy-efficient construction code, the project directly contributed to reducing energy demand in the building sector, promoting more sustainable urban development, and improving comfort and affordability for households across the country. By implementing this groundbreaking regulation, Libya is taking a major step toward more sustainable urban development while promoting better living conditions and reduced energy costs for residents.

Activity 2.3: Technical assistance, capacity building and outreach for gender responsive air conditioner energy efficiency delivered and Activity 2.4: Technical assistance, capacity building and outreach on gender responsive domestic heating and appliances energy efficiency delivered.

The Training on Minimum Energy Performance Standards (MEPS) and Testing for Electric Water Heaters, held in Tripoli in February 2025, directly advanced the objectives of Activity 2.3 (gender-responsive air conditioner energy efficiency) and Activity 2.4 (gender-responsive domestic heating and appliances energy efficiency) by strengthening national capacity to regulate high-consumption household appliances and by promoting inclusive, consumer-focused energy efficiency policies.

Although the workshop focused specifically on electric water heaters, it addressed cross-cutting technical, regulatory, and institutional competencies that are equally applicable to air conditioners and other major household appliances. Through hands-on training for 70 policymakers, technical experts, and industry stakeholders, the workshop built practical capacity on MEPS design, product testing methodologies, certification procedures, and compliance enforcement. These skills are essential for regulating energy-intensive appliances such as air conditioners, which—like water heaters—are major drivers of residential electricity demand in Libya.

From a gender-responsive perspective, the workshop emphasized appliances that directly affect household energy costs, thermal comfort, and daily domestic workloads—areas where women are often disproportionately impacted. Discussions highlighted how efficient water heaters, air conditioners, and domestic appliances can reduce household electricity bills, improve living conditions, and enhance energy access and affordability, particularly for women-led households and vulnerable groups. The focus on modern and innovative technologies reinforced the link between appliance efficiency, emissions reductions, and improved quality of life.

By strengthening institutional understanding of appliance standards, testing, and enforcement across the residential sector, the workshop effectively contributed to both Activity 2.3 and Activity 2.4. It laid the technical groundwork for scaling MEPS and labelling schemes beyond water heaters to air conditioners and other domestic appliances, supporting a coherent, gender-responsive approach to reducing residential energy consumption and greenhouse gas emissions in Libya.

The study tour to the New and Renewable Energy Authority (NREA) in Egypt, conducted between June and July 2024, further strengthened the delivery of Activity 2.3 (gender-responsive air conditioner energy efficiency) and Activity 2.4 (gender-responsive domestic heating and appliances energy efficiency) by complementing national training with regional, practice-based learning.

Through the visit, a delegation of Libyan energy officials and technical experts gained direct exposure to Egypt's policy frameworks and institutional arrangements for implementing Minimum Energy Performance Standards (MEPS) and energy labelling programmes for high-consumption household appliances, including air conditioners, water heaters, and other domestic equipment. The programme placed particular emphasis on how MEPS and labelling schemes are planned, sequenced, and enforced in a regional context with similar climatic conditions, market structures, and socio-economic challenges. Site visits to accredited testing facilities for electrical appliance energy efficiency provided practical insights into laboratory requirements, testing protocols, certification processes, and market surveillance mechanisms. These experiences reinforced the technical training delivered under the Tripoli workshop by demonstrating how appliance efficiency standards are operationalized in practice, from product testing through to compliance and enforcement.

In addition, discussions with Egyptian counterparts highlighted the social and consumer dimensions of appliance efficiency policies, including how energy-efficient air conditioners and domestic heating appliances contribute to reducing household energy expenditures, improving thermal comfort, and supporting inclusive access to energy services. These lessons informed Libya's efforts to integrate gender-responsive considerations into appliance standards, recognizing the disproportionate impact of inefficient appliances on women and low-income households.

Collectively, the study tour enhanced institutional learning, strengthened regional cooperation, and accelerated Libya's readiness to expand MEPS and labelling schemes for air conditioners and domestic appliances. By linking policy design with real-world implementation experience, the activity reinforced

national capacity to deliver gender-responsive appliance energy efficiency reforms aligned with Activities 2.3 and 2.4.

Output 3: Multiple large-scale gender responsive Renewable Energy projects are developed and financed to the construction ready stage in Libya.

Activity 3.1: Technical assistance for 1 MW grid-connected PV solar power plant.

Under Activity 3.1, the project provided targeted technical assistance to advance the preparation of grid-connected solar photovoltaic (PV) power generation in Libya, with the objective of developing a technically sound, investment-ready solar project and strengthening national capacity for utility-scale renewable energy deployment.

During the initial phase, UNDP explored the development of a 1 MW grid-connected PV system through a partnership with the Man-Made River Authority (MMRA), including the potential use of reservoir sites for floating solar installations. Due to political and institutional constraints, formal cooperation with MMRA was not feasible. In response, UNDP applied an adaptive implementation approach, using the Partnership Matrix for Renewables to identify alternative institutional partners and viable project configurations, ensuring continuity in delivering the activity objective.

In 2024, UNDP launched procurement processes for feasibility studies for two priority solar projects: a 1 MW rooftop and car-park-mounted PV system at Tripoli Medical Center and a 100 MW utility-scale PV plant in Jadu (Shakshuk). These studies generated critical technical, regulatory, and financial insights into site conditions, grid connectivity, and project viability. However, procurement outcomes revealed that the cost of full feasibility studies exceeded available resources. In close consultation with the Renewable Energy Authority of Libya (REAOL), the project strategically refocused its technical assistance on a more viable and scalable investment option.

As a result, UNDP supported the preparation of a technical and economic feasibility study for a 50 MW utility-scale solar PV project in Tininai, which emerged as a technically and financially robust alternative. The study confirmed excellent solar resource availability, assessed regulatory compliance and grid integration requirements, and identified key environmental and investment risks. Preliminary plant design and energy yield assessments demonstrated that the project could be efficiently developed with minimal environmental impact and reliable grid integration, thereby meeting the core objective of advancing a grid-connected solar PV project.

In parallel, the project prepared detailed technical specifications and tender documents for photovoltaic power plants, aligned with international best practices. These documents strengthened national procurement readiness and enabled REAOL to solicit bids for both engineering, procurement, and

construction (EPC) projects and private-sector-led investment models. This work directly contributed to building Libya's institutional capacity to move from project concept to procurement and investment mobilization.

To ensure sustainability and investment readiness, UNDP formalised strategic partnerships to support the next stages of project development. A Memorandum of Understanding with REAOL established a framework for ongoing policy and technical cooperation on large-scale solar deployment. The African Development Bank, through its Middle-Income Country Technical Assistance Fund (MIC-TAF), committed technical and financial support to advance the 50 MW solar project. In addition, a partnership with the Platform for Investment Support and Technical Assistance (PISTA) was established to support financial structuring, risk assessment, and investment mobilisation.

Collectively, these activities fulfilled the objective of Activity 3.1 by delivering high-quality technical assistance, advancing investment-ready solar PV projects, and strengthening national capacity to develop grid-connected renewable energy infrastructure. Despite necessary adjustments in project scope, the activity successfully laid the technical, institutional, and financial groundwork for Libya's transition toward utility-scale solar power generation.

Additionally, to support these efforts, UNDP developed partnerships to assist in the financing of the 50MW solar project:

The Renewable Energy Authority of Libya (REAOL) – A Memorandum of Understanding (MoU) was developed, ensuring alignment on policy and technical support for large-scale solar projects.

The African Development Bank (AfDB) – Through the Middle-Income Country Technical Assistance Fund (MIC-TAF), AfDB is providing technical and financial support to advance the 50 MW solar project.

The Platform for Investment Support and Technical Assistance (PISTA) – A strategic partnership was established with PISTA, focusing on finalising the financial structuring, conducting risk assessments, and mobilising investment for the solar plant in Libya.

Activity 3.2: Early project development for multiple gender responsive solar projects supported.

Egypt Study Tour for the Early Project Development for Gender-Responsive Solar Projects. The study tour to Egypt on utility-scale and rooftop solar PV systems, held in Cairo in October 2024, made a direct and substantive contribution to Activity 3.2: Early project development for multiple gender-responsive solar projects supported, by strengthening the technical, institutional, and practical capacity required to move solar initiatives from concept to pre-feasibility and feasibility stages.

The six-day programme, implemented in collaboration with Egypt's New and Renewable Energy Authority (NREA), focused on the full early-stage project development cycle for both utility-scale solar

plants and grid-connected rooftop installations. Through targeted technical sessions, participants strengthened their understanding of solar resource assessment, site selection, system planning, sizing, and performance modelling—core competencies required to identify, screen, and prioritise viable solar project pipelines in Libya.

Participation by 20 Libyan professionals from key institutions, including the Renewable Energy Authority of Libya (REAOL), General Electricity Company of Libya (GECOL), the Libyan Center for Solar Energy Research and Studies, the Solar Energy Center in Misrata, and the Ministry of Planning, reinforced cross-institutional coordination for early-stage project development. The programme also addressed regulatory and financial considerations for grid integration, enabling participants to better align technical project design with Libya's evolving policy and investment frameworks.

A critical component of the study tour was its emphasis on preparing technical and economic feasibility studies, equipping participants with the analytical tools needed to advance multiple solar concepts simultaneously. Practical site visits—particularly to Egypt's Zaafarana 50 MW Solar Power Plant—provided hands-on exposure to project execution, operation, and maintenance, translating theoretical knowledge into applied understanding relevant to Libya's context.

From a gender-responsive perspective, the study tour supported the development of solar projects that improve access to affordable, reliable electricity for households and public facilities, while strengthening national capacity to design inclusive energy solutions. By building practical expertise across institutions and exposing participants to operational best practices, the activity directly advanced the objective of Activity 3.2 by enabling Libya to systematically identify, design, and prepare a portfolio of grid-connected and rooftop solar projects ready for further development and investment.

Project Governance Arrangements

The Climate Change and Energy Programme was implemented under a governance framework designed to ensure strategic oversight by promoting national ownership inline with UNDP programme management standards. While overall responsibility for programme implementation rested with UNDP all work was done pursuant to a request from and in close collaboration with national counterparts, principally the Ministry of Environment and relevant sectoral institutions.

Day-to-day management was undertaken by the UNDP Project Team, which was responsible for operational planning, financial management, procurement, risk management, monitoring and reporting. Technical implementation was supported through national and international experts engaged in line with approved annual work plans.

Strategic oversight and policy guidance were provided through a Project Board, which functioned as the highest decision-making body for the programme. The Project Board was composed of representatives of

the European Union, the Ministry of Environment and UNDP senior management. The Project Board met in September 2025 to review progress against agreed outputs and indicators, discussed financial execution, and provided guidance on final implementation priorities to ensure completion of deliverables within the project timeframe. Decisions and action points from the Project Board meeting were documented and followed up by the UNDP Project Team as part of routine programme management.

This governance structure ensured alignment with national priorities, compliance with EU contractual requirements, and adaptive management in response to Libya's evolving institutional and operational context.

External Evaluation and Use of Recommendations

A third-party Evaluation of the Climate Change and Energy Programme was conducted between May and August 2025, in accordance with UNDP and EU evaluation requirements. The purpose of the evaluation was to assess the programme's relevance, effectiveness, efficiency, sustainability, and coherence, and to draw lessons learned to inform future climate and energy interventions in Libya.

The evaluation used a mixed-methods approach that included a comprehensive desk review of project documentation, including the project document, annual and quarterly progress reports, financial records, work plans, and monitoring data as well as semi-structured interviews and consultations with key stakeholders, including national counterparts, EU representatives, UNDP staff, project consultants, and beneficiaries.

The evaluation concluded that the programme remained highly relevant to Libya's climate change and energy priorities and aligned well with national strategies and international commitments. It recognized the programme's contribution to strengthening institutional capacity, improving the enabling environment for climate and energy action, and advancing technical work in priority areas despite implementation constraints.

Key challenges identified included capacity limitations within national institutions, delays linked to the operating context, and the need for stronger coordination mechanisms to ensure sustainability of results beyond the project lifecycle. The UNDP Project Team reviewed and the evaluation's recommendations and took action to address them during the final phase of implementation. This included strengthening institutional ownership by intensifying engagement with national counterparts during the completion of final technical deliverables and ensuring that outputs were formally validated and handed over. Improving the prospects for the sustainability of results by sharing with national counterparts all the data gathered and ensuring that it was properly stored so that it could be utilised again for future project development and reporting. The project also extended the time available to implement the project by soliciting a three month extension as requested by the national counterparts, particularly the Ministry of Environment.

Risks and Mitigation Measures

Both the Climate Change and Energy Transition programmes operated in a complex and evolving operating environment in Libya. Throughout implementation, key risks were systematically identified, monitored, and addressed through adaptive management measures, allowing activities to continue progressing despite significant constraints.

Government endorsement and regulatory risks emerged as a critical challenge when new mandatory approval requirements were introduced by the Libyan authorities, temporarily suspending project activities. In response, both programmes strengthened early and sustained engagement with national institutions, including the Ministry of Planning and relevant technical committees, and adjusted workplans to accommodate formal endorsement procedures. While these delays affected timelines, they also improved institutional alignment and reinforced the legitimacy of project interventions, providing a clearer pathway for future programming.

Private sector engagement risks were identified early, particularly in relation to renewable energy investment and market development. Libya's underdeveloped regulatory framework, limited incentives, and high perceived risk constrained private-sector participation. To mitigate this, the programmes focused on preparatory and enabling measures, including feasibility studies, investment-ready technical documentation, policy advisory support, and partnerships with development finance institutions. These actions helped lay the groundwork for future private investment, even where immediate market entry was not feasible.

Energy sector reform and unbundling risks, particularly within the General Electricity Company of Libya (GECOL), were addressed through a phased and realistic approach. While progress was made on financial unbundling, broader technical and regulatory reforms—outside GECOL's mandate and dependent on higher-level government decisions—remained constrained. The programmes responded by focusing on advisory support, diagnostics, and institutional design, including preparatory work for an independent Public Utilities Regulatory Authority, while maintaining dialogue on the sequencing of reforms needed for a functional energy market.

Operational and security-related risks, including visa delays and access constraints for international experts, affected the delivery of capacity-building activities. Both programmes adapted by relocating selected trainings to neighbouring countries, deploying hybrid and remote support modalities, and prioritising knowledge transfer to national experts. These measures ensured continuity of implementation while reducing dependency on international travel and mitigating security-related disruptions.

Time horizon risks were also identified, as the complexity and inertia of energy transition and climate governance reforms exceeded the scope of short project cycles. While the existing 21-month timeframe limited the ability to translate preparatory work into full implementation, this risk was mitigated through strategic prioritisation, sequencing of activities, and efforts to mobilise follow-on support. Both

programmes emphasized sustainability by embedding reforms within national institutions and aligning outputs with longer-term national strategies.

Finally, the programmes actively incorporated **learning and adaptive management** mechanisms. An independent Final Evaluation conducted between May and August 2025 provided actionable recommendations, many of which were addressed during the remaining implementation period. In parallel, outreach and dialogue activities—such as the forthcoming *Just and Sustainable Energy Transition* conference organised with the Ministry of Oil and Gas—were used to manage social and political risks, promote responsible business practices, and sustain stakeholder engagement.

Overall, the climate change and energy transition programmes demonstrated a proactive and flexible approach to risk management, adapting to Libya’s challenging context while safeguarding progress toward long-term policy, institutional, and investment outcomes.

Lessons Learned

Implementation of the Climate Change and Energy Transition programmes in Libya generated important operational and strategic lessons that were continuously identified, assessed, and integrated into programme delivery. Operating in a highly fluid political, institutional, and security environment required both programmes to adopt adaptive management approaches, transforming implementation challenges into actionable insights that will inform the design of future climate and energy transition interventions in Libya.

1. Anticipating and Managing Complex Government Endorsement Processes

Both programmes encountered an unanticipated requirement for formal government endorsement of internationally funded projects, including review by the Ministry of Planning’s Technical Advisory Committee. The temporary suspension of activities highlighted the importance of understanding evolving regulatory procedures and inter-ministerial dynamics.

Lesson learned: Future programmes must proactively anticipate endorsement and clearance requirements during project design, supported by early and sustained engagement with relevant ministries. Strategic use of UNDP’s convening role and good offices is essential to manage institutional coordination and mitigate delays arising from administrative or political changes.

2. The Importance of Flexibility in Project Design and Partnerships

Initial assumptions regarding institutional partnerships, project sites, and implementation modalities required adjustment due to political sensitivities, institutional resistance, and budgetary constraints. Both

programmes responded by revising technical scopes and partnership arrangements while preserving core objectives.

Lesson learned: Flexibility is essential in the Libyan context. Project design should be informed by thorough institutional mapping and political economy analysis, with built-in mechanisms to allow adaptive course correction without compromising strategic outcomes.

3. Adapting to Visa, Security, and Access Constraints

Persistent visa and security constraints limited in-country deployment of international experts, affecting training delivery and technical assistance. Both programmes mitigated this risk by relocating activities to neighbouring countries and deploying hybrid and remote support models.

Lesson learned: Future programmes should embed hybrid delivery models from the outset, combine regional and remote technical assistance, and strengthen national expertise to reduce reliance on international consultants and ensure continuity under access constraints.

4. Strengthening Institutional Coordination and Policy Coherence

Engagement across multiple institutions—including NESDB, the Ministry of Planning, GECOL, and REAOL—revealed fragmented mandates and overlapping responsibilities that slowed decision-making and policy alignment.

Lesson learned: Effective reform requires formal coordination mechanisms, such as inter-agency working groups and advisory platforms with clearly defined roles and responsibilities, to enhance coherence and streamline policy and investment planning.

5. Aligning Reform Support with Institutional Mandates and Sequencing

While progress was made on internal financial reforms within GECOL, broader market liberalisation and regulatory reforms remained outside its mandate and dependent on higher-level government action, including the establishment of an independent regulator.

Lesson learned: Energy sector reform support must be carefully sequenced and aligned with institutional mandates. Technical assistance should balance immediate capacity-building within utilities with parallel policy and regulatory engagement at the national level to enable sustainable reform pathways.

6. Moving from Policy Dialogue to Private Sector Investment

Despite advances in policy dialogue, feasibility studies, and investment preparation, private sector participation remained constrained by regulatory uncertainty and perceived risk.

Lesson learned: Future interventions must go beyond policy formulation to develop bankable investment frameworks, including risk mitigation instruments, guarantees, and clearer regulatory incentives, to crowd in private capital and accelerate renewable energy deployment.

7. Leveraging High-Profile Platforms for Advocacy and Influence

Participation in national and international platforms, such as the Libya Energy & Economic Summit, demonstrated the value of high-visibility engagement in advancing gender-inclusive energy and sustainability narratives.

Lesson learned: High-level forums should be strategically leveraged for policy advocacy, partnership development, and stakeholder alignment, supported by stronger media engagement and communications strategies to amplify impact and validate national ownership.

8. Aligning Project Timeframes with the Reality of Energy Transition

Both programmes highlighted the mismatch between short project cycles and the long-term nature of energy transition and climate governance reforms. While analytical and preparatory outputs were achieved, sustained implementation requires longer engagement.

Lesson learned: Future climate and energy transition programmes should be designed with longer time horizons (3–5 years) to allow for institutionalisation of reforms, maturation of investment pipelines, and durable capacity building, ensuring that momentum is maintained beyond project closure.

Conclusions and Way Forward

The portfolio of climate and energy projects implemented by UNDP in Libya demonstrates a deliberate and integrated approach to addressing both the drivers of climate change—particularly greenhouse gas emissions from energy and oil and gas systems—and the impacts of climate change on communities, institutions, and ecosystems. By combining top-down policy and strategic reforms, meso-level institutional capacity building, and bottom-up engagement with municipalities and civil society, the programmes have laid the foundations for a coherent national response to climate change and energy transition challenges.

At the strategic level, the programmes supported Libya in closing long-standing gaps in climate governance through the development and validation of core national instruments, including the Nationally Determined Contribution (NDC), the National Drought Management Strategy and Action Plan, energy efficiency standards, and the Renewable Energy Law. At the institutional level, targeted investments strengthened the operational capacity of key entities such as the Ministry of Environment, the Ministry of Local Government, the Libyan National Meteorological Centre, the National Oil Corporation, and the Renewable Energy Authority of Libya. These efforts were complemented by

extensive technical training, including advanced weather forecasting, methane detection and response, energy efficiency regulation, and renewable energy project preparation. At the local and societal level, the programmes expanded public awareness, empowered civil society actors, and enabled municipalities to begin developing Local Climate Action Plans aligned with national priorities.

Together, the SET and ECCM programmes sought to address systemic barriers that have historically constrained Libya's transition away from a fossil-fuel-dependent development model. These barriers include weak institutional coordination, outdated and inefficient energy infrastructure, limited private sector participation, fragmented climate governance, and low levels of public engagement. Through mutually reinforcing interventions, the programmes have begun to shift these conditions, positioning Libya on a pathway toward a low-carbon, climate-resilient, and inclusive development trajectory that supports national stability, improved service delivery, and long-term socioeconomic progress.

The ECCM programme, in particular, has significantly strengthened Libya's ability to mitigate emissions and engage with international climate processes, including reporting, financing, and compliance mechanisms. However, the report clearly demonstrates that sustaining and expanding these gains will require continued political commitment, sustained institutional engagement, and longer-term investment support. Climate and energy transition reforms are inherently multi-year processes that extend beyond the scope of short project cycles.

Looking forward, UNDP will focus on consolidating and scaling up the foundations established under the current programmes. Priority areas include: supporting the implementation of the forthcoming NDC and its associated investment plan; advancing implementation of the National Drought Management Strategy and Action Plan; operationalizing the mandate of the Ministry of Local Government's Climate Action Unit and harmonizing Local Climate Action Plans; strengthening methane mitigation and OGMP 2.0 compliance in the oil and gas sector; and sustaining the civil society climate forum and public awareness platforms created under the programme. These next steps will aim to translate strategic and preparatory achievements into tangible mitigation, adaptation, and resilience outcomes, while leveraging international climate finance and partnerships to ensure long-term sustainability.

In sum, the combined climate change and energy transition programmes have established a credible and integrated platform for future action. Building on this platform with sustained, sequenced, and adequately resourced support will be critical to enabling Libya to meet its climate commitments, enhance resilience to growing climate risks, and unlock the economic and social benefits of a just and inclusive energy transition.

Annexes

- I. Results Framework**
- II. Communication Inventory**
- III. Final Financial Report**
- IV. Final Evaluation Report**