UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

SUSTAINABLE DEVELOPMENT GOALS

# Project Implementation Report

(1 July 2021 – 30 June 2022)

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| **Project Title:** | Sustainable Energy Initiative for Industries in Pakistan |
| **GEF ID:** | 4753 |
| **UNIDO ID:** | 100045 |
| **GEF Replenishment Cycle:** | *GEF-5* |
| **Country(ies):** | *Pakistan* |
| **Region:** | *SA - Southeast Asia* |
| **GEF Focal Area:** | *Climate Change Mitigation (CCM)* |
| **Integrated Approach Pilot (IAP) Programs[1]:** | *Not applicable* |
| **Stand-alone / Child Project:** | *Stand-alone* |
| **Implementing Department/Division:** | *ENE / CTI* |
| **Co-Implementing Agency:** | *Not applicable* |
| **Executing Agency(ies):** | *UNIDO* |
| **Project Type:** | *Full-Sized Project (FSP)* |
| **Project Duration:** | *48 Months* |
| **Extension(s):** | *4* |
| **GEF Project Financing:** | *USD 3,550,000* |
| **Agency Fee:** | *USD 355,000* |
| **Co-financing Amount:** | *USD 31,200,000* |
| **Date of CEO Endorsement/Approval:** | 2/4/2014 |
| **UNIDO Approval Date:** | 5/29/2014 |
| **Actual Implementation Start:** | 6/1/2014 |
| **Cumulative disbursement as of 30 June 2022:** | *3,431,185* |
| **Mid-term Review(MTR) Date:** | 1/3/2019 |
| **Original Project Completion Date:** | I2/31/2020 |
| **Project Completion Date as reported in FY21:** | 12/30/2021 |
| **Current SAP Completion Date:** | 12/31/2022 |
| **Expected Project Completion Date:** | 12/31/2022 |

[1]Only for **GEF-6 projects**, if applicable

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| **Expected Terminal Evaluation (TE) Date:** | 9/30/2022 |
| **Expected Financial Closure Date:** | 6/30/2023 |
| **UNIDO Project Manager[2]:** | *Nadia Aftab* |

## I. Brief description of project and status overview

**Project Objective**

*The objective of the project is to reduce energy-related greenhouse gas emissions by facilitating the creation of a market environment to promote the use of Renewable Energy (RE) and Energy Efficiency (EE) technologies and measures in the selected industrial sectors of Pakistan.*

| **Project Core Indicators** | | **Expected at Endorsement/Approval stage** |
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| 1 | Greenhouse Gas Emissions Mitigated (metric tons of CO2e) | *Direct Greenhouse Gas Emissions Reduction (metric tons of $CO_2e$) during the project: 2,079.5 kt$CO_2$*<br>*Direct Greenhouse Gas Emissions Reduction (Metric Tons of $CO_2e$) beyond Project Life: 2,858.4kt$CO_2$*<br>*Indirect Greenhouse Gas Emissions Reduction (metric tons of CO2e) during the project: 34,283 kt$CO_2$.* |

**Baseline**

The power situation in Pakistan was characterized by an increasingly widening gap between demand and supply. This situation adversely affected the economy and the general well-being of Pakistan. However recently, govt. initiatives on new power projects have greatly improved the generation capacity. However, the transmission system still lacks the sort of advancements to bear the high-power demand in summers. The lack of sufficient power in such periods is compounded by the high transmission losses that include technical (poor quality infrastructure) and non-technical (theft and non-payment due to poor bill collection) losses as well as the problem of "circular debt". Meanwhile, the Integrated Generation Capacity Expansion Plan (IGCEP 2020-47) which is a policy document developed by Govt. has high projections of increased demand of 148 GW in the next 27 years.

As result, many companies have difficulties accessing modern energy services and electricity supply interruptions are very frequent in the country. Besides this, the recent increase in electricity prices has greatly impacted the cost of doing business. This in particular affects the small and medium-sized enterprises (SMEs) that often have to resort to the use of expensive diesel generator sets or to bear the high cost of electricity from the Grid. The power shortage and interruptions result in a lowering of the industries' production, profit, capacity and opportunity to grow

Besides this, enterprises have not implemented EE and RE programs despite of large potential for EE improvements and locally available RE resources. Several initiatives have been launched by the government including the ARE policy 2019, NEECA's Act 2016, and the State Bank refinancing scheme for RE projects. However, a number of barriers remain contributing to the slow uptake of EE measures in industry and the implementation of industrial RE applications. The UNIDO/ GEF project aims to address

[2] Person responsible for report content

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| these barriers by supporting the uptake of RE/EE investments in the country by developing supporting instruments, and policy measures, enhancing the capacities of Public-Private Sectors which could greatly propagate the EE & RE technologies and adoption of the best practices within the energy-intensive industrial sectors of Pakistan. |

| **Overall Ratings**[3] | **FY22** | **FY21** |
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| Global Environmental Objectives **(GEOs)** / Development Objectives **(DOs)** Rating | *Highly Satisfactory (HS)* | *Satisfactory (S)* |
| Since the project is in the concluding phase now, the current reporting period can be taken as the crucial one, where most of the activities of the project were undertaken and completed. This period coincides with a post COVID phase, where the lockdown situation eased and marked by industry re-activation. This provided the project an opportunity to step up the pace of the activities to compensate the loss of time in the COVID lock down situation and has been able to achieve majority of the milestones set under the entire project. Accordingly, the GEO's / DO's has been achieved to call this as "Highly Satisfactory" in comparison of previous reporting period, where it was "Satisfactory". | | |
| Implementation Progress**(IP)**Rating | *Highly Satisfactory (HS)* | *Satisfactory (S)* |
| Considering the same rationale, as described above, the implementation progress has been "Highly Satisfactory" compared to "Satisfactory" in previous reporting period. The project has exceeded the targets in Renewable Energy demonstration projects, Energy optimizations interventions, Energy Management System implementation, ISO 50001-2018 Certifications, establishing Energy Desk, completing the Energy Award call and application assessment process and Support to small businesses for installations of Renewable Productive Solutions. Even though training targets were already achieved before this current period, additional professionals were trained as certified energy professionals to boost the certification process within industries. | | |
| Overall **Risk** Rating | *Low Risk (L)* | *Low Risk (L)* |
| The overall risk rating remained at the lower side as in previous years. The achievements shows that there was no major risk involved during the project activity, otherwise this could not have achieved. The risk related to COVID also remain at the lower end. | | |

## II. Targeted results and progress to-date

Please describe the progress made in achieving the outputs against key performance indicator targets in the project's **M&E Plan/Log-Frame at the time of CEO Endorsement/Approval**. Please expand the table as needed.

| Project Strategy | KPIs/Indicators | Baseline | Target level | Progress to-date |
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[3] Please refer to the explanatory note at the end of the document and assure that the indicated ratings correspond to the narrative of the report

| **Component 1 – Develop the policy and regulatory framework on the use of EE and RE in the industry** | | | | |
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| Outcome 1: Policy and regulatory framework on EE/RE use in the industry improved | | | | |
| **Output 1.1:** Existing policy and regulatory framework reviewed and recommendations made (including financial and non-financial incentives and instruments) | (1) Specific regulations that promote solar and biomass power generation by industry and incentives for EE in industry | There are many policies and regulatory measures taken by the Government to promote energy conservation and renewable energy in the country. However, these initiatives have resulted in very few achievements in the industrial sector because of the lack of targets to improve industrial energy efficiency, the weakness of the existing policy instruments to raise awareness of market players on the promotion of EE and RE, and inadequate financing incentives and mechanisms. | Regulations established within the framework of current RE and power sector legislation that specifically focus on biomass and solar-based power generation in the industry (both grid and on-site) and EE incentives through various measures like feed in-tariffs, soft loans or guarantee schemes, tax rebates or exceptions | Policy Recommendations for Promotion of RE & EE in the Industrial Sector of Pakistan developed and handed over to NEECA and AEDB. Several consultative Workshops were conducted with stakeholders including industry, energy consultants, certification bodies, and academia on promoting energy management system and EE in the industrial sector of Pakistan followed by a detailed report on recommendations for policymakers. |
| **Output 1.2**: Recommendations on improvements in policy and regulatory framework adopted and associated advocacy work | 2) Adoption of regulations<br>3) Number of information events and packages on regulations and policy | To help achieve the objectives set in its policies, the Government has adopted the Energy Efficiency Roadmap (2010 – 2019) and prepared the Short-Term Policy on Renewable Energy (2006). This has generated a great deal of interest but has not resulted in significant power capacity addition to the national grid. | Regulations promoting RE/EE in the industry are adopted by the Government<br><br>Information disseminated (amongst decision-makers in government and private sectors) | Workshop conducted with PM task Force on Energy Reforms on promoting Energy Efficiency and conservation for sustainable and greener Pakistan.<br><br>Dissemination and advocacy of Policy recommendations on RE / EE to right holders.<br><br>Many suggestions were adopted, in the policy framework documents such as NEECA Act 2016, and NEEC Action plan 2022, as well as ARE Policy 2019. The adopted suggestion by regulatory bodies were registered and documented as success stories. |
| **Output 1.3:** Sectoral analysis on EE (and RE) opportunities, impact assessment and recommended post-project action plan for RE/EE in the industry as well as gender mainstreaming | (4) Analysis carried on RE and EE potential in various industrial subsectors with particular attention to projects that benefit women.<br><br>5) End-of-project impact assessment carried out<br><br>6) Action plan for post project actions | For policy-making purposes, information gathering on specific energy consumption in types of companies (large, medium, small) in various subsectors and comparison with reference values (benchmarking) is another tool. However, no such benchmarks exist for the energy-intensive sectors of local | Based on ADB-supported analysis, at least 5 such subsector studies are carried out plus a review study on impacts of realized savings based on earlier NPO/SMEDA work in the textile sector<br><br>One end-of-project impact study (with recommended actions)<br><br>Plan for post-project actions (based on end- | Sectoral analysis study of five energy-intensive sectors completed and report published. The formal launch was taken place in July 2019 attended by top representatives of industries, public and private sector, and development sector agencies.<br><br>A post Energy Management System data analysis activity was carried out, that considered to be a connected documented with the sectoral analysis. The Energy Analytical report is now to be published. The report summarizes data from industrial energy audits |

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| | | industries. | of-project impact study) formulated and discussed at the workshop(s) | (baselines) and performance reports (reported works) for 50 industrial sites where EnMS was implemented. The data was captured into a framework to develop an understanding of the current state of energy performance in the industry in Pakistan, as well as to quantify EEM's improvements that were achieved through this project. |
| **Component 2 –** | **Investments in RE and EE in the industry** | | | |
| Outcome 1: Investments in RE and EE in pilot demonstration carried out and scaled up | | | | |
| **Output 2.1:** Projects on EnMS and Systems Optimization (SO) assessed and implemented in industrial companies in textile (and other sectors) | (7) Number of plants in which audits/assessments are carried out<br>8) Number of energies management plans implemented (in line with EnMS)<br>9) Number of plants that implement systems optimization | The situation of limiting both electricity and natural gas supply to industries has led companies to look for other alternatives and set up their own captive power generation, usually based on natural gas. However, the culture of energy saving to reduce connected load is not present. In addition, the technical and financial capacity of the industry is weak to take advantage of EE optimization-related technology. | An estimated 130 energy assessments and audits will be carried out, initially in the textile sector, but then spreading out to other subsectors (based on analysis in Output 1.3)<br><br>Formulation and implementation of energy management plans in 75 plants (based on energy assessments)<br><br>Implementation of systems optimization in 50 plants (based on energy audits mentioned earlier) | Considering a focused strategy on providing meaningful support to selected progressive and committed companies, rather than diluting the support services, properly selected companies are being supported on EE. A forward approach has been taken to cover energy assessments and the implementation of the EnMS based on ISO 50001-2018. Under the program technical assistance was provided to the 50 beneficiary industries for implementing the Energy Management System in line with ISO 50001 Standards leading toward energy system optimizations. Out of Technical assistance was provided to 11 industrial units that were interested in ISO 5001 certification and Energy optimization support through partial grants to push for energy optimisation investments. 11 Industries have now successfully completed the ISO 50001:2018 certification. Other industries are working on the implementation and certification of ISO 50001.<br><br>EnMS Implementation Programme leading to Energy System Optimization was formally launched in July 2019 and has been completed successfully comprises 10 regional and sectoral consortia of consultants who implemented the EnMS / SO in 50 industrial units across Pakistan. |

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| **Output 2.2:**EE and RE technology support in 1 textile unit | 10) EE and RE technology supported in a textile company | The situation of limiting both electricity and natural gas supply to industries has led companies to look for other alternatives and set up their own captive power generation, usually based on natural gas. As also the supply of natural gas is rationed, they are now looking for alternatives, including locally available renewable sources of energy. Companies are also considering setting up power generation schemes with the purpose of selling power to the grid. However technical and financial capacity of the industry is weak to take advantage of EE and RE technology. | Implementation of a 200-kW solar PV plant and installation of an energy efficient socks producing line (with state-of-the-art technology and energy saving measures) | National Rural support program (NRSP), a local NGO engaged in micro-financing, is being supported for channelizing small grant packages for RE projects, to provide interest-free loans to small/micro enterprises including women-led businesses. These loans are provided by NRSP, while UNIDO is bearing the interest for RE-based productive solutions with a cumulative capacity of 600kW.<br><br>In 20 districts, from four regions in Punjab and Sindh provinces, 474 applications were processed for the provision of RE solutions to farmers and small enterprises including women-owned businesses, with a cumulative capacity of 1,321 kW. The project contributed to improving the livelihood of small working communities which include 21 women-led businesses and 453 men-led businesses including businesses such as agriculture, education, small enterprises, medical services, and livestock. Under this project, 102 small-scale vendors were registered to extend their businesses in remote areas and provide free-of-cost after sales services from one month to one year. |
| **Output 2.3:** RE technologies assessed and implemented in 2 companies | 11) Projects for deployment of RE technologies supported (solar, biomass).<br>12) Projects for deployment of RE technologies supported (solar & biomass) | The situation of limiting both electricity and natural gas supply to industries has led companies to look for other alternatives and set up their own captive power generation, usually based on natural gas. As also the supply of natural gas is rationed, they are now looking for alternatives, including locally available renewable sources of energy. Companies are also considering setting up power generation schemes with the purpose of selling power to the grid. However technical and financial capacity of the industry is weak to | Technical support has been provided for the pilot phase of the biomass power plant (heat and power on site 6MW); and the solar power plant (5MW, grid-connected) Pilot project proponents have (post-project) supported through technical designs and technical services. | M/s Shams Power was contracted to install the 6 MW Solar power plant in industrial setups on the B2B model. All the contracted deliverables are accomplished and projects are up and running. Apart from this B2B based projects, another 6 MW project installation achieved and thus 12 MW projects cumulatively in industrial sectors which included: 1.45 MW of captive RE projects in the Textile Sector, 2.7 MW of Solar Power plants installed in the Food Processing Sector, and around 1 MW installed in the Ceramics industry. |

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| | | take advantage of EE and RE technology. | | |
| **Output 2.4:** Portfolio of implementation of EnMS/SO and deployment of RE elaborated (incl. finance sources) | 13) Portfolio of implementation of EnMS/SO and deployment of RE elaborated (incl. finance sources) and focus on industries | No such portfolio exists right now. | List of EE and RE investment opportunities if needed, finance sources are identified and financial engineering supported | A post Energy Management System data analysis activity was carried out, that considered to be a connected documented with the sectoral analysis, but also depicts the implementations data under EnMS/SO. The Energy Analytical report is now to be published. The report summarizes data from industrial energy audits (baselines) and performance reports (reported works) for 50 industrial sites where EnMS was implemented. The data was captured into a framework to develop an understanding of the current state of energy performance in the industry in Pakistan, as well as to quantify EEM's improvements that were achieved through this project. The report is under publication.<br><br>A brochure of the success of the REEE project is under development which is showcasing the impact of the REEE project from inception to implementation. A total of 12 success stories were drafted to highlight the impact of the project including the portfolio of implementation of EnMS/SO and deployment of RE. awareness, outreach, and implementation are shared in the brochure. |
| **Component 3 – Create a platform for promoting investment and sustainability** | | | | |
| Outcome 1: Investment platform for scaling up investments operational; Training centres operational and programmes established; Monitoring of results and knowledge disseminated | | | | |
| **Output 3.1:** Investment platform to promote RE and EE in industrial companies strengthened (non-grant instruments, banking products; awareness creation) | 14) Strengthened energy desks at Pakistani organizations that provide info services | Although some credit lines supporting RE/EE projects exist in Pakistan, companies are reluctant to make use of the available funding for a number of reasons. There is a general absence of culture to consider savings in operating costs and lifecycle costs when making the decision to purchase machinery or set | Strengthened 'energy desks and services delivered (audits support, best practices, grant and non-grant instruments, finance sources) on EE/RE for industry (NPO; SMEDA, associations) | The Energy Desk has been established in collaboration with SMEDA with the prime objective to provide a one-window platform to facilitate the promotion of RE and EE technologies and investments in small and medium enterprises in Pakistan.<br><br>The primary aim of the Energy Desk is to counsel and guide SMEs regarding the adoption of EE and RE technologies and provide information on market players including service providers, technology suppliers, financing facilities options, and regulatory updates.<br><br>More than 1,100 visitors have |

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| | | up new installations. Decisions are still mainly driven by the initial cost investment and will not consider payback times over 5 years or so. On the other hand, the companies are not fully aware of the financial opportunities offered by the banking institutions and there is a mismatch between the needs of companies for energy efficiency projects and the financing products offered by banks | | already visited the Energy Desk (ED) portal. The Energy Desk Data Management System has more than 6,169 page views.<br><br>The training of Energy Desk Staff was conducted on operating ED Data Management System/Portal. For external stakeholders, 13 training sessions have been organized with more than 350 attendees. |
| **Output 3.2:** Training and Certification Centre and Textile Training Facility for experts on RE and EE EnMS applications established (under NPO) and training and accreditation programme established | 15) Certification center for experts on EE/RE applications established<br><br>16) Training centre for the textile industry supported | The technical knowledge and expertise of energy efficient (EE) and renewable energy (RE) technologies are rather limited. There is no formal platform specific to Energy management to connect different stakeholders and share information. | Strengthened 'Training and Certification Centre' at NPO Establishment of a training facility for textile subsector supported | Establishing new centers in Pakistan have the sustainability issues, unless they are done under government committed patronage and some special revolving fund to sustain operational cost. NPO itself did not able to provide committed co-financing to support this project. Under these circumstances, it was found feasible to build the existing educational institutes to build the capacities of the faculties, that are already working on energy subjects. Also besides textile there are many other industrial sectors that need to be supported. Under the EnMS implementation program, three Academia were selected and actively participated as consultant groups for 4 clusters (for 20 industrial units handholding). The faculty members and students are thoroughly engaged in energy audits and System implementations and thus the connectivity between industry and industry is being enhanced. Besides other academia also participated in this program, as co-leads. Many academia are now offering courses on energy efficiency and EnMS, while some has introduced credit courses in the engineering syllabus.<br><br>This also included training for the industry through Academia based |

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| | | | | Energy Service Consortia on Energy Management and EEE-related subjects during the EnMS implementation phases<br><br>Besides from an initiative taken by UNIDO by introducing AEE USA Certification courses like CEA and CEM at the local level, the professional who attended the courses, worked to set a local chapter of the Association of Energy Engineers (AEE). UNIDO project team members, took active participation and also become key office holders (honorary basis) to align this chapter with project activities. The chapter is conducting regular webinars/training on RE/EE-related subjects and providing advisory services to local professional. |
| **Output 3.3:** Training of experts on EE and RE in industrial applications carried out with at least 20% being women. | 17) Number of experts trained on RE and EE - EnMS/SO applications in the industry with at least 20% being women. | Personnel working in this sector change frequently and lack the necessary qualifications. Further, local manufacturers and equipment suppliers require specific training to support the installation and maintenance of RE/EE technologies in the future. | At least 120 experts trained and certified | Already achieved in the previous period, in excess of the target, more than 400 professionals trained, including 40+ certified in Energy Auditor and Energy Managers courses from AEE, USA. Around 100 women professional were trained as well. In the current period, 20 professionals have been certified as the lead auditor for ISO 50001-2018 conducted by international certification bodies such as SGS and BV. |
| **Output 3.4:** National Energy Performance Award scheme introduced | 18) Award scheme for energy performance in Large companies and SMEs | No such awards currently exist. | An award scheme for energy performance in large companies and SMEs and 'awards' provided on an annual basis with associated publicity | UNIDO announced the call for a first-ever energy performance awards in Pakistan for four categories namely: best organization award - energy performance in the industry, best consultant Firm Award-Energy service delivery (Energy Efficiency), best energy professional, and best woman professional in the energy sector. UNIDO involved the public sector organizations such as National Energy Efficiency and Conservation Authority (NEECA) to collaborate in piloting an Energy Performance Awards scheme, which allows industries, consultants, and individuals engaged in energy management system implementation to compete. The award judging process is complete, while the Award ceremony is due in third quarter of Year 2022. |

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| **Component 4 – Monitoring and Evaluation** | | | | |
| Outcome 1: | | | | |
| Output 4.1: Project monitoring and evaluation, knowledge dissemination | 19) Evaluations mandatory under GEF and UNIDO rules carried out<br><br>20) Experiences and knowledge created by the project captured and disseminated | | One mid-term evaluation and one final (terminal) evaluation<br><br>Regular reporting on the project website; Publication of best practices and experiences | Midterm Evaluation of the project was completed in March 2019. Terminal evaluation is expected in third quarter of year 2022.<br><br>Project Website was launched in Jan 2019 all the relevant studies and knowledge material has been uploaded on the UNIDO/GEF Project Website: http://www.unidogefpakistan.org.pk<br><br>Sectoral Report and other brochures/success stories has been published, while those encompassing final results are due in third and last quarter of year 2022. |

## III. Project Risk Management

**1.** Please indicate the overall project-level risks and the related risk management measures: (i) as identified in the CEO Endorsement document, and (ii) progress to date. Please expand the table as needed.

| | (i) Risks at CEO stage | (i) Risk level FY 21 | (i) Risk level FY 22 | (i) Mitigation measures | (ii) Progress to-date | New defined risk[4] |
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| 1 | RE Technology<br><br>are not technically and/or financially viable | Modest<br><br>risk (M) | Low<br><br>risk (L) | Well-proven technologies with a good track record in similar countries will be focused on.<br><br>Training and other capacities building activities will be provided to ensure strict O&M management capabilities. The project will focus to support revenue generation by avoiding expensive fuels, as well as diminishing power interruptions. Financial and economic risk will be addressed by innovative financing and financial capacity building.<br><br>The investment risk will be covered by encouraging the government to introduce policy incentives such as guarantees, risk insurance and tax exemptions | For the demonstration of Solar PV projects, leading service companies using proven technologies (for PV panels and inverters) have been chosen to ensure the successful operation of the systems. This will improve the market image of PV technologies in order to support the replication and investments in these technologies. In pilot projects, the feasibility of projects is based on the replacement of high-cost fossil fuels such as diesel (which was utilized in captive power generation during power shutdown from the national grid) with solar power. The B2B approach adopted for a few demo projects has already shifted the financial burden from companies to investors. The industries are also availing of RE-financing schemes extended by the State Bank of Pakistan. For projects of capacity lower than 1 MW, many | ☐ |

[4] New risk added in reporting period. Check only if applicable.

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| | | | | | companies are also availing of net-metering facilities, to supply extra power to the national grid. | |
| **2** | New importation of natural gas, set to begin in 2014- 5, could affect viability of RE and EE Projects | Modest risk (M) | Modest risk (M) | The project focused on the development of RE and EE technologies and services. Natural gas might not be rationed in future, but it will be imported and price is likely to be higher than currently. Given that the most of the industry is export oriented, it is envisaged that the appetite to invest in RE and EE will be boosted by foreign markets increasingly demanding products with low ecological footprints | The government policy on the importation of RLNG to improve gas supply to industrial sector has started to have an impact in LNG's industrial sector consumption. However due to increasing gas circular debt and supply and demand imbalances, few hiccups in supply to industries have been occurred.<br>However, the demand for RE technologies in the industrial sector still is increasing, thanks to advancements in RE technologies as well as its falling prices. Also, not all industrial plants utilize natural gas to cover their power needs and many of them still utilize FO/Diesel for power generation. These companies are potential users of RE-based Power systems. The application of RE technologies in industries has also diversified, which further boosted the potential of RE in the industry. | ☐ |
| **3** | Following the system EnMS optimization audit and report, an enterprise might not be willing to invest and finance the installation of new equipment, even if the energy reduction potential is important | Modest | Modest | The project will provide training for enterprises' key personnel, to build their capacity to better understand the value of investing without delay in EnMS and energy management and the long-term financial benefits it brings. System optimization typically focuses on getting the low-hanging fruits in energy savings first, rather than proposing grand schemes that yield large reductions, but at a larger investment with longer payback periods. In a participatory approach, the companies will be provided with adequate information packages and training. | The training program has been concluded for EnMS system implementation followed by the launching of the EnMS programme within 50 progressive industries across Pakistan that are willing to invest in System Optimization activities. 10 consortia comprising of energy service consultants, energy auditors and academic institutions had been engaged to assist these industries for implementing the EnMS. Moreover, UNIDO also supported the consortia through organizing regular capacity-building sessions with the support of local and international consultants to align and enhance their competencies. | ☐ |
| **4** | Co-ordination between key agencies and stakeholders and agencies remain weak and SME clusters do not actively participate in the project. In addition, various federal Ministries have now been devolved to the provinces. The decentralization | Low risk (L) | Low risk (L) | The project will coordinate with executing partners and major stakeholders and its steering the committee will establish the institutional linkages among the stakeholders. A Technical working group will guide the work on the identification of companies for audits, energy assessments and RE/EE implementation. Decision makers will be engaged early on in the project Implementation. A new midterm RE policy has been proposed | The Project Steering Committee (PSC) sessions held with all relevant organizations especially in the public sector related to RE and EE, appreciated and endorsed all the activities done and planned under the project for the year and assured the national project management that all the support needed for the successful implementation of the project will be provided by the members.<br><br>All the relevant partners are on board on planning and | ☐ |

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| | is still an ongoing process, but the project will work with provincial energy and environmental departments | | | and the project will provide essential inputs into its drafting process. | implementation activities and have cooperated for successful execution of this project. The project is already in active contact with provincial energy departments and their representatives have been invited and attended the training courses. The new RE policy draft has also been formulated by the present government in consultation with all relevant stakeholders including UNIDO. | |
| **5** | RE sources might be affected by CC as well as fluctuating feedstock (biomass prices) | Low risk (L) | Low risk (L) | Detailed RE resource assessment has been conducted, in which information on RE sources and climate historical data will be taken into consideration. For the biomass projects, apart from buying biomass on the market, the prospective biomass user will enter into longer-term supply contracts with various suppliers, especially large-scale suppliers. This will guarantee the supplier a certain income, while at the same time safeguarding a feedstock supply. The contracts will also include a price review mechanism to ensure that should the need for price review arises, a reasonable price will be agreed upon. Such contracts will be made with various suppliers<br>to mitigate risk by relying on a few suppliers. It should be noted that the biomass for energy technology users is located in areas of high biomass residue | The project can make good utilization of the current World Bank-sponsored Energy Sector Management Assistance Plan in Pakistan, called ESMAP, which has created a biomass atlas, depicting available biomass quantity and locations. Few agro-based organizations have shown interest in being part of the supply chain for biomass, provided that a regulatory umbrella is set by the government. The sugar sector is already using its bagasse stocks to replace low-pressure systems with high-pressure steam turbines. Many of them are working to produce excess power to feed into the national grid. All these initiatives give an optimistic future scenario.<br><br>However, considering the fact that biomass pricing and availability issues are still not taken seriously by the regulatory bodies in Pakistan, the risk remains present. However, it is not affecting the project as such because, other RE sources such as Solar have been tapped more aggressively under the project, and already the target GHGs are almost accomplished. | ☐ |
| **6** | Covid Pandemic might hit the industrial sector and the service providers as well as the supplier for Energy Efficiency and Renewable Energy equipment. | Medium risk (M) | Low risk (L) | Not provided in the Project document | The COVID-19 Pandemic has affected the implementation activities of the EnMS and RE projects in beneficiary industries. Industries are now showing signs of changing culture towards energy savings, and more are now investing in energy optimization interventions. The support grants announced at the right time by UNIDO for energy optimizations and ISO 50001 certification has further incentivized the change and offset the COVID impact. | ☒ |
| **7** | The time frame of preparation, design and implementation of the pilot projects | Modest risk (M) | Low risk (L) | All efforts are made that the GEF project will start in 2013. In addition, the investment component will be implemented | For the demonstration projects, the size of the individual projects has been diminished to reduce the risk, while this approach has also | ☐ |

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| | may not coincide with the overall timeframe of the GEF Initiative | | | from the beginning to ensure that the projects are realized by the end of the project. | broadened the support from a few to a large number of beneficiaries. Also, the contractual arrangements between UNIDO and partner investors of RE demonstration projects have been simplified.<br><br>Grants are provided to already identified techno-economically viable projects and not for conducting the feasibility of the projects. Also, the grant support is provided at different levels of the project cycle and is tied with specific milestones. This simplified scheme has been able to draw more contenders and has broaden the level of choice for UNIDO to select viable projects which are able to be conducted during the duration of the project.<br><br>The implementation periods for the Solar projects usually do not take more than six- eight months. For the demonstration projects the one selected partner company is leading organization in the field and have invested in these projects within their clients' factories premises. The power generated is being sold to them on an agreed tariff. Out of 12 MW cumulative renewable energy projects, 6 MW has already been commissioned on B2B basis while the remaining 6 MWs is implemented on co financing basis. Among this 6 Mw 1.3MW is installed with the help of microfinance bank that gave interest free loans to the beneficiaries | |

**2.** If the project received a sub-optimal risk rating (H, S) in the previous reporting period, please state theactions takensince then to mitigate the relevant risks and improve the related risk rating. Please also elaborate on reasons that may have impeded any of the sub-optimal risk ratings from improving in the current reporting cycle; please indicate actions planned for the next reporting cycle to remediate this.

| |
|---|
| *Not applicable* |

**3.**Please indicate any implication of the **COVID-19** pandemic on the progress of the project.

Due to the advent of the COVID-19 Pandemic, many of the project activities initially suffered during the first waves. The major impact of the pandemic was on the implementation of the Energy Management system programme. Due to the lockdown-like situation mostly the on-ground activities such as industrial energy audit visits were put on halt. However, the situation showed improvements due to Governmental efforts, which were also lauded by the international community. At present, most of the beneficiaries came out of the lockdown crises, and have restarted activities and all of them have still shown keen interest in going on with the EnMS implementation activities. However, one of the greater risks still pose to the implementation of the Energy System optimization measures in industry is the lack of finances for capital investments on RE and EE as these industries are still not able to completely come out of the impact, to cope with the economic fallout of the Pandemic. In order to mitigate this financial bottleneck, grant support is being provided through UNIDO/GEF project to support the implementation of EE interventions in beneficiary industries. As far as the implementation of the RE demonstration projects is concerned, 12+MW RE projects has been successfully implemented in various sectors.

**4.**Please clarify if the project is facing delays and is expected to request an **extension**.

*Not applicable*

**5.**Please provide the **main findings and recommendations of the completed MTR**, and elaborate on any actions taken towards the recommendations included in the report.

In the mid-term review of March 2019, a combination of three types of primary data collection and review techniques has been used: document review, Key Informant Interviews/stakeholder interviews, and site visits/observations. The mid-term review concludes that the overall management and implementation of the project are satisfied with good prospects of successfully achieving the project targets. These prospects can be enhanced by the project stakeholders through the findings and recommendations mentioned below

- Each component of the project has the capacity of being a separate individual project that can also be developed, implemented and further developed independently.
- Project activities have been so far successfully implemented as a result of the close cooperation and coordination of the partners with beneficiary stakeholders up to the midterm review period.
- PMU, Public sector key stakeholders and the beneficiary stakeholders/participants were observed to be involved in the project implementation progressively with good cooperation and coordination, and with a high level of expectation, particularly from private sector partners.
- PMU, UNIDO HQ team and key experts were observed to be highly professional and successful in the coordination of the project, with good relations and cooperation with beneficiary stakeholders/partners.
- The project has a strong potential to provide major global environmental benefits and best practices that enhance the reduction of greenhouse gas emissions, and which are replicable as best practices globally.
- Review suggests that gender component was substantially mainstreamed in the project interventions, at the outcome and output levels

*The Mid Term Review report can be found in* the supporting docs: 4753_Midterm Review Report

## IV. Environmental and Social Safeguards (ESS)

**1.**As part of the requirements for **projects from GEF-6 onwards**, and based on the screening as per the UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP), which category is the project?

☐ Category A project

☐ Category B project

☐ Category C project

(By selecting Category C, I confirm that the E&S risks of the project have not escalated to Category A or B).

*N/A*

Please expand the table as needed.

| | E&S risk | Mitigation measures undertaken during the reporting period | Monitoring methods and procedures used in the reporting period |
|---|---|---|---|
| **(i)** Risks identified in ESMP at time of CEO Endorsement | | | |
| **(ii)** New risks identified during project implementation (if not applicable, please insert 'NA' in each box) | | | |

## V. Stakeholder Engagement

**1.** Using the previous reporting period as a basis, please provide information on **progress, challenges and outcomes** regarding the engagement of stakeholders in the project (based on the Stakeholder Engagement Plan or equivalent document submitted at CEO Endorsement/Approval).

The Project's main public sector partners are the Alternative Energy Development Board (AEDB), National Energy Efficiency and Conservation Authority (NEECA), Small and Medium Enterprise Development Authority (SMEDA) and National Productivity Organization (NPO) which have participated in several meetings with the PMU. Besides, relevant documentation has been shared -including terms of Reference- for every initiative in order to receive feedback from the main partners. Also, to fully make use of the available structures, platforms of partners were used for (i) advertising notices of RFPs for pilot demonstration projects and (ii) linking with the industry associations to support the study assignments.

All the relevant partners are fully on board and a good level of work understanding has been developed with the UNIDO field office. UNIDO and AEDB are supporting each other through holding discussions on policy measures and related financial instruments favouring the investments in RE in the industry. Moreover, sharing of information on the progress of demo projects has been done on regular bases with AEDB. Recently, the inaugural ceremony of the Rural Support Programme for promoting RE productive solutions for small businesses was chaired by CEO AEDB.

Similarly, with NEECA, UNIDO has shared the information and progress of beneficiary industries of the EnMS Program. NEECA officials were also invited as a guest in all the in-person training sessions of consortia. UNIDO is also working with SMEDA, especially in establishing Energy Desk to be housed in the SMEDA office in Lahore. SMEDA support is also sought with making linkages with SMEs and their associations.

Likewise, NPO has always extended its support in making plans for Energy Management system implementation and energy audits. Apart from that, a reasonable partnership has been developed with

chambers and industrial associations and industry, in addition, the project aims to support and provide the policy recommendations for the promotion of RE & EE In industrial Sectors of Pakistan. This is evident from the fact that in collaboration with Prime Minister's Task Force on Energy Reforms a consultative workshop was also organized to address the issues pertaining to achieving Energy Efficiency in Pakistan

The United Nations Industrial Development Organization (UNIDO) organized a commemoration of Micro, Small, and Medium-sized Enterprises (MSME) Day to recognize the MSMEs' contribution to the economic growth and sustainable development in Pakistan, and to identify synergies with the 2030 Agenda for Sustainable Development. The event was chaired by Mr. Iftikhar Ali Sahoo, the Additional Secretary of the Ministry of Industries and Production, and co-chaired by Ms. Nadia Aftab UNIDO Country Representative Dr. Rashid Bajwa CEO of National Rural Support Programme (NRSP). The event brought together representatives from the Ministry of Industries and Production, Ministry of Climate Change, national and international development organizations, Microfinance banks, and academia. The participants appreciated the efforts of UNIDO on MSME's development initiatives.

UNIDO being the implementing agency, the project steering committee (PSC) is composed of National Productivity Organization (NPO), Alternate Energy Development Board (AEDB), National Energy Efficiency and Conservation Authority (NEECA- formerly ENERCON), and Small and Medium Enterprise Development Authority (SMEDA). Review suggests that the UNIDO-PMU is in closed coordination with PSC and receives strategic guidance and substantial support. The Project Steering Committee (PSC) sessions held with all relevant organizations in the public sector appreciated and endorsed all the activities done and planned under the project for the year and assured the national project management that all the support needed for the successful implementation of the project will be provided by the members.

Besides this, the project also approached the State Bank-owned Pakistan Credit Guarantee Company, DFIs and commercial banks to explore the possibility of developing Financial Instruments such as the system of credit guarantee to promote RE investments in the SMEs sector. Similarly, collaboration was done with National Rural Support Programme to channel the small grant packages for the implementation of RE projects at the community level/ small businesses for product uses. UNIDO is in active consultation with NEECA for the launch of Energy Performance Awards, under which guidance the Award framework has been developed. NEECA platform will be utilised for the sustainability of the award scheme on regular basis even beyond the project lifetime.

The engagements with the private sector, including academia, consultants, industries and service providers have remained positive, despite the COVID situation. Though actions remained delayed, things are moving in a positive way. The demonstration projects have been in the implementation phases, and that stems from the fact that UNIDO remained actively engaged with industry players. Another level of engagement that remains highly conducive, is the implementation of the Energy Management System. Continuous coordination with consultants, service providers and the industry has resulted in a position where around 17 industrial units applied for grants for certification of ISO 50001-2018 and energy optimization investments in their units among which 11 industries have successfully implemented EnMS and got the ISO 50001 certification.

UNIDO team also engaged the public sector staff officials in the judging activity for the “Energy Performance Awards” was spread over three days. In the second phase, all the candidates were given the opportunity to present their performance presentations through an online meeting platform. This phase involved experts from Project's main public sector partners i.e., NEECA, NPO, SMEDA and AEDB for the final assessment.

The main challenges involving stakeholder engagement are the capacity issue of the institutions involved and structural/management changes in the institutions. Though the project has enabled these institutions to build their knowledge by conducting training for them and engaging them in the post-training programs, however, most of the stakeholders, being the public sector organizations, are slow to act do and have not enough resources, both in terms of human and financial to grow accordingly. The project partners have also been seeing changes in their structure and portfolios, such as AEDB has been in the proposed transition phase of being merged with another entity Private Power and Infrastructure Board (PPIB), as the CEO has recently been changed while the acting charge is with MD,PPIB. Moreover, after a long time, the decision-making head of NEECA has been finally appointed. However, NEECA is still facing capacity issues to move forward with its objective accomplishments, such as the enforcement of the National

Energy Efficiency and Conservation Act, which is still not enforced as yet. The Covid Pandemic remain one main hurdle, in keeping an effective consultation and coordination with the stakeholders. While personal meetings are replaced by virtual meetings but the quality of working relationships has surely suffered. As far as the private sector is concerned, the major challenge in the project so far is to change the culture of the industry to resist the change and prioritise its actions based on quick financial gains through ad-hoc measures. Change the culture is a time taking sojourn, and this simple challenge has been faced throughout the project span. However, the challenge has been overcome to quite an extent, as the system improvement approach is becoming more evident.

The outcome of the stakeholder engagements is that it has resulted in better guidance on the way forward, good decision making, and achieving the ownership of the partners. The dissemination of the awareness on RE and EE issues and solution became possible, and enable to create a great replicable potentials in the industry for the best practices.

**2.**Please provide any feedback submitted by national counterparts, GEF OFP, co-financiers, and other partners/stakeholders of the project (e.g., private sector, CSOs, NGOs, etc.).

The national counterparts have remained satisfied with the project activities, as no negative feedback has ever been narrated in any meetings. UNIDO gets positive feedback on its initiatives on EnMS implementations, RE projects for both industry and small businesses, planning for Energy Awards, Energy Desks etc.

Private Sector Partners are appreciative of the UNIDO initiatives under the project, and overall, there was a great demand for the technical support provided. Even after the finalisation of cooperation agreements with beneficiaries, many others who missed, raised their interest to join the project and asked for any provision to enlist them. Even at the community level, the demand for support for the installation of RE-based productive solutions rises, even if the allocated fund is fully utilised.

Academia partner, who are engaged in this project, has the most vociferous feedback on the support. According to them, this project has provided the kind of support that was long due, and which has helped the faculty members and the student, to liaise with industry, learn practical aspects of energy conservation and energy efficiency management practices, and has opened a new vista for R&D for industrial needs. Energy Award has been the most talk of the town, as many of those not in the scope has asked for the awards details. This makes a good omen for the regular conduct of this scheme in the future.

**3.**Please provide any **relevant stakeholder consultation** documents.

*Please list here the documents which will be submitted in addition to the report, e.g.:*

- *4753_Project Steering Committee meeting minutes*
- *4753_PSC meeting Agenda*

## VI. Gender Mainstreaming

**1.** Using the previous reporting period as a basis, please report on the **progress** achieved **on implementing gender-responsive measures** and **using gender-sensitive indicators,** as documented at CEO Endorsement/Approval (in the project results framework, gender action plan or equivalent),.

Women are considered key stakeholders for the development of industry, energy and environmental resources and climate change mitigation therefore gender mainstreaming action needs to be integrated with all stages of a project cycle, especially during the execution of the project interventions monitoring and evaluation, as well as the review of the existing, polices and formulation of recommendations on improvements in policy and regulatory frameworks to ensure that women's needs and priorities are

addressed. References to gender have to be consistent throughout the project approach, including activities, and indicators.

In light of the above-mentioned context, special consideration has been given to gender issues in two studies that were completed under this project. The first one is the sectoral analysis, which has conducted a baseline study on the potential opportunities of RE and EE technologies in five selected industrial sectors in Pakistan. However, during this study which was largely a technological review, the gender-related information that was available remained quite limited even though interviews and questionnaires were specifically asked for it. One of the reasons was that since the study was conducted during the initial stages of the project, the conditions were more adverse, and even today women constitute a negligible part of the overall workforce therefore the collection of disaggregated data was not available from industry or any other source.

For the second study which reviewed and advised on the national policy framework for RE and EE in Pakistan, it was easier to find social information and co-relate gender issues with that of policy segments. Separate sections were allocated for the gender discussions and appropriate recommendations were given streamlining the gender issues in the policy.

Similarly, for the selection of RE demonstration projects investors and EnMS Consortia /beneficiary companies, though adequate criteria were developed, however not many choices were available to select from based on gender priorities.

Women's presence in the industry is very nominal, especially in the manufacturing sector, and even it is in the garment industry, for example, it is mainly as the Labour force or daily wager. On the professional side, the women are either recruited in human resource management or planning/design side, which offers very limited opportunities for women. UNIDO under the REEE project is implementing ISO 50001-based Energy Management System (EnMS) in 10 assigned clusters across Pakistan consisting of 50+ industrial units, engaging 8 consortia of consultants to support these units. UNIDO selected those consultants and beneficiary industries who showed and commitment to engage more women in their working teams.

Female experts are encouraged to participate in the training and other project activities. In the current EnMS program, there are many women professionals who are part of the energy teams, even heading the team in some cases. Some of them are also getting training on lead auditor for ISO 50001 certification training Many are working on the RE and EE demonstrations projects as implementers. On the academic side, many women faculty members and students are continuously engaged in industry handholding for improving energy performance, as energy auditors. The same is true with some consultants' companies, where women are acting as advisors to the industry as the consultant team. The training programme of the project was scaled up, as the activity was started in the UNIDO REEE Project which was devised to ensure the participation of women professionals to meet the target of around 20 % of total participants. Overall 800+ different capacity-building trainings were conducted to enhance the knowledge and skills of professionals and young entrepreneurs which includes more than 100 young women energy professionals, trained in 20 different types of training stretched over one day to three days. Out of the 20 training, two specialized training sessions on Certified Energy Manager (CEM) and Certified Energy Auditors (CEA). It was for the first time in Pakistan that any women professional underwent such high-level international certifications. Seven women energy professionals undertook the training and four women achieved the certification.

Involved organizations that are focusing on women's participation in the energy sector e.g., Women in Energy Network, Women in Renewable Energy etc. Apart from the main activities of project development and finding access to finance for investments, women's forums were actively engaged in learning and advocacy efforts. Since a huge informative gap exists among the Pakistani women on that front. The project tried to fully utilize the current women's platforms and even planned to establish new ones with more focus on climate mitigation and adaptation for industrial and rural community development, any effort will not be sustained. These platforms are supposed to be structured to add technical, financial and management women professionals-led wings so that they could better visualize their potential and have space to excel in a more positive way.

The energy desk housed at SMEDA is facilitating women entrepreneurs in training participation and adoption of EE and RE solutions. Energy Desk organized webinars conducted by women energy experts

on “Energy Saving Opportunities in Electric Motors” and “Energy Expert – A Promising Career for Women”. Moreover, two training programs were exclusively conducted for the women professionals which were attended by 23 participants.

In the RE demonstration projects, the women professionals were trained in installations by the service providers, while for small business clean energy solutions, many women-led businesses were supported. For the upcoming Energy Performance Award Scheme, a special category of merit certificate Award has been assigned for a women energy professional. A gender Knowledge product is under preparation, that will provide a gender guidance document for the industry to implement gender mainstreaming in their organization.

## VII. Knowledge Management

**1.** Using the previous reporting period as a basis, please elaborate on any **knowledge management activities/products**, as documented at CEO Endorsement / Approval.

An active website is working, that covers all the activities of UNIDO under its GEF portfolio in Pakistan, and is administered locally. This website includes active websites of two other GEF projects, along with a project on Renewable Energy and Energy Efficiency. Thus, this website is created for promoting GEF projects & is highlighting the work that is being undertaken under the projects. This includes the publication of a wide range of communications and promotional materials (such as event coverage, press releases, speeches, annual reports, research papers, and brochures), in order to share information with its staff members, partners and all other stakeholders.

Energy Data Management System at Energy Desk, housed in SMEDA, has been developed and is fully functional. More than 1,100 visitors have already visited the Energy Desk (ED) portal. The Energy Desk Data Management System has more than 6,169 page views. The training of Energy Desk Staff was conducted on operating ED Data Management System/Portal. For external stakeholders, 13 training sessions have been organized with more than 350 attendees.

An advanced Cloud-based File management portal for project documents, files, reports and Media is formed that will guide through the relevant document component-wise.

**2.** Please list any **relevant knowledge management mechanisms/tools** that the project has generated.

A number of knowledge management tools including success stories (ss), Brochures, Flyers and reports were generated by the project team. Online presence is ensured by creating handles on social media (Twitter, Facebook) and creating a website

Following is the list of KM tools and mechanisms developed:

- Twitter handle @UNIDO_Pakistan
- Facebook: @UNIDOPakistan
- Website: www.unidogefpakistan.org.pk
- Information, Education and Communication material developed:
  - 4753_Brochure_success stories
  - 4753_SEIIP_factsheet
  - 4753_SS_Energy transition
  - 4753_SS_Gender mainstreaming
  - 4753_SS_academia industry collaboration

- 4753_SS_Empowering SMEs
- 4753_SS_ISO 50001 certification
- 4753_ss_4753_ss_Renewable Energy Transition
- 4753_Energy Awards_flyer
- 4753_ss_ Energy Optimization
- 4753_ss_Energy Performance Awards
- 4753_ss_Comprehensive Training Program
- 4753_ss_Major Study on EE And RE Potential and Opportunities
- 4753_ss_National Policy Frameworks on EE and RE.pdf
- 4753_Event report_MSME Day 2022

- Videos produced:
  - 4753_testimonial_SPPL
  - 4753_testimonial_afm-woman professional
  - 4753_testimonial_ET
  - 4753_testimonial_ETM
  - 4753_testimonial_IRM
  - 4753_testimonial_EMCO
  - 4753_testimonial_EnMS_Fazal Steel
  - 4753_Testimonial_qarshi_Ayesha Zaheer
  - 4753_Testimonial-Ravi Automobile
  - 4753_video_IWD2022
  - 4753_Midterm Review Report

LINK: https://xfiles.unido.org/index.php/s/FonKtrk2HrwqjZP

## VIII. Implementation progress

**1.** Using the previous reporting period as a basis, please provide information on **progress, challenges and outcomes achieved/observed** with regards to project implementation.

The UNIDO Pakistan REEE project has successfully carried out the following initiatives under the FY 2021-22:

The EnMS implementation in line with ISO 50001-2018 has been completed whereby 10 different regional consortia groups comprising Energy Management System Consultants, Sectoral Experts, Certified Energy Auditors and Academia are providing technical assistance to beneficiary industries for smooth implementation of EnMS. Moreover, UNIDO has been hand-holding consortia groups by assessing, aligning and enhancing their competencies through organizing various capacity-building sessions and workshops by engaging international and local consultants. The energy audits of all the beneficiaries' units are completed and baselining done.

The Audit reports suggested low-cost, midterm and long-term (high investment) energy-saving options to industries with action plans for implementation. The EnMS system development based on different clauses of ISO 50001 was achieved in most of the companies and currently, the implementation phase is in progress. In a few companies, the preparation of internal audits is in progress, which will pave way for the certifications. To expedite the implementation process, UNIDO is supporting these companies through incremental cost grants on energy optimizations and three years of certifications compliance. For this matter, 17 companies had submitted their proposals in the RFP bidding process for single or both categories of grants, among which 11 industries has been successfully completed the certification.

The most challenging aspect of the above-mentioned activities was the COVID Pandemic impact on industrial activities, which largely remained dormant in the initial period of the year. However, after lifting the lockdowns, the activities restarted. The other major challenge was to drive the industry towards the system approach against the ad-hoc approach of energy audits. In addition, one of the major barriers posed to investments in RE and EE is the lack of knowledge on RE/EE technologies and related interventions, global best practices and lack of access to finance. Thus, there was a dire need to build the local capacities and information dissemination mechanism for industries particular SMEs and to ensure the effective coordination and collaboration between the public and private sector institutions to promote the uptake of RE and EE/EnMS interventions in Pakistan.

Addressing the rising challenges, the REEE project promoted a business approach which is an innovative finance mechanism to support the energy transition where the developer invests in the Renewable Energy power plants at commercial and industrial sites and operates them for 20-25 years selling electricity to the site owners at a discount to the grid. Shams Power Limited, a new solar power developer and solution provider in Pakistan, was selected as a private sector implementing partner and was given a partial grant in the form of financial assistance to cater to the cost of 6 MW cumulative capacity solar energy projects installation. The REEE project's grant enabled Shams Power Limited to secure corporate Power Purchase Agreements (PPA) for the implementation of solar projects at 12 commercial and industrial sites, with zero capital and operational costs. These projects are based on the B2B model where the developer will be providing clean energy to the consumer through a Power Purchase agreement. The total clean energy generated during the period 2020-21 was 4,270,543 kWh. Few of the major challenges were related to the demonstration projects on the B2B model. The contracts with Shams power and Reon energy were signed back in 2015 -16 however even though they were among few leading Solar Developers still they were unable to execute the Solar projects timely mainly due to the pending regulatory approvals and negotiations with the lending institutions on the collateral requirements for the loans. Further, the COVID Pandemic caused overly delays in supply and installation activities.

National Rural Support Program (NRSP), one of the major micro-financing entities in Pakistan, outreach to the communities that were involved in small businesses and agriculture with limited access to resources. This project provided subsidies in terms of interest-free loans to the beneficiaries for procurement and installation of RE solutions for productive use along with post-installation maintenance support. In 20 districts, from four regions in Punjab and Sindh provinces, 474 applications were processed for the provision of RE solutions to farmers and small enterprises including women-owned businesses, with a cumulative capacity of 1,321 kW. The project contributed to improving the livelihood of small working communities which include 21 women and 453 men (ranging from 19 to 60 years in age) engaged in businesses such as agriculture, education, small enterprises, medical services, and livestock. Under this project, 102 small-scale vendors were registered to 18 Sustainable Energy Initiative for Industries in Pakistan

to extend their businesses in remote areas and provide free-of-cost after sales services from one month to one year. The project has been able to build the trust of communities with vendors. The vendors regularly visit the community for the maintenance of the installed solar systems, which allows them to introduce the latest technologies and products according to the community's needs.

The REEE project achieved and exceeded the target of RE by installing more than 12 MW projects cumulatively in industrial sectors which included: 1.45 MW of captive RE projects in the Textile Sector, 2.7 MW of Solar Power plants installed in the Food Processing Sector, and around 1 MW installed in the Ceramics industry. This project generates 14,455 MWh of clean energy every year. This has resulted in the reduction of industrial $CO_2$ and other GHG, contributing to the Climate Action Goals by avoiding more than 200,000 Metric tons of $CO_2$ emissions over the lifetime.

The outcomes of the aforementioned activities were the development and promotion of the culture of EnMS/ EE in the industrial sector of Pakistan while integrating and aligning the roles of stakeholders and National Actors and creating an enabling environment through formulating supporting instruments (technical and financial).Industries are now showing signs of changing culture toward energy savings, and more are now investing in Renewable Energy and energy optimization interventions. The support grants announced at the right time by UNIDO for energy optimizations and ISO 50001 certification has further incentivized the change and offset the COVID impact.

**2.**Please briefly elaborate on any **minor amendments**[5] to the approved project that may have been introduced during the implementation period or indicate as not applicable (NA).

Please tick each category for which a change has occurred and provide a description of the change in the related textbox. You may attach supporting documentation, as appropriate.

| | | |
|---|---|---|
| ☐ | Results Framework | |
| ☐ | Components and Cost | |
| ☐ | Institutional and Implementation Arrangements | |
| ☐ | Financial Management | |
| ☐ | Implementation Schedule | |
| ☐ | Executing Entity | |
| ☐ | Executing Entity Category | |
| ☐ | Minor Project Objective Change | |
| ☐ | Safeguards | |
| ☐ | Risk Analysis | |
| ☐ | Increase of GEF Project Financing Up to 5% | |
| ☐ | Co-Financing | |

[5]As described in Annex 9 of the *GEF Project and Program Cycle Policy Guidelines*, **minor amendments** are changes to the project design or implementation that do not have significant impact on the project objectives or scope, or an increase of the GEF project financing up to 5%.

| | | |
|---|---|---|
| ☐ | Location of Project Activities | |
| ☐ | Others | |

**3.** Please provide progress related to the **financial implementation** of the project.

The main expenditure were related to contractual payments for Consultants, who worked for Energy Management System implementation, and for payments as grants to demonstration projects in RE and EE. There were also some expenditure related with payments to public sector organizations for establishing Energy Desk.

While at current situation the obligation balance is USD 280,892.74 and available budget is USD 84,920.83. For year 2022, payments made were USD 355,760.60.

*4753_Budget*

*4753_ULO's*

## IX.Work Plan and Budget

1. Please provide **an updated project work plan and budget** for the remaining duration of the project, as per the last approved project extension. Please expand/modify the table as needed.

*Please fill in the below table or refer to a file, in case it is submitted as an annex to the report.*

| Outputs by Project Component | Year 1 | | | | Year 2 | | | | Year 3 | | | | GEF Grant Budget Available (US$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | |
| **Component 1 –** | | | | | | | | | | | | | |
| Outcome 1: | | | | | | | | | | | | | |
| Output 1.1: | | | | | | | | | | | | | |
| Output 1.2: | | | | | | | | | | | | | |
| **Component 2 –** | | | | | | | | | | | | | |
| Outcome 2: | | | | | | | | | | | | | |
| Output 2.1: | | | | | | | | | | | | | |
| Output 2.2: | | | | | | | | | | | | | |

* Annex to the report as *4753_Workplan 2022 Qt 3-4*

## X. Synergies

1. **Synergies** achieved:

*Describe potential synergies arising out of UNIDO internal cooperation and/or cooperation with (external) bilateral and multilateral projects/programmes, if applicable.*

- *Establishment of Energy Desk at Small and Medium Development Authority (SMEDA)*
- *Access to clean energy to communities and small businesses opportunities with National Rural*

*Support Programme (NRSP)*

- *Judging activity for the Energy Performance Awards with all project stakeholders i.e., SMEDA, NPO, AEDB, NEECA*

**3. Stories to be shared** (Optional)

*Please provide a summary of any especially interesting and impactful project results that are worth sharing with a larger audience, and/or investing communications time in. Please include links to any stories/videos available online.*

- *4753_Brochure_success stories*
- *4753_SEIIP Factsheet*

**EXPLANATORY NOTE**

1. **Timing & duration:** Each report covers twelve months, i.e. 1 July 2021 – 30 June 2022.

2. **Responsibility:** The responsibility for preparing the report lies with the project manager in consultation with the Division Chief and Director.

3. **Evaluation:** For the report to be used effectively as a tool for annual self-evaluation, project counterparts need to be fully involved. The (main) counterpart can provide any additional information considered essential, including a simple rating of project progress.

4. **Results-based management**: The annual project/programme progress reports are required by the RBM programme component focal points to obtain information on outcomes observed.

| Global Environmental Objectives (GEOs) / Development Objectives (DOs) ratings | |
|---|---|
| **Highly Satisfactory (HS)** | The project is expected to achieve or exceed all its major global environmental objectives, and yield substantial global environmental benefits, without major shortcomings. The project can be presented as "good practice". |
| **Satisfactory (S)** | The project is expected to achieve most of its major global environmental objectives, and yields satisfactory global environmental benefits, with only minor shortcomings. |
| **Moderately Satisfactory (MS)** | The project is expected to achieve most of its major relevant objectives but with either significant shortcomings or modes of overall relevance. The project is expected not to achieve some of its major global environmental objectives or yield some of the expected global environmental benefits. |
| **Moderately Unsatisfactory (MU)** | The project is expected to achieve some of its major global environmental objectives with major shortcomings or is expected to achieve only some of its major global environmental objectives. |
| **Unsatisfactory (U)** | The project is expected not to achieve most of its major global environmental objectives or to yield any satisfactory global environmental benefits. |
| **Highly Unsatisfactory (HU)** | The project has failed to achieve and is not expected to achieve, any of its major global environmental objectives with no worthwhile benefits. |

| Implementation Progress (IP) | |
|---|---|
| **Highly Satisfactory (HS)** | Implementation of all components is in substantial compliance with the original/formally revised implementation plan for the project. The project can be presented as "good practice". |
| **Satisfactory (S)** | Implementation of most components is in substantial compliance with the original/formally revised plan except for only a few that are subject to remedial action. |
| **Moderately Satisfactory (MS)** | Implementation of some components is in substantial compliance with the original/formally revised plan with some components requiring remedial action. |
| **Moderately Unsatisfactory (MU)** | Implementation of some components is not in substantial compliance with the original/formally revised plan with most components requiring remedial action. |
| **Unsatisfactory (U)** | Implementation of most components is not in substantial compliance with the original/formally revised plan. |
| **Highly Unsatisfactory (HU)** | Implementation of none of the components is in substantial compliance with the original/formally revised plan. |

| Risk ratings | |
|---|---|
| Risk ratings will access the overall risk of factors internal or external to the project which may affect implementation or prospects for achieving project objectives. The risk of projects should be rated on the following scale: | |
| **High Risk (H)** | There is a probability of greater than **75%** that assumptions may fail to hold or materialize, and/or the project may face high risks. |
| **Substantial Risk (S)** | There is a probability of between **51%** and **75%** that assumptions may fail to hold or materialize, and/or the project may face substantial risks. |
| **Moderate Risk (M)** | There is a probability of between **26%** and **50%** that assumptions may fail to hold or materialize, and/or the project may face only moderate risk. |
| **Low Risk (L)** | There is a probability of up to **25%** that assumptions may fail to hold or materialize, and/or the project may face only low risks. |