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PROJECT PROGRESS REPORT

United Nations Development Programme
Kazakhstan
De-Risking Renewable Energy Investment



Adambek Nurzhan

Project Coordinator

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Reporting Period	February 2018 – August 2024
Donor	GEF
Country	Kazakhstan
Project Title	De-Risking Renewable Energy Investment
Project ID (Quantum Award ID) Outputs (Quantum Project ID and Description) Strategic Plan and/or CPD Outcomes	00101058 Contributing Outcome (CPD): By 2025, all people in Kazakhstan, especially the most vulnerable, will benefit from increased resilience to climate change, sustainable environmental management and clean energy, and sustainable rural and urban development
Implementing Partner(s)	Ministry of Energy of the Republic of Kazakhstan
Project Start Date	19 February 2018
Project End Date	19 August 2024
Total Budget	USD 4,610,000

Revenue received	• Regular USD
	• Other
	  ○ GEF USD 4,510,000
	  ○ UNDP USD 100,000
	• Total USD 4,610,000

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I. Executive summary

The Project achieved measures to de-risk renewable energy investments by piloting site-specific auctions for starting RE project investments and green bond issuances for financing small and large-scale RE projects, increasing capacities of testing laboratories personnel for RE devices, supporting the GoK on amendments to the Law on Support of RES that introduces the concept of "small-scale renewable energy facilities" and “net consumers”, building capacities of relevant stakeholders to conduct Project-developed M&V methodologies, and contributing to greater involvement and participation of women in RES sector.

Important results were also achieved in the context of promotion of sound social and environmental safeguards (SES). The SES methodology was successfully introduced and adopted within the UNDP-DAMU joint financial support program. The SES risk log was integrated as an integral component of the banking loan agreements associated with renewables projects supported.

II. Background

The objective of the project is to encourage private sector investment in renewable energy in Kazakhstan to achieve the objectives of the “Kazakhstan 2030” and “Kazakhstan 2050” strategies for renewable energy.

The project targets both large-scale and small-scale renewable energy sources. The ultimate goal of this project is to achieve the transformation of the energy market in Kazakhstan through a significant increase in the scale of the use of renewable energy sources in the field of electricity generation, from 0.77% to 10% - the share of RES by 2030, which is a 10-fold increase in electricity generation based on RES with the assistance of the project.

In terms of large-scale renewable energy sources, the project will help promote Kazakhstan as a prime target for foreign investment. Technologies will include wind power and photovoltaic solar power (PV).

For small-scale renewable energy sources, the project will stimulate investment in "Renewable energy sources for Urban Life", small-scale renewable energy sources for grid systems, intended for urban population and enterprises; and in RES for Rural Life, small-scale renewable energy sources for both grid and off-grid systems for farms and rural SMEs. Technologies may include solar PV (on rooftops), solar water heating and small-scale wind energy.

III. Progress Review

Fill in the table with project indicators data:

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Expected outputs	Output indicators	Data source	Baseline		Value for the previous year if different from baseline	Target achieved
			Value	Year		
Appropriate policies, programmes and regulations are in place to reduce investors' risks, scale-up investment and enable the achievement of 2030 RES target	***Capacity of the Government to design and implement policy initiatives enabling development of renewable energy markets***	*PIR*	The Government has limited capacity to deliver renewable energy deriskin g strategies	2018	25 policy – makers trained	28+ policymakers trained
	Reduction in DREI aggregate risk score across 9 DREI risk categories	*PIR*	Aggrega te DREI risk score 32 out of 45 (72%)	2016	DREI cumulative risk score 30 out of 45 (66%)	Aggregate DREI risk score 22.5 out of 45 (56%)

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Appropriate policies, programs and regulations have been developed and implemented for grid and off-grid small renewable energy sources	***Degree of support for the development of small renewable energy sources in policy, planning and regulation***	*PIR*	1 – Virtually no policy or strategy for small-scale climate change is in place	2018	*Solid policy and regulatory framework developed with financial/market/incentive mechanisms*	*Level 8 - Strong policy and regulatory frameworks designed with financial / market / incentive based mechanisms*
	Knowledge of small-scale applications in rural and urban areas	*PIR*	N/A		*At least 25% of women and 25% of men in the target stakeholder groups understand the benefits and risks of renewable energy and support their development.*	*31.2% of all respondents definitely support and 43.5% mainly support the idea that humanity must reach 100% energy coming from renewable sources; 29.5%/45.1% definitely/mainly support more active use of renewables among population today*

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Appropriate financial instruments created for pilot investments in small-scale rural and urban renewables	***No. of new DREI project subsidy applications under the enhanced FSM***	*PIR*	Small-scale developments are very rare and face a number of financial barriers	2018	*0*	*24*
	Total combined capacity of supported (launched) DREI projects				*2 MW*	*12.137 MW launched*

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	Total cumulative amount of subsidy commitments (to completed verified projects) and payments to approved projects and related Damu commission, including green bonds coupon rate subsidy				*USD 0.1 mln*	*USD 1.9*
	% of projects with the GHG emission reductions from FSM-assisted DREI projects verified				*0%*	*100%*

Outcome 1: Appropriate policies, programmes and regulations are in place to reduce investors' risks, scale-up investment and enable the achievement of 2030 RES target

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Capacity of the Government to design and implement policy initiatives enabling development of renewable energy markets

End of project target is met: knowledge gaps were identified; 27 policy-makers trained, a capacity building plan was implemented:

Cumulative progress since project start:

- 3 study tours to Netherlands, Finland and Denmark were organized for policy makers;
- to fill the knowledge gaps identified at an early stage of site-specific auctions preparation and to improve competitive environment 7 regional workshops (2018) were organized to raise awareness and clarify the procedures of RE auctions in six regions of Kazakhstan. Over 70 potential investors and representatives of municipal authorities participated in the workshops with the ME, RE financial settlement center, UNDP and USAID;
- 7 workshops in three regions of Kazakhstan were organized providing an opportunity for more than 200 potential investors, representatives of state bodies to discuss and clarify the rules for renewable energy auctions, and 2 webinars on RES auctions were held in 2019;
- participation and seminars at events - 2 RES summits in 2019, a seminar at Financial Settlement Center of Renewable Energy LLP, participation in Power Expo Kazakhstan, etc;
- a few webinars were organized with DAMU Foundation and other stakeholders, as described in the Outcome indicator 2.2;
- to respond to new challenges after the pandemic started, the Project team organized a webinar to present the regulatory changes to support investors and developers who signed PPAs with the Financial Settlement Center, but could not deliver on time due to the COVID-19 for over 170 participants (investors and operators) and representatives of the ME, Solar Power Association, Kazakhinvest and Financial Settlement Center;
- 2020 autumn round of auctions demonstrated a need in awareness raising, clarifications of the new procedures and legal amendments to potential investors. 6 workshops were organized online for over 300 potential investors (45% of them women), and state institutions representatives of to clarify the important issues (e.g. changes related to COVID-19);
- since June 2020, 2 videos promoting site specific renewable energy auctions (auctions with the documentation) were developed. The content was handed over to the Financial Settlement Center;
- several meetings with the Financial Settlement Centre representatives were held to build capacity for the preparation of more site specific RE auctions;
- a roadmap concept was prepared for creating training and retraining system for personnel for renewable energy projects, including 3-level structure of RES-related education, standards and qualification requirements. The concept was offered to the stakeholders to discuss (Evidence 1.5 Report roadmap);
- an expert (Dr. Joël Ruet) completed work on analyzing the site-specific auction scheme, the way it is realized in Kazakhstan. This included both international best practice research, a critical examination of the RE auctions in Kazakhstan, and recommendations to refine methodology for conducting renewable energy auctions in Kazakhstan; the work was completed in the beginning of 2021 and forwarded to the

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ME, in response to their request for expert advice regarding the auctions and possibilities of direct contracts with investors (Evidence 1.6 Report site-specific auction scheme in Kazakhstan);
- evaluation of the completed RES auctions and methodology fine-tuning for the RES auctions in Kazakhstan (filling gaps, e.g. methodology for correcting inadequate price limits, preventing incidents and adding features to make the bidding more secure, comfortable and simplify it) (Evidence 1.7 – Report on renewable energy auctions);
- thermal and electric energy market analysis to identify direct and hidden subsidies (Evidence 1.8 Analysis of direct and indirect subsidies in thermal and electric energy market).
- recommendations were developed to create conditions for the development of bilateral contracts for the purchase of electric energy from RES (Evidence 1.9 Recommendations for the bilateral power purchase contracts development from RES).
In the current reporting period, the following activities were executed:
- In October 2023, workshop was held for representatives of energy sector organizations aimed at empowering women in the sector of renewable energy sources. As a part of the workshop, an analytical report on the gender balance in the renewable energy sector in Kazakhstan was presented, and an action plan of the women's network in the renewable energy sector was discussed, which will provide an opportunity for women to advocate gender-oriented goals in the field of clean energy. Based on the analysis of the gender balance in the renewable energy sector, recommendations were developed aimed at creating favorable conditions for the active participation of women. Key proposals include collecting data and conducting research to analyze employment problems in the renewable energy sector, including at the household level; providing special scholarships for women studying technical specialties in the field of renewable energy; creating partnerships between educational institutions and industry representatives to support women; as well as strengthening public policy with a gender perspective.
- As per request of the Ministry of Energy, legislative support was provided for the development of renewable energy sources, including the development of legislative provisions in terms of bilateral agreements, multilateral agreements. Comparative table has been developed and currently is being discussed with the Ministry and other stakeholders, including association of RES QazaqGreen, and Kazakhstan Electric Power Association.
- As per request of Ministry the comprehensive study on energy storage market has been conducted. The current RES development causes imbalance into the grid, therefore there is a need to assess the needs for the energy storage systems in Kazakhstan, including the sources and markets for return on investment (balancing market/wholesale market, etc.).

Reduction in DREI aggregate risk score across 9 DREI risk categories
End of project target was reached/exceeded: in 2024 the new survey was implemented (with the same methodology), the result for the compatible list of 9 risks was 22.5 out of 45 (Evidence 1.28 Report Risks Scoring Survey (2024).
The most important achievement is that the RES site-specific auctions, launched with the Project support in 2019, became institutionally owned , organized by Kazakhstan Electricity Grid Operating Company (KEGOC) (Evidence 1.10 Kegoc website), no more assistance is required from the UNDP team;

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the auctions and the PPAs signed provide certainty to their winners regarding their future business prospects (revenue guarantees), the banks and IFIs are actively working with the auctions winners to fund large-scale RE projects. This is a clear case of successful de-risking renewable energy investments.
In 2022, the roadmap for organizing a system of advanced training and improving the educational process was developed, establishing a comprehensive system for training, advanced training and retraining of personnel in the renewable energy sector. The roadmap also includes initiatives to enhance and improve professional opportunities for women. (Evidence 1.5 Report roadmap)
In 2023, as a part of its inputs to Kazakhstan institutional development to reduce the "hardware risk" of investing in renewable energy sources, the DREI Project organized expert work on increasing the competence of employees of renewable energy devices testing laboratories, organizing and conducting technical trainings with testing laboratories, studies of the test methods, discussing procedures for testing renewable energy technologies and developing an information case on compliance with technical characteristics and their impact on work efficiency components of renewable energy technologies, and held webinars covering the technical risks reduction for the stakeholders (Evidence 1.11 Report on trainings for RES testing laboratories).
- "Gender balance in the sector of renewable energy in Kazakhstan: status, issues and solutions" by Mr. Roman Vakulchuk (Evidence 1.12 Gender balance in RES report).
In June 2024, with support from the Ministry of Culture and Information of the Republic of Kazakhstan, the project organized a training on Enhancing the Quality of Legal Expertise Through a Gender Lens: From Theory to Practice. The training brought together women members of Parliament representatives of state bodies and NGOs to deepen their understanding and skills in applying gender expertise in legislation governing the area of just energy transition and digital transformation. More than 40 participants went through different international practices and case studies of gender mainstreaming in the legislative process (Evidence 1.13 Booklet Gender Mainstreaming for MPs).

Outcome 2: Appropriate policies, programmes and capacities are in place to reduce risk and attract investment in small-scale (on-grid and off-grid) renewables

Degree of support for small-scale renewable energy development in policy, planning and regulations

End of project target is achieved: level 8 - Strong policy and regulatory frameworks designed with financial / market / incentive-based mechanisms
- The project was actively involved in discussions of the new law on electric power market (administrative reform law) discussions organized by the QazaqGreen association, and the project employed the expert (Mr. Arseniy Katerusha) to draft the regulatory changes initiatives and organize discussions with the stakeholders. The focus of attention in this work is amendments to the Law on the Support of RES (as well as the Law on the Electric Power Industry, the Entrepreneurial and Tax Codes in case of amendments of these legislative acts), as relevant to regulatory support for the development of small-scale RES projects, including discussions with the Ministry of Energy and relevant committees in the Parliament of the Republic of Kazakhstan / RES associations, the electric power industry and other stakeholder communities.

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In 2022, the project continued legislation improvement processes through the Parliament through the working group within the committee on ecology. More than 10 working groups were held. In April 2024, the law was adopted by the Mazhilis of the Parliament.
On June 19, 2024, the Head of State of Kazakhstan signed the Law on amendments to several legislative acts aimed at supporting the development of renewable energy sources (RES) and the power industry. The law introduces the concept of "small-scale renewable energy facilities" defined as technical installations with a capacity not exceeding 200 kilowatts, which generate electrical and/or thermal energy using RES. Owners of such small-scale RES installations will continue to have the right to utilize the electricity and/or thermal energy produced for their own needs, as well as to sell surplus electricity to energy supply organizations. Surplus electricity will be purchased by the energy supply organizations at a maximum price, set without differentiation between consumer groups, established by the Committee on Regulation of Natural Monopolies (Evidence 1.14 Law on Support of RES (with amendments, dated 19.06).
To ensure guaranteed purchase of electricity generated by small-scale RES installations and to eliminate bureaucratic barriers to grid access, energy supply organizations are obligated to enter into mandatory electricity purchase agreements. Additionally, energy transmission organizations must ensure unrestricted access to their grids.
In efforts to increase the country's hydropower potential, the law permits small hydropower plants (SHP), with a total capacity not exceeding 10 MW, commissioned before July 1, 2023, to sell electricity directly to energy supply organizations without an intermediary purchaser. Electricity generated by SHP will be prioritized for purchase by energy supply organizations at a maximum tariff set by the Ministry of Energy, subject to periodic reconfirmation every 7 years.
Furthermore, the law introduces financing mechanisms for the construction, reconstruction, and modernization of regional electricity grids owned by municipal entities, funded by budgetary resources. In that way, the law aims to foster the development of renewable energy, particularly small-scale installations, enhance regulatory support for hydropower projects, and facilitate investment in regional electricity grid infrastructure. It sets clear guidelines for tariff determination, grid access, and financing mechanisms.
To provide alternative vision to the Government, in 2022 the Project prepared analysis of subsidies in the energy sector (coal-based), it is submitted to the Ministry of Energy; (Evidence 1.15 Summary analysis _direct and indirect subsidies)
In 2021-2022 the Project completed analysis of the development of small RES projects, focusing on the development of the MRV system for small RES projects, and 4 online seminars on the review of the regulatory framework and the existing MRV methodology, including small-scale renewable energy projects, were organized and delivered. (Evidence 1.16 Report online seminars).

Knowledge of small-scale applications in rural and urban areas
End-of-project target was achieved in the previous reporting period.
Sociological survey of the awareness of the population regarding the renewable energy sources" by Talap Applied Research Centre (Evidence 1.17 Sociological survey of the awareness of RES) was completed in the 2nd half of 2022: 31.2% of all respondents definitely support and 43.5% mainly

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support the idea that humanity must reach 100% energy coming from renewable sources; 29.5%/45.1% definitely/mainly support more active use of renewables among population today. Same figures for women are a little lower than the aggregate figures for all respondents: 30.6%/43.3% and 29.0%/44.6%. The survey also detailed the understanding of the risks, advantages and barriers for the wider use of the RE. The survey covered all regions of Kazakhstan, it was balanced by age, gender, education, place of living and social status, and covered 2,546 people.

The project aimed at promoting renewable energy sources (RES) in Kazakhstan has implemented a comprehensive strategy to raise awareness and support among various stakeholders. Key activities included media campaigns, communication strategies tailored to gender perspectives and audience needs, and extensive training initiatives.

Throughout 2022 and during the reporting period, the project conducted numerous regional trainings across Kazakhstan. Initially in 2022, four trainings were held in Turkestan, Petropavlovsk, Uralsk, and Aktobe. Subsequently, an additional 12 trainings were organized in various regions such as Karagandy, Pavlodar, Kokshetau, Taraz, and others. These sessions collectively engaged over 700 participants, with 46% of them being women. The trainings focused on building capacity among representatives from second-tier banks, small and medium-sized businesses to implement small-scale renewable energy projects (Evidence 1.18 Report offline trainings and seminars).

Previously, the project undertook online seminars on regulatory frameworks, MRV (measurement, reporting, verification) methodologies, and specific consultations aimed at SMEs and farmers. Notably, efforts were made to empower women in the energy sector through dedicated seminars. The project also developed informational materials such as step-by-step investor guides and hosted seminars on standards and regulations for RE quality testing laboratories.

The practice of holding offline seminars for representatives of financial organizations, SMEs/business has been resumed in order to raise awareness on the renewable energy sources, including the possibility of using them for their own needs, as well as existing support mechanisms within the framework of the Project. Materials were prepared in Kazakh, English and Russian languages: a specific format of information presentation was selected for each information occasion: an article, posts, a story with a hero, illustrations, infographics, short notes, etc.

The work was carried out to increase awareness of target audiences about renewable energy technologies, reduce investment risks, as well as inform about existing financial support mechanisms. An infographic has been developed on three programs of financial support for SMEs, concessional financing.

Printed versions were distributed at offline events: including the Astana International Forum, the 3rd Almaty Energy Forum, the Energy Week of Central Asia and Mongolia 2023, as well as meetings with representatives of the banking sector and SMEs, etc.

A publication has been prepared (report on gender balance in the renewable energy sector), which was verified by RBEC for addition to the knowledge library on the official website of UNDP in Kazakhstan and published in the "Publications" section.

Technical trainings were conducted with testing laboratories on working with previously developed methods for testing renewable energy technologies:

- testing of solar photovoltaic panels (without limitation on the unit power of one panel);

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- testing of wind turbines, including turbine components (up to 1 MW);
- testing of solar collectors for hot water supply;
- boilers/boilers on solid biomass, bales of pressed straw, with a unit capacity of up to 1 MW.

The trainings were conducted in hybrid format offline/online in cooperation with the Technical Committee for Standardization No. 117 "Renewable Energy Sources and Alternative Energy". The participants of the trainings were specialists from testing laboratories and representatives of companies in the field of renewable energy (Evidence 1.11 Report on trainings for RES testing laboratories).
To raise awareness, during the reporting period, field and online seminars, round tables were held for SMEs, representatives of banks, MFIs, the DAMU Foundation, and other interested parties. More than 14 offline and online seminars were held with second-tier banks, business associations, 3 panel sessions and roundtables and high-level events were held.
In December 2021 information package was finalized as a step-by-step guide for investors in the small-scale RE projects in Kazakhstan; (Evidence 1.19 info package).

Outcome 3: Sustainable business models and financial mechanisms to support their implementation in place for investment in small-scale urban and rural RES solutions

Developed financial and business models for small-scale RES in urban and rural sectors

End of project target is met - standard contracts / agreements were prepared to facilitate scale-up. The project has achieved significant milestones through targeted initiatives and research efforts. Key achievements include the development and adaptation of business and financial models tailored for testing in pilot RES projects across key market sectors in cooperation with Damu Fund. These models have been crucial in assessing the viability and scalability of small-scale renewable energy projects. As part of the pilot phase, the standard contracts/agreements were prepared in the form of standard Agreement on subsidizing part of the main loan/micro-loan for implementation of RES projects. This agreement includes key concepts and conditions for the compliance of the project to the requirements of financial mechanism programme (including the principle of additionality). This standard agreement also contains information on the identified social and environmental risks, probability and their impact, as well as information on the mitigation and preventive measures to handle those risks (Evidence 1.20 Standard subsidy agreement).
In the last and present reporting period (2022-2024), the project successfully updated its business and financial models to incorporate a new financial support mechanism. This mechanism includes partial compensation of loan principals, aimed at enhancing the support level for renewable energy projects (Evidence 1.21 FSM Rules for the support of RES projects).
Previously, the project provided extensive assistance to businesses, particularly in preparing business plans and conducting financial modeling for small-scale RES projects. This included the development of prototype MS Excel models specifically designed to assist small businesses applying for financial support, such as projects involving solar PV panels or solar heating.
Research initiatives have also been pivotal. In 2021, a comprehensive study was conducted on "net consumers," small-scale renewable power generators under relevant legislation, yielding

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recommendations to enhance their integration into the energy grid. Additionally, the project proposed and gained approval for a concept supporting small-scale RE projects from the Ministry of Energy in 2021 (Evidence 1.22 - Report net consumers).
Further research efforts in 2022 analyzed the potential of renewable energy technologies in diverse applications, including heat supply, cooling, hot water supply, and their utilization in agriculture, particularly focusing on biomass. These analyses were instrumental in understanding geographical resource potentials and optimizing renewable energy utilization in agricultural setting s (Evidence 1.24 - Report renewable energy technologies; Evidence 1.25 Report RES in agriculture).
Moreover, the project conducted a review of commercial banks' practices regarding RE devices as collaterals, addressing funding risks and exploring potential methodologies for government-backed leasing, aiming to stimulate investment in renewable energy infrastructure (Evidence 1.23 -Report RE devices as collaterals).

Appropriate financial instruments created for pilot investments in small-scale rural and urban renewables

End of project target is achieved.

The FSM had been under independent review since September 2020. In October 2022 it was relaunched. By August 2023, the business financial modelling resulted in adaptive change of the initial support from 25% to 35%.
In the reporting period, in addition to 2MW solar power plant supported using green bonds instrument and 2 small-scale projects supported in the previous reporting period, 15 small-scale RES projects were supported so far. 6 more projects are expected to be commissioned by July 19, 2024 (Evidence 1.4 Monitoring visit reports).
Besides, enabling regulatory decisions and institutional changes took place, supported by the project: green taxonomy was adopted, which created a basis for green bonds as a funding instrument; pilot issuance of green bonds supported by project demonstrated viability and attractiveness of this form of fundraising. After the pilot issuance of green bonds, a number of followers joined the market (Evidence – 1.26 List of green bonds issued in Kazakhstan). Also, the project is currently supporting the first of its kind case in the whole Central Asia of debut municipal bonds issuance undertaken by the municipality of Almaty with the expected issuance amount of more than 1 billion USD for 20 strategic green projects in the field of sustainable transport, energy and infrastructure.
An important aspect of the green investments is monitoring and verification: this is a feature that makes such investment green, otherwise it is impossible to validate the proper use of funds. The project developed related methodologies and transferred them to the broader market: capacity building activities, mentioned above (Component 2), helped the deployment of financial instruments, educating intermediaries and direct beneficiaries.
Also in the reporting period, jointly with UNDP-GEF NAMA project, the project has conducted specialized monitoring and evaluation training course (M&E) targeted for the representatives of NGOs, governmental agencies and associations with an emphasis on renewable energy and energy efficiency.

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The training was aimed and providing all the stakeholders with knowledge and skills of monitoring and evaluation of the projects to improve transparency, effectiveness and credibility for such projects and strengthening civil society control over the RES support programs (Evidence 1.27 M&E training for NGOs).

Investment mobilized to support small-scale projects

End of project target is achieved. 18 RES projects were launched and verified with the total installed capacity of 12.137 MW (using business / financial models from outcomes 3.1 and 3.2 above). 6 more projects with installed capacity of 1.992 MW will be verified by July 19, 2024 (Evidence 1.4 Monitoring visit reports (commissioning of the projects).
The end of project target is met in terms of installed capacity of the projects and diversification of technologies supported. Most supported projects are solar PV. The project also supported several different types of biomass-based boilers and one installation of heat pumps.

IV. Project Risks and Issues

a. Updated project risks and actions

Project Risk 1: About 15 RES projects do not get funding in the amount of 1.65 mln USD before July 2024 Type: Financial & Operational
Actions taken: Risk is under control of the project to a large extent: it is caused by lack of information, which has been minimized by the following prevention measures:
- trainings of the business representatives in attracting commercial financing were held in the reporting period;
- new FSM application submissions were supported by a series of seminars and individual consultations with the applicants;
- meetings and seminars were held with commercial banks within the reporting period on the identification of existing applications and projects in the field of renewable energy.

Project Risk 2: Loss of political support: regulatory initiatives of project (amendments of regulatory changes proposed) are not adopted till August 2024. Type: Political
Actions taken: Project team was seeking support by proposing changes via the working group (ME and MPs)) in the implementation of regulatory initiatives. Dialogue with political leaders, mazhilismen. The project is backed by the Department of Energy, which gives the best political support for the project's goals. The project maintained a dialogue with representatives of the legislature (Mazhilis).

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Project Risk 3: Economic and investment slow-down during the project implementation period until August 2024 reduces the number of applications for loans and project support, the number of RES investments may be less than 5. Type: Financial & Operational
Actions taken: Risk is under control of the project to a large extent: it is caused by lack of information, which was provided by the following Prevention measures:
- information campaign to attract business representatives (14 webinars in 2023);
- supporting about 10 applications submission in 2023 in a series of seminars and consultations to prevent drop-outs;

Project Risk 4: Under certain conditions (appreciation of tenge above the rate to the date when each support package is approved) the project may lack funds to cover its liabilities: the project budget is in US dollars while the project liabilities are in local currency. Type: Financial
Actions taken: Risk is under control of the project: it is caused by factor which were structurally eliminated:

- *Reallocation of the risk to the applicants: capping the liabilities to the available funds in US dollars for each supported project to the date when liability had arisen (decision of the Credit Committee);*

Risk is fully reallocated – on date of payment the payment amount cannot get beyond the amount in USD budgeted/reserved for each supported project

b. Updated project issues and actions

Project Issue 1: During the project implementation in 2023-2024, the project team faced a number of barriers, including the risk of lack of interest and co-financing of projects from the private sector. Due to the unstable geopolitical situation, increased commercial interest rates of financial organizations for debt financing, the risk of low interest for financial support programme has materialized in 2023
Actions taken: The project team has taken a number of mitigation measures, including increase in the amount of financial support, as well as an ongoing awareness-raising campaign and trainings for structuring financial models of such projects.

V. Gender Related Activities

This section should capture project's results on gender equality and/or gender mainstreaming, or major activities that, under sound assumptions, will contribute to improvement in women's life.

In September 2023, an in-depth analysis of the gender balance in the renewable energy sector (RES) in Kazakhstan was published. It was presented during a dedicated workshop aimed at empowering women in the sector of renewable energy sources in October 2023. The workshop created a platform for key decision makers from government, Parliament and diplomatic corps to deep dive into the report's key findings and identify way forward. The event was also used to establish a robust network of women in the renewable energy sector. During the workshop the action plan of the women's network in the renewable energy sector was discussed, which will guide them to advocate for gender equality in the field of clean energy. Apart from this, in line with UNDP gender strategy, the project considered gender differentiated impacts of activities at the national level. One of the past reports on

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the assessing the potential of the agricultural sector of the Republic of Kazakhstan in terms of biomass production, served as an entry point for the developing and launching a new project on the production of biomass briquettes. The project was successfully implemented in 2023, aiming at helping women in rural areas with access to clean and affordable energy sources.
In June 2024, with support from the Ministry of Culture and Information of the Republic of Kazakhstan, the project organized a training on Enhancing the Quality of Legal Expertise Through a Gender Lens: From Theory to Practice. The training brought together women members of Parliament representatives of state bodies and NGOs to deepen their understanding and skills in applying gender expertise in legislation governing the area of just energy transition and digital transformation. More than 40 participants went through different international practices and case studies of gender mainstreaming in the legislative process (Evidence 1.13 Booklet Gender Mainstreaming for MPs).
For the past periods: Online webinars on the Empowerment of Women in Energy were conducted in December 2021. The webinars were attended by industry specialists from ministries and akimats of the Republic of Kazakhstan, representatives of companies in the energy sector, operators of renewable energy system facilities, and experts. The total number of participants was 89 people – women and men.
The OSCE held a regional workshop on Fostering Women's Participation in the Energy Sector in Central Asia, jointly with the Qazaq Green Renewable Energy Sources (RES) Association and with in-kind support from UNDP DREI Project in Astana, Kazakhstan, on 7-8 December. The event offered a platform for 30 representatives from energy ministries, industry, women's energy associations, and academia from Kazakhstan, Kyrgyzstan, Uzbekistan, and Tajikistan to discuss regional opportunities and challenges facing women in the energy sector. https://www.osce.org/oceea/534621
Also, as a part of an awareness-raising campaign, a number of offline trainings were conducted for representatives of second-tier banks and small and medium-sized businesses and other stakeholders. With more than 700 participants (46% of them women) the regional trainings were aimed at building capacity to implement small-scale renewable energy projects and to promote the active participation in FSM (Evidence 1.18 Report offline trainings and seminars).
Specifically for banks, leasing and microfinance companies, a series of 10 webinars were organized 11-20 October 2022 with a total number of 142 participants, including 66 women (Evidence 1.18 Report offline trainings and seminars).
Thus, the project is contributing to greater involvement and participation of women in RES sector by building their capacity and changing the traditional behavior. (Evidence 1.12 Gender Balance in RES report)

VI. Cross-Cutting Themes

If relevant, this section should capture project's results on incorporating different cross-cutting themes, such as Rights-based Approach to Programming, Environmental Sensitivity and Sustainability, Crisis Response, South-South and Triangular Cooperation etc.

The Project important side-effect is improvement of social conditions in the locations where it operates. The supported projects (4 solar power plants) created up to 16 permanent jobs for the employees of the solar power plants. One of the examples of businesses that was supported by DREI project's financial support mechanism programme is engaged in the agricultural sector - LLP BAQ Agro

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in Shymkent (greenhouse farming). The company received financial support for the construction of 100 kW solar power plant for internal needs. During the construction phase up to 4 temporary jobs were created. As a result of the RES project implementation, the company received growth potential for expanding agrobusiness and creating up to 5 new permanent jobs. Overall, in 2023 DREI FSM-supported projects provided an opportunity for creating up to 55 new permanent jobs in the various spheres.

As a part of the South-South co-operation, the UNDP-GEF Project shared its experience of applying the financial support mechanism developed and instruments tested. The enhanced FSM was presented at several international meeting and forums and the Project contributed to several publications, including Astana International Forum 2023 (09.06.2023), QazaqGreen Fest (26.05.2023), joints seminar for SMEs with GEFF EBRD (28.09.2023), POWER EXPO Almaty exhibition (17.10.2023), 3-rd Almaty Energy Forum (06.11.2023), 5-th International Energy Saving Forum (10.11.2023).

VII. Lessons Learned

The As a result of the terminal evaluation, the following key lessons were highlighted from the DREI project aimed at further enhancing of renewable energy solutions and promoting sustainable development.

Lesson #1: Loan Principal Subsidies Adjustment.

The DREI Project initially implemented a Financial Support Mechanism (FSM) that offered a 25% loan principal subsidy to small and medium enterprises (SMEs) for renewable energy (RE) investments. However, by the end of May 2023, only two applicants had utilized this FSM. A review led to an increase in the subsidy to 35%, which successfully met the greenhouse gas (GHG) emission reduction targets for the project.

Key Points:

- The 25% loan principal subsidy proved simpler to administer than the previous interest rate subsidy model used between 2019 and 2022.
- The increase to 35% was necessary to stimulate more interest and ensure the achievement of project goals.

Lesson #2: Effective Awareness-Raising Strategies

The project utilized a combination of workshops, seminars, webinars, and multimedia content to raise awareness about the DREI FSM and other project activities. This approach proved effective in reaching diverse stakeholder groups, including banks, SMEs, renewable energy personnel, donors, and women-entrepreneurs.

Key Points:

- Various platforms were used to engage stakeholders, including targeted regional seminars, participation in various thematic panel sessions, and high-level events.
- The approach was tailored to specific stakeholder needs and contexts, including on-line seminars during the COVID-19 pandemic for SMEs.
- Women’s groups represented 40-50% of all stakeholders, highlighting the project's commitment to gender equality.

Lesson #3: Biomass technologies operational and cost efficiency

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The project encountered challenges with biomass boilers: those using wood chips provided more heat but were more costly, whereas straw-fired boilers were cheaper but less efficient. The choice of boiler type was influenced by local availability of biomass resources and transportation costs.
Key Points:

- Wood chip boilers offer higher efficiency but come with higher costs, while straw-fired boilers are cheaper but less effective in heating.
- Effective market servicing for biomass boilers requires strategic targeting based on resource availability and cost-efficiency.

VIII. Conclusions and Way Forward

The project has achieved significant milestones since its launch. Notable achievements include the successful implementation of government policies and programs, aimed at addressing barriers and risks to investment in both small-scale and large-scale renewable energy projects. The first site-specific renewable energy auction approach (with all the documentation) and debut issuance of green bonds in Kazakhstan were both piloted under the project. Legislative amendments on the law on support of renewable energy sources aimed at facilitating small-scale renewable energy facilities, including net-consumers are being finalized and were adopted and signed by the President.

The DREI Project was instrumental in piloting various financial support mechanisms, stakeholder engagement, and technology-specific challenges. In terms of lessons learned, it can be concluded for the overall project duration that implementing a diverse range of renewable energy technologies is challenging. More than the half of the overall project pipeline included solar solutions as other technologies often require additional time for market acceptance and wider adoption. Financial mechanisms such as interest rate subsidies and loan principal subsidies are effective in engaging commercial banks and private-sector clients. However, it was observed that increasing subsidies alone may not easily alter entrenched technology preferences. Tailoring support mechanisms to specific technologies and stakeholder needs is crucial for achieving desired outcomes.

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IX. Financial Status

This section should provide overview of the project financial resources utilization for the entire project implementation period. The financial information should be based on Combined Delivery Reports.

The below tables should be completed:

Component	Account	Source of Funds	I=Approved Budget(as per ProDoc)	2018	2019	2020	2021	2022	2023	2024	Total	Diff
Component1	71200	GEF	262000		14710		17160	74.9			**31944.9**	230055.1
Component1	71300	GEF	194000	17816.59	13535.86	4026.29	15764.19	51935.04			**103077.97**	90922.03
Component1	71400	GEF	128000	4229.51	14422.61	8191.65	12939.74	8929.37			**48712.88**	79287.12
Component1	71600	GEF	48000	8980.72	14629.85	1227.89			10,333.45		**35171.91**	12828.09
Component1	72800	GEF	7000	6697.5							**6697.5**	302.5
Component1	74500	GEF	11000	188.5	124.54	30.34	301.07	51.2			**695.65**	10304.35
Component1	75700	GEF	50000	11873.14	10030.72	1606.57					**23510.43**	26489.57
Component1	72100	GEF		58220.99	179910.57	46186.09					**284317.65**	-284317.65
Component1	76100	GEF		-583.8	-146.43	-144.1	-26.21	2235.54	93.95		**1428.95**	-1428.95
TotalComponent1		**GEF**	**700000**	**107423.15**	**247217.72**	**61124.73**	**46138.79**	**63226.05**	**10,427.40**		**535557.84**	**164442.16**
Component2	71200	GEF	269000	7106	63751.4	34000					**104857.4**	164142.6
Component2	71300	GEF	164000		19991.44	13334.42	43543.97	21442.15	10,054.77		**108366.75**	55633.25
Component2	71400	GEF	157000	7309.68	18736.07	11365.45	12939.74	22016.14	12,509.69		**84876.77**	72123.23
Component2	71600	GEF	50000	6033.75	13083.49	1954.17		7277.78	8,364.00		**36713.19**	13286.81
Component2	72100	GEF	402500	6136.03	40404.03	211364.12	31625.08	81869.31	24,866.54		**396265.11**	6234.89
Component2	74500	GEF	7500	339.56	148.59	16.32	39.14	61.34	261.56		**866.51**	6633.49
Component2	75700	GEF	50000	3345.48	14819.92	1944.01		13467.26	8,247.46		**41824.13**	8175.87
Component2	73100	GEF				-516.55					**-516.55**	516.55
Component2	74200	GEF						6617.45	11,598.70		**18216.15**	-18216.15
Component2	76100	GEF		-28.56	-24.58	65.73	-43.57	518.67	195.6		**683.29**	-683.29
Component2	74596	GEF									**0**	0
TotalComponent2		**GEF**	**1100000**	**30241.94**	**170910.36**	**273527.67**	**88104.36**	**153270.1**	**76098.32**		**792152.75**	**307847.25**
Component2		TRAC						1463.42			**1463.42**	-1463.42
Component3	71200	GEF	192000		4946.61	40632.68	25583.96	30799.58	20,808.81		**122771.64**	69228.36
Component3	71300	GEF	99000		204.98	9931.42	25773.87	1761.25	19,844.07		**57515.59**	41484.41
Component3	71400	GEF	227000		16259.98	28801.26	42868.6	51946.43	18,262.08		**158138.35**	68861.65
Component3	71600	GEF	30000		5613.81	3686.1	183.12	14995.76	3,630.32		**28109.11**	1890.89
Component3	72100	GEF	1900000	19011.13	6168.37	360.28	68092.66	150413.46	158,584.90		**402630.8**	1497369.2
Component3	72400	GEF	7500		1506.75						**1506.75**	5993.25
Component3	72500	GEF	5000		3110.37						**3110.37**	1889.63

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Component3	74200	GEF	5400	1498.9	22887.8	2376.41					**26763.11**	-21363.11
Component3	74500	GEF	8600	31.04	1635.37	-1543.78	247.97	80.55	510.39		**961.54**	7638.46
Component3	75700	GEF	25500	720.9	31157.35	1012.25		2664.02	1,492.08		**37046.6**	-11546.6
Component3	71500	GEF			329.98	-329.98					**0**	0
Component3	76100	GEF		-0.79	36.8	-43.41	-430.24	-135.69	-1,931.65		**-2504.98**	2504.98
TotalComponent3		**GEF**	**2500000**	**21261.18**	**93858.17**	**84883.23**	**162319.94**	**252525.36**	**221,201.36**		**836049.24**	**1663950.76**
Component4	71400	GEF	51000	2340.37	3959.29	6885.31		7991.73	14,834.62		**36011.32**	14988.68
Component4	71600	GEF	15000	72.79	2618.01				770.39		**3461.19**	11538.81
Component4	72100	GEF	25000		17859.06	-3290.69	314.49	4243.03	101.79		**19227.68**	5772.32
Component4	72200	GEF	1500		1066.36				0		**1066.36**	433.64
Component4	72400	GEF	2500			300	1192.43	2123.6	2,744.44		**6360.47**	-3860.47
Component4	72500	GEF	2500			125.31			9.41		**134.72**	2365.28
Component4	73100	GEF	57000	6569.68		15887.08	5586.68	7860.21	9,451.39		**45355.04**	11644.96
Component4	74200	GEF	1100	20.32			682.23	45	896.43		**1643.98**	-543.98
Component4	74500	GEF	2500	6763.49	241.81	171.37	18.82	161.96	38.12		**7395.57**	-4895.57
Component4	74596	GEF	51900		19239.55	13187.69	10657.72	2106.57	0		**45191.53**	6708.47
Component4	71500	GEF			712.43				0		**712.43**	-712.43
Component4	74400	GEF					4.25		0		**4.25**	-4.25
Component4	76100	GEF		-1.12	-10.97	-22.81	-73.3	12.73	-80.59		**-176.06**	176.06
TotalComponent4		**GEF**	**210000**	**15765.53**	**45685.54**	**33243.26**	**18383.32**	**24544.83**	**28,766.00**		**166388.48**	**43611.52**
	77600	GEF			345.41	444.09					**789.5**	**-789.5**
	18000	GEF									**0**	**0**
	73100	GEF							-89.29			**0**
	76100	GEF							10.61			**0**
	71300	GEF							2645.89		**2645.89**	**-2645.89**
		GEF			**345.41**	**444.09**			**2567.21**		**3356.71**	**-3356.71**
TotalDREIProject			**4510000**	**174691.8**	**558017.2**	**453222.98**	**314946.41**	**493566.34**	**339,060.29**		**2333505.02**	**2176494.98**

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X. Annex

Insert the latest approved Annual Work Plan (AWP), relevant copies of media coverage, publications, etc. Specific reporting requirements from donors can also be inserted here.

Links to published materials:
Media monitoring and social media from 1.07.2023 to 1.07.2024:

- https://www.undp.org/kazakhstan/stories/path-equality-overcoming-gender-barriers-energy-sector-kazakhstan
- https://www.undp.org/kazakhstan/stories/transition-renewable-energy-sources-economic-benefits-entrepreneurs-kazakhstan
- https://www.undp.org/ru/kazakhstan/stories/novye-puti-rasshireniya-biznesa-istoriya-predprinimatelya-iz-turkestanskoy-oblasti
- https://www.undp.org/kazakhstan/press-releases/undp-conducts-training-gender-expertise-legislation-parliament-kazakhstan
- https://www.undp.org/kazakhstan/stories/circular-economy-action
- https://el.kz/ru/v-mezhdunarodnyy-forum-po-energosberezheniyu-prohodit-v-astane_96433/
- http://infozakon.kz/gov/24017-v-mezhdunarodnyy-forum-po-energosberezheniyu-prohodit-v-astane.html
- https://baq.kz/astanada-v-halyqaralyq-energiya-unemdeu-forumy-otedi-317071/
- https://optimism.kz/2023/11/10/
- https://dknews.kz/ru/ekonomika/307538-energosberezhenie-v-kazahstane-novye-vyzovy-i
- https://ru.sputnik.kz/20231110/zhilischnyy-sektor-kazakhstana-za-poslednie-pyat-let-uvelichil-energopotreblenie-na-tret-40083139.html
- https://ortcom.kz/ru/novosti/1699597854
- https://inform.kz/ru/v-mezhdunarodniy-forum-po-energosberezheniyu-prohodit-v-astane-86eb6a
- https://kazlenta.kz/73682-opredeleny-pobediteli-konkursa-detskih-risunkov-energosberezhenie-glazami-detey.html
- https://mir24.tv/news/16571077/kakie-energosberegausie-tehnologii-vnedraut-v-kazahstan
- http://kz.mir24.tv/news/148075

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- https://smart-smi.ru/single/2386149
- https://news.rambler.ru/tech/51750701-kakie-energosberegayuschie-tehnologii-vnedryayut-v-kazahstane/
- https://gurk.kz/news/opredeleny-pobediteli-konkursa-detskih-risunkov-e-nergosberezhenie-glazami-detej
- https://gurk.kz/news/v-mezhdunarodny-j-forum-po-e-nergosberezheniyu-prohodit-v-astane
- http://stan.kz/kbtu-dagi-almati-energetikalik-forumi-zhek-zhobalarina-390907/
- https://kbtu.edu.kz/ru/latest-news/3886-v-kbtu-proshel-tretij-almatinskij-energeticheskij-forum
- https://kaznpu.kz/ru/30985/news/
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- https://astanatimes.com/2023/10/undp-qazaq-green-association-establish-women-for-just-transition-network/
- https://qazaqgreen.com/news/kazakhstan/1504/
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- https://tengrinews.kz/article/buduschih-pokoleniy-buduschee-kazahstana-delayut-zelenyim-2471/?fbclid=IwZXh0bgNhZW0CMTEAAR2WDbh0NTXnzZ7NW6zfLL8N7nDHWB8XICYW0PxJV-FLLKCnkfC99l-_7iM_aem_IRT7v1XbGmTaGRc_EXmqhQ&sfnsn=wa
- https://kapital.kz/economic/126307/dekarbonizatsiya-ekonomiki-v-razy-prevysit-investitsii-v-neye-proon.html
- https://youtu.be/XYhImvHO-WI?si=9ejCqFvsx2yrrnPo
- https://24.kz/ru/news/social/item/654911-kazakhstantsam-mogut-razreshit-ustanavlivat-solnechnye-paneli-na-svoikh-domakh
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- https://t.me/eurasia1tvkz/27147
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- https://www.gov.kz/memleket/entities/mam/press/news/details/784649?lang=ru
- https://www.gov.kz/memleket/entities/mam/press/news/details/784649?lang=kk
- https://astana-akshamy.kz/genderlik-prizma-taqyrybyndaghy-treningke-shaqyrady/
- https://www.instagram.com/madeniet__aqparat__ministrligi/p/C7wPVk9i-ia/?img_index=1
- https://www.facebook.com/story.php/?story_fbid=122150554550147900&id=61554437004339&paipv=0&eav=AfbMOsI13leROYk8XiccWKHQnCSTzC65rDyFN1H0mVgiQq_puOwLdO3Q0D7ujbg_CsE&_rdr
- https://parlaminst-mtqb.qr-pib.kz/ru/p/33412
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- https://www.youtube.com/watch?v=zVfibXH-wqQ