



## 1. Project Data

**Project ID**  
P127486

**Project Name**  
SUST AGR & CL CH MITIGATION GEF

**Country**  
Uzbekistan

**Practice Area(Lead)**  
Agriculture

**L/C/TF Number(s)**  
TF-14400

**Closing Date (Original)**  
31-Dec-2016

**Total Project Cost (USD)**  
12,576,327.43

**Bank Approval Date**  
29-Jan-2013

**Closing Date (Actual)**  
31-Mar-2018

	<b>IBRD/IDA (USD)</b>	<b>Grants (USD)</b>
Original Commitment	12,699,000.00	12,699,000.00
Revised Commitment	12,699,000.00	12,576,327.43
Actual	12,576,327.43	12,576,327.43

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## 2. Project Objectives and Components

### a. Objectives

The Global Environmental Objective of the Project as articulated in the Project Appraisal Document (PAD, p. 14, para 18) was identical to that stated in the Global Environment Facility Trust Fund Grant Agreement (p. 5) and aimed to:

***"(i) promote the introduction of selected renewable energy and energy efficiency technologies of relevance to agri-businesses and farms; and (ii) strengthen capacity for improving degraded irrigated land and water conservation in the project area."***



It is worth noting that this project was closely implemented within a larger program focused on rural enterprise development through the IDA-financed Second Rural Enterprise Support Project (RESP II) and improving water management on irrigated agricultural lands through financing from the Swiss Development Cooperation (SDC). Both projects provided complementary financing and were planned in an integrated manner. The GEF project activities were sequenced to complement RESP II; and targeted the same beneficiary groups and geographic areas to generate additional global public goods and meet environmental goals.

**b. Were the project objectives/key associated outcome targets revised during implementation?**

Yes

**Did the Board approve the revised objectives/key associated outcome targets?**

No

**c. Will a split evaluation be undertaken?**

No

**d. Components**

The GEO was supported by the following three components:

**1. Promoting Renewable Energy Technologies (appraisal cost: US\$9.0 million, actual cost: US\$10.11 million).** This component would be implemented in close association with the RESP II Rural Enterprise Finance component throughout all eight regions covered by RESP II and its AF. It would include the following activities: (i) support the dissemination of knowledge and information on renewable energy technologies (including, inter alia, bio-gas digesters, solar water heaters, solar photovoltaics and biomass installations) by provision of goods, works and training for demonstration purposes in selected districts; and (ii) provision of support to beneficiaries for the carrying out of renewable energy subprojects. Activities were under two sub-components:

**1.1. Technology Demonstrations.** Activities under this sub-component would aim to demonstrate renewable energy technologies in small- and medium-sized (SME) agribusinesses and on small, medium and large farms in the eight RESP II project oblasts. It is estimated that the demonstrations would include approximately 20 small biogas digestors, 2 medium-sized and 1 large biogas digestors; 20 small solar home systems and 7 energy efficient on-farm irrigation water pumps. Except for the largest biogas demonstration, all demonstrations will receive a grant to cover 80% of costs and require a 20% loan/equity contribution from the applicant.

**1.2. Renewable Energy Technology Investments.** This sub-component would provide matching grant funds to scale up and expand the introduction of renewable energy (RE) technologies in small- and



medium-sized (SME) agribusinesses and on small, medium and large farms in the eight RESP II project oblasts. Typologies (e.g., technical parameters, inputs required), vendors and costs would be identified for several technologies, including bio-gas digesters, solar collectors, PV-powered applications, biomass, wind and micro-hydroelectric installations. Under the investment activities of the project, early beneficiaries would receive grant financing for 60% of the RE investment cost during years 1 and 2 of the project. During years 3 and 4, the grants would cover a maximum of 40% of the investment costs, with loans and/or equity required to cover the balance.

**2. Promoting Technologies and Practices to Mitigate Irrigated Land Degradation (appraisal cost: US\$1.09 million, actual cost: US\$0.79 million).** Resources from RESP II, the GEF project, and Swiss Development Corporation (SDC) (parallel grant financing \$4.6 million) would be pooled to support improved management of agricultural systems and water resources through the introduction of technologies and good practices for irrigated land. This component would include two sub-components:

**2.1. Farm-Level Land and Water Conservation Demonstrations.** Examples of technologies and management approaches for controlling and reversing irrigated land degradation that could be introduced in the seven sub-project areas include: (i) Farm-level (farmer/WUA command): Improved land-leveling techniques (laser) to improve on-field distribution uniformities; deep ripping to improve soil internal drainage and utilize soil-moisture storage; micro-irrigation of various degrees of sophistication; soil-quality enhancement (e.g., combined irrigation and fertigation techniques to improve fertilization efficiency); salinity coping measures; diversify cropping (water-saving varieties, salt-tolerant crops). (ii) On-farm level (tertiary canals within WUA): Irrigation re-scheduling (amend irrigation rotations to utilize Readily Available Moisture); pilot sub-surface drainage and vertical drainage; groundwater pumping to supplement surface irrigation; salinity mitigation of marginal land. (iii) Inter-farm level (main/secondary canals within BAIS): Alternative canal-lining options with geo-textiles; managed reuse of land drainage (marginal water).

**2.2. Farmer Field Schools.** This sub-component would provide training for farmers (including women farmers) and WUAs on using and scaling up the practices/technologies that prove successful. It would be implemented in close coordination with Component 3, in cooperation with the parallel financing of the SDC, which is already supporting the Farmer Field School (FFS) under RESP II. Farmers would receive hands-on training at the plots, and successful demonstrations would be compiled in technology packages for dissemination via the BAIS, AIS, and the Rural Training and Advisory Services component of RESP II.

**3. Advisory Services and Project Management (appraisal cost: US\$2.60 million, actual cost: US\$1.80 million).** This component would include the following activities: (1) provision of advisory services to, inter alia, (i) analyze and develop a regulatory framework aimed at supporting the adoption of renewable energy technologies; (ii) develop an improved system for monitoring carbon emissions produced by renewable energy subprojects; (iii) update the wind and solar maps of the Recipient's territory; and (iv) carry out financial feasibility studies on the adoption of renewable energy technologies; (2) provision of training and workshops to eligible farmers and students in selected districts on, inter alia: (i) the technical issues and financial and management aspects related to the adoption of renewable energy technologies; and (ii) the legislation and regulations (including regulations on health and safety issues) governing said technologies; (3) support to the Rural Restructuring Agency (RRA) to design training and workshops (including developing methodologies, curricula, tests, feedback forms and assessments of



training and workshops) on, inter alia, the impact of climate change on agribusinesses and the Recipient's legislation and regulations governing renewable energy technologies; and (4) provision of support for the technical and administrative management of the Project. This component would also support the RRA's additional costs associated with implementation of the GEF project, including: (i) the baseline, mid-term and end-of-project surveys; and (ii) supplemental RRA HQ staff who will provide technical backstopping, environmental and monitoring and evaluation (M&E) support for implementation of the GEF project activities.

#### e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

**Project Cost.** The total project cost was US\$12.69 million. According to the ICR (Annex 3) and the project's operational portal 100% of this amount was disbursed.

**Financing.** The project was financed through a GEF Trust Fund Grant worth US\$12.69 million. The full Grant amount was disbursed.

**Borrower Contribution.** The project was fully financed through the GEF Grant and no borrower contribution was expected.

**Dates.** The project was approved on January 29, 2013 and became effective fifteen months later on May 7, 2014. The Mid-Term Review was conducted on December 4, 2015. The PAD did not provide a specific date for MTR, but stated that it would be after 30 months of implementation (PAD, p. 66, Table 5.1). The project was expected to close on December 31, 2016, however, it closed fifteen months later on March 31, 2018. The project was restructured two times, both Level 2 restructuring. The first was on August 2, 2016, when the amount disbursed was US\$3.19 million, in order to extend the project closing date by 15 months from December 31, 2016 to March 31, 2018, to make up for the delays in effectiveness, and under Component 1, to increase of the grant financing proportion of the Renewable Energy Sub-projects from 40% to 70%. The financing proportion was revised due to the lack of RESP II IDA funds on the fourth year of project implementation, which were fully disbursed. The second restructuring was on September 28, 2017, when the amount disbursed was US\$10.25 million, in order to reallocate funds between the disbursement categories. Specifically, the GoU requested the reallocation of US\$1.1 million from Unallocated (Category 4) to Goods, works, consultants, services (Category 1) to allow additional demonstration of renewable energy and energy efficient technologies (Component 1) in line with the project objectives. The Results Framework was also amended (see section 9 for more details).

### 3. Relevance of Objectives

#### Rationale



Uzbekistan's average annual temperature has already increased by 0.29°C since 1951. There is also a significant increase in the frequency of record high temperatures observed during the last decade. Climate change is expected to further acute water scarcity where the flows in the Syr Darya and Amu Darya rivers basins might decrease by 25-50%. In 2008, Uzbekistan was the 35th largest carbon dioxide (CO<sub>2</sub>) emitter and the most carbon-intensive economy in the world: CO<sub>2</sub> emissions amounted to 124.9 million tons, and CO<sub>2</sub> emissions per unit of GDP were more than twice the level of Russia and three times the ECA average. The project supported activities were expected to contribute to mitigating and adapting to these water scarcity, land degradation and increased GHG emission risks.

At project appraisal, the GEO was in line with the strategic goals of the GEF-5 Strategy in the Climate Change Mitigation focal area, namely, promoting the use of renewable energy for the provision of rural energy services, and supporting new low-GHG emitting energy technologies. Objectives were also in line with the GEF's Objective 1 in the Land Degradation focal area to "maintain or improve flows of agro-ecosystem services to sustain livelihoods of local communities." The GEO was also in line with the Bank's 2012-2015 Country Partnership Strategy for Uzbekistan which called for increasing the efficiency of infrastructure; enhancing the economy's competitiveness; and diversifying the economy.

At project completion, the GEO continued to be in line with the Government's efforts to mitigate and adapt the sector to water scarcity, land degradation and increased GHG emissions as well as the country's priorities in agricultural and irrigation development. The GEO was also in line with the Bank's Country Partnership Framework (CPF-FY 16-20) for Uzbekistan which aimed to support development of the country's agricultural sector as "it remains the largest source of employment, especially of the poor and women, it offers large opportunities for productivity improvements, and it embodies many of Uzbekistan's most pressing environmental sustainability issues (CPF, p.13, para 35)." The GEO was aligned with the CPF's Focal Areas 1 and 2, Private Sector Growth and Job Creation and Agricultural Competitiveness. Finally, the GEO continued to be in line with GEF's strategy and goals mentioned above.

The statement of objectives was clear and focused; however, it lacked a connection to higher level objectives. Also, while there is clear alignment between the project's development objectives and the country - and World Bank strategies, the relevance of the objectives is pitched at a level that does not adequately reflect a potential solution to a development problem. A significant shortcoming is the lack of clarity in the GEO formulation around what outcomes would be achieved through "promoting the introduction of selected renewable energy and energy efficiency technologies" (which is at the ToC's input/activity level); and "strengthen capacity for improving degraded irrigated land and water conservation in the project area" (at the ToC's output level). Focusing on the promotion of introduction of new technology and strengthening the capacity for water management and conservation alone is not outcome focused and does not help in understanding what development results were expected as a consequence of the project. The causal chain between funding and outcomes was clear, albeit with most targets at output level, as PDO was at input/output level.

Based on the information above, relevance of objectives is rated Substantial.



## Rating

Substantial

### 4. Achievement of Objectives (Efficacy)

#### Objective 1

##### Objective

PDO: to promote the introduction of selected renewable energy and energy efficiency technologies of relevance to agri-businesses and farms.

##### Rationale

This objective aimed to promote Renewable Energy Technologies and advisory services through supporting Renewable Energy technology demonstrations; matching grants for renewable energy investments established; formulation of the regulatory framework to assist integration of renewable energy into the rural energy system; and increasing electricity generation capacity of renewable energy. These activities were expected to improve the use of selected renewable energy and energy efficiency technologies of relevance by agri-business & farms and reduce GHG emissions.

##### Outputs

- A total of 98 demonstration sites were created (exceeding the target of 55). Demonstration sites included: 52 sites with demonstration of technology of water lifting systems with use of solar photovoltaic station; 17 sites with demonstration of technology of energy efficient irrigation pumps; 5 sites with demonstration of technology of solar water-heating systems (collectors); 23 sites with demonstration of biogas installations with volumes of bioreactors of 6 m<sup>3</sup>- 20 units, and 60m<sup>3</sup>, 100 m<sup>3</sup> and 600 m<sup>3</sup> -one unit each. In addition to one site for the demonstration of a sprinkling irrigation system.
- 39 matching grants for the total amount of US\$8,215,294 were financed compared to a formally revised target of 37 and an original target of 2,370. The ICR (p. 48, para 16) attributed this significant difference to the significant increase in value of individual sub-projects because the demand by beneficiaries was for the more cost-efficient biogas and energy efficient pumps combined with the higher prices of the equipment packages than was assumed at appraisal. 58% of the matching grants funds went to financing biogas units followed by 19.9% for solar panels, 19% for solar powered water lifting systems, and lastly was energy efficient irrigation pumps at 2.7%. In a further communication (10/30/2018), the project team explained that small holders showed little interest in small biogas reactors because these reactors required at least four cows to be operational -a small holder on average owns one cow. In addition, the small biogas reactors cease to operate under extreme cold conditions.
- 286 workshops were held (18,873 attendants including: 17,481 men; 1,392 women) to inform/disseminate selected Renewable Energy technologies and publicize the Second Rural Enterprise Support Project credit line (exceeding the target of 256).





- 23,990 farmers (no target was given at appraisal), rural entrepreneurs and students were trained on the promotion of Renewable Energy (RE) and Energy Efficiency (EF) technologies
- A draft regulatory framework to assist integration of renewable energy into the rural energy system was prepared and pending approval by the Legislative branch of the Government. An international consultant was recruited under the project to analyze the existing regulatory framework. The consultant provided comments and contributed to the draft of this law on Renewable Energy. The comments and recommendations of the consultant to the draft law were discussed with all stakeholders and submitted to the Legislative Chamber of the Parliament.

## **Outcome**

The project demonstration sites and training on the promotion of Renewable Energy (RE) and Energy Efficiency (EF) technologies were both expected to increase awareness of RE options and the availability of equipment in each of the eight project regions. However, the ICR (p. 23, para 68) reported that the Results Framework lacked indicators to measure: the actual outcome of the workshops and training, the rate of adoption of demonstrated technologies by those beneficiaries that received training; and beneficiaries' satisfaction from the training.

The project funded renewable energy and energy efficiency investments in a number of sub-sectors of agriculture (greenhouses, orchards and vineyards, processing and packaging, meat and milk production, poultry production, storage/cold storage) through financing 39 sub-projects. These received US\$8.2 million of project funds and focused on the introduction of renewable energy technologies in small- and medium sized (SME) agribusinesses and small, medium- and large farms. It is worth noting that Tashkent and Samarqand regions received 55% and 25% of the project's funds, respectively. According to the ICR (p. 12, para 28) the project was demand driven and the population in these two regions were more familiar with renewable energy technologies compared to other regions.

The project investments tripled the number of functional biogas units from 11 at appraisal to 37 by completion. Based on the ICR's analysis, which is realistic, the 15 largest biogas units financed by the project would generate an estimated 19 Kilo-Watt (KW) hour of generation capacity per day. This is equivalent to 5,012 KW hour per year if utilized at their maximum capacity. If used at 50% capacity (due to limited volume of manure production or unfavorable weather conditions), generation capacity would drop to 3,421 KW hour per year. Both estimates exceed the PDO outcome indicator target value of 1,070 KW hour per year.

In terms of greenhouse gas reduction, the project was expected to exceed the PAD target of 3.3 million tons of Carbon Dioxide equivalent (tCO<sub>2</sub> eq) over the lifetime of the project investments. An independent scientific assessment at project completion found that when all installed equipment was in full operation, an estimated reduction of 1.98 million tons of CO<sub>2</sub> equivalent per year or 19.8 million over ten years or 39 million over 20 years was expected to be achieved. That said, IEG had not assessed the quality of the independent assessment and its methods.



Finally, the project contributed to the preparation of the draft law on renewable energy development. The ICR (p. 13, para 29) stated that "according to the Government, the law "On Renewable Energy Development" is expected to be adopted by end 2018."

Based on the above-mentioned information, outcome is rated substantial.

### **Rating**

Substantial

## **Objective 2**

### **Objective**

PDO: to strengthen capacity for improving degraded irrigated land and water conservation in the project area.

### **Rationale**

This objective aimed to strengthen capacity for improving degraded irrigated land and water conservation in the project area. This was expected to be achieved through supporting and financing improved water management and improved land management technologies. These activities were expected to strengthen capacity for improving degraded irrigated land and improve water conservation in the project areas; and reverse land degradation in irrigated lands under the project areas.

### **Outputs**

- 26,351 hectares of irrigated land had degradation reversed compared to an original target of 900 hectares. According to the ICR (p. 10, para 20) target was increased from 900 to 26,351 ha because it was difficult to decouple the activities supported by this GEF project from the activities implemented in parallel by the Swiss Development Corporation under the parent Second Rural Enterprise Support Project.
- Through organizing 267 workshops (target: 256) that were attended by 18,495 participants (17,145 males and 1,350 females), the project contributed to building capacity of farmers through targeted training and through introduction of modern irrigation and land preparation techniques on 93 ha of demonstrations. Women participants were at 10% possibly because "project investments did not take place at household level as was initially planned by the project (ICR p. 19, para 52)."
- The project financed construction and installation works at seven demonstration sites (no target set at appraisal, but the idea was a demonstration site in each of the regions covered under the project) in





farms of seven project regions (Ulugnor of Andijan province, Yazyavan of Fergana province, Buka of Tashkent province, Bayaut of Syrdarya province, Pastdargom of Samarkand province, Mirishkor of Kashkadarya province and Alat of Bukhara province) in order to demonstrate methods of land and water resources conservation.

- In 2017 the project organized 7 irrigation focused trainings that focused on six topics: the use and expansion of modern methods and technologies of irrigation; the historical development of drip irrigation systems, features and advantages of their application in agriculture; drip irrigation systems and its components; operation of drip irrigation systems; safety measures in the operation of drip irrigation systems; procedure and rules for issuing grant funds; and compliance with Gender equality, as well as international conventions of ILO and national legislation on prevention of child and forced labor.
- 41.4 ha of laser levelling and deep reaping of selected plots, demonstration of modern techniques such as drip irrigation on 32.5 ha of land, including pumping from the gravity systems, pumping from wells and using solar panels for pumping; and hose reel sprinkler on 9 ha of land; other irrigation techniques applicable for gravity irrigation on about 10.45 ha of land.
- Improvements of existing irrigation canals, drainage networks and structures in demonstration plot areas included: construction of 4 cross regulators, 27 outlets, and cleaning and reshaping of about 1.3 km of on-farm systems.

## Outcome

The project was expected to strengthen capacity for improving degraded irrigated land and water conservation in the project area.

**Strengthening capacity for improving degraded land.** While the project supported a number of capacity building activities, the impact of these activities was not clear due to the lack of relevant indicators. Also, this outcome was partially achieved due to implementation delays and attribution issues. While the project met its target on reversing degradation on 26,351 hectares, this achievement according to the ICR (p. 15, para 34) was "considered partial due to challenges and delays in implementation, as well as the shared contribution to results by various financiers, which means achievements cannot be fully attributed to the GEF project."

**Strengthening capacity for improving water conservation in the project area.** The project supported capacity building activities and demonstrated various technologies to improve irrigation management. However, there was no indicators to assess actual outcomes of the workshops nor to measure the rate of adoption of demonstrated technologies by those beneficiaries that received training. Also, there was no indicator to gauge the satisfaction of beneficiaries from the training they received. There were also some shortcomings that negatively impacted achieving the desired outcome including: the rejection of technical solutions for the three demonstration greenhouses by the Rural Restructuring Agency, leaving only drip irrigation systems without considering required improvements in the existing poor greenhouses structures. Also, 7.4 ha planned for demonstration of furrow irrigation using syphons were excluded from the design due to the contractor's non-performance (ICR, p. 16, para 36).



In a further communication (10/30/2018), the project team explained that the contribution of the project was mainly through the provision of training and capacity building to irrigation specialists.

Based on the above mentioned information, outcome is rated modest due to attribution issues, implementation delays, and lack of relevant indicators to assess activities and impacts.

**Rating**  
Modest

## Rationale

Overall efficacy rating is substantial despite a modest rating for the outcome of the second objective. The project succeeded in promoting the introduction of selected renewable energy and energy efficiency technologies of relevance to agri-businesses and farms. It met or exceeded all targets under this objective. Shortcomings under the second objective stemmed mainly from implementation delays-some of which beyond the project's control, and attribution issues due to close implementation with other projects in the same area. Finally, the activities contributing to the first objective received 91% of funding at the appraisal stage and about 94% at completion.

**Overall Efficacy Rating**  
Substantial

## 5. Efficiency

### Economic and Financial Efficiency

#### *ex ante*

- At appraisal no detailed or comprehensive economic analysis was carried out for the project. That said, the PAD stated that the project was assessed to be a solid economic and financial investment based on the following:
  - A detailed economic and financial analysis done for the IDA/GEF funded Irrigation Development and Watershed Management Project showed an economic rate of return (ERR) of 14%.
  - The World Bank study "*Madagascar: The impact of public spending on perimeters productivity 1985-2004*" reported that past donor investments in the irrigation sector in Madagascar



have generated attractive economic returns, significantly improved country welfare, and contributed to poverty reduction.

- Likely returns to investments in irrigated rice development using simple farm models yield an ERR of around 25.9% over twenty years.

### **ex post**

- Financial rates of return for most individual grants were calculated. The average IRR across all sub-projects where data was available was 22%. The project targeted an internal minimum IRR benchmark between 15% and 20%, for which most sub-project exceeded. The analysis showed an average internal rate of return (IRR) of 27% for biogas sub-projects, 15% for solar panels, and 20% for water-lifting systems with Photo Voltaic solar energy.
- Assessment of cost effectiveness of the projects investments in sustainable energy technology and land degradation; calculation of financial rates of return for individual sub-project loans; and quantification net GHG emissions reductions generated by the project.
- **Cost Efficiency.** At completion, the cost per meter cube of bio-gas for project investments ranged between \$199/m<sup>3</sup> - \$981/m<sup>3</sup> compared to an appraisal estimate between \$335/m<sup>3</sup> - \$917/m<sup>3</sup>. Comparisons of cost effectiveness globally showed that the project was within norms for cost efficiency. Analysis of modern biogas facilities in Georgia show estimated cost new capital investment could be between \$390 - \$600 /m<sup>3</sup> of installed capacity while larger systems in China showed costs in excess of \$1,000/ m<sup>3</sup>.
- **Greenhouse Gas Emission Reduction Analysis.** Net reductions in greenhouse gas emissions were calculated under the project using detailed data collected from individual demonstration sites and sub-project loans to determine base (without project) emissions and estimated emissions with project investments. Reductions in emissions were calculated based on the actual operations of installed equipment over the project life – the period from 2014 up to the end of the first quarter of 2018. Analysis also took into account variations in operating capacity and days of operation for different production systems. The net present value of 20 years of emission reduction generated by the project ranges from \$177 – \$708 million depending on the price of carbon.
- There was no sensitivity analysis carried out to reflect the impact of different scenarios on the project investments.

### **Administrative and Institutional Efficiency**

The project was expected to close on December 31, 2016, however, it closed fifteen months later on March 31, 2018. The project suffered from implementation delays and low disbursements during the first three years of implementation. This contributed to late completion of many sub-projects (ICR, p. 18, para 49). Also, there were effectiveness delays stemming from lengthy countersigning procedures. Delays in project



implementation were expected to negatively impact the economic and financial efficiency. However, delays were not factored in the ex post EFA.

The project implementation experienced significant delays, and the actual impact of project investments under the second objective could not be fully assessed at completion due to attribution issues. The lack of a comprehensive ex-ante EFA made assessing efficiency difficult. It was not possible to compare the pre-project and post-project EFAs before concluding whether the project achieved its anticipated economic benefits or if the investments were justifiable and still relevant. Therefore, efficiency is rated modest.

### Efficiency Rating

Modest

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal		0	0 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	22.00	90.00 <input type="checkbox"/> Not Applicable

\* Refers to percent of total project cost for which ERR/FRR was calculated.

## 6. Outcome

Relevance of design is rated Substantial. Overall, efficacy is rated Substantial despite some shortcomings. The project succeeded in promoting selected renewable energy and energy efficiency technologies of relevance to agri-businesses and farms. These technologies included bio-gas reactors and photo-voltaic systems; both of which were expected to contribute to GHG reductions. However, the attribution of project activities towards the reversal of land degradation was difficult to verify due to close implementation with RESP II activities. Efficiency was rated Modest due to implementation delays and the lack of a comprehensive ex-ante EFA-hence, it was not possible to compare the pre-project and post-project EFAs before concluding whether the project achieved its anticipated economic benefits or if the investments were justifiable and still relevant.

Based on the above mentioned ratings, the overall outcome rating is Moderately Satisfactory.

### a. Outcome Rating

Moderately Satisfactory



## 7. Risk to Development Outcome

Risk to the development outcome is high.

- **Project related risk.** The high cost of technologies promoted by the project and the absence of grants/subsidies-post completion could limit the demand in rural areas. To encourage farmers and agribusiness to invest in these technologies, the Government could offer a subsidy or grant to partially cover the cost of these technologies.

## 8. Assessment of Bank Performance

### a. Quality-at-Entry

- The project provided incremental financing to a larger program that focused on rural enterprise development through the IDA financed Second Rural Enterprise Support Project (RESP II-P109126) and improving water management on irrigated agricultural lands through the Swiss Development Cooperation (SDC) financing. Both projects and the SDC provided complementary financing and were planned in an integrated manner.
- The GEO was in line with the Government's priorities in agricultural and irrigation development and supported the Government's efforts to mitigate and adapt the agricultural sector to water scarcity, land degradation and increased GHG emissions.
- The project activities were designed to be synchronized with activities under RESP II, which was expected to maximize the benefits and overall impact of both projects. Notable lessons reflected in the project design from other GEF funded projects included: establishing a favorable policy and regulatory regime is needed to provide conditions for successful renewable energy investments; and gradual phasing out of subsidies is important to prepare beneficiaries for a non-subsidized market regime.
- While design benefitted from a strong task team at preparation stage, it still suffered from notable shortcomings. These included: first, design failed to anticipate both the demand and financial leverage capacity of small-producers for matching grants. This resulted in overestimation of the expected number of matching grants at appraisal (2,370). These were not realized during implementation and only 39 larger sub-projects were approved. Second, design did not address possible attribution issues for the activities that contributed to the second objective-which later made assessment of outcome difficult at completion. Third, there were weaknesses regarding the M&E design (see section 10 a for more details).
- Nine risks were identified at appraisal, one was rated substantial, seven rated moderate and one was rated low. The PAD (Annex 4) included a detailed description of mitigation measures. The ICR did not comment on the adequacy of mitigation measures or whether the identified risks materialized during implementation.



- Based on the above information, Quality at Entry is rated Moderately Satisfactory.

### **Quality-at-Entry Rating**

Moderately Satisfactory

#### **b. Quality of supervision**

According to the ICR (p. 27 para 81) supervision was well staffed and had adequate funding. The project benefited from steady leadership since there was no turnover in team leadership or in members of the key team for a major part of the implementation period. The task team oversaw project implementation and provided appropriate advice and remedy actions to the government, implementing agency and Participating Financial Institutions. The Implementation Status and Results Reports (ISRs) reflected realistic ratings that reflected the performance of the project both in terms of achievement of development objectives and project implementation. The team worked proactively with the Practice and Country Management to address implementation delays. Safeguards and fiduciary compliances were closely monitored and the team emphasized the importance of maintaining a sound M&E system. The Mid-term review recommended a set of actions to be taken to ensure a successful completion of the project. However, the project team should have addressed M&E design weaknesses including the lack of a baseline survey. The project also would have benefitted from a more rigorous and analytical end-of-project impact assessment.

Based on the ratings of Quality at Entry and Supervision, the overall rating of Bank performance is rated as Moderately Satisfactory.

### **Quality of Supervision Rating**

Satisfactory

### **Overall Bank Performance Rating**

Moderately Satisfactory

## **9. M&E Design, Implementation, & Utilization**

### **a. M&E Design**

- The PAD did not include an explicit theory of change. Nonetheless, the ICR (p.8) included a clear theory of change that reflected the connection between project activities, outputs, expected outcomes and long-term outcomes.
- The project monitoring and evaluation (M&E) system was designed to function within the existing M&E system managed by the Rural Restructuring Agency to monitor the existing Second Rural Enterprise Support Project (RESP II).





- The Results Framework (RF) included five GEO outcome indicators: number of hectares of irrigated land where degradation has been reversed, renewable energy technology demonstrated in the project areas; generation capacity of renewable energy constructed; support formulation of the regulatory framework to assist integration of renewable energy into the rural energy system; and GHG emissions avoided by the project (in Tons CO<sub>2</sub> equivalent). These were directly linked to the GEO and measurable. However, as the ICR (p. 23, para 68) correctly pointed out, indicators lacked clear definitions (e.g., decrease of GHG emissions over the lifetime of the investment without specifying the timeframe). Also, there were large deviations between some of the original indicator targets at appraisal compared to the same targets at closing (e.g., number of hectares of irrigated land where degradation has been reversed).
- The RF included four intermediate outcome indicators. These were relevant and linked to different activities supported by the project. The RF could have benefitted from a set of intermediate indicators that measured beneficiaries' satisfaction from the training or the rate of adoption of demonstrated technologies by those beneficiaries that received training (ICR, p. 23, para 68).
- A notable design shortcoming was the lack of a baseline survey. This might be partially due to the fact that the GEF was complementary financing to most of on-going projects RESP II and Swiss Development Cooperation (SDC) financed activities, and results of these projects were used as baseline values for this project. That said, the presence of a baseline survey would have "allowed collection of a broader number of variables to capture any changes that could be attributed to the project in the enabling environment or behavior of beneficiaries and non-beneficiaries (ICR, p. 23, para 68)."

## **b. M&E Implementation**

- Implementation benefitted from hiring a full time M&E specialist in the RRA office in Tashkent (HQ) to plan and coordinate M&E activities. A management information system (MIS) was setup to track results and financial indicators.
- Activities under component 2 were monitored by a private consulting firm that provided monthly reports on progress on rehabilitation works to the Rural Restructuring Agency (RRA). These reports were validated through follow-up site visits.
- The Swiss Development Cooperation (SDC) undertook regular monitoring of activities related to Water Consumer Associations (WCA) and farmer capacity building and training and undertook surveys in 2012 and 2015 to assess achievements, gaps and lessons learned.
- An Impact Assessment of the project was undertaken shortly before the closing date to assess project progress and impacts related to the project activities. However, the project team explained that it was not a comprehensive assessment.
- **Revision of the Results Framework.** The project was restructured in September 2017 to adjust target values of one GEO indicator and one intermediate indicator. Specifically, the indicator measuring the number of hectares where degradation was reversed was significantly revised upwards from 900 hectares to 26,351 hectares; and the intermediate results indicator measuring investments in renewable energy in the agri-business sector was significantly revised downwards from 2,370 sub-projects to 37 sub-projects.



These were significant deviations from the appraisal targets; which points out to weakness in M&E design. That said, the ICR (p. 10, para 20) attributed the revision on the GEO outcome indicator to "taking into consideration outputs and outcomes from the activities implemented in parallel by the Swiss Development Corporation (SDC) under the parent RESP II, which were difficult to decouple from the activities supported by this GEF project." While the revision to the intermediate outcome indicator according to the ICR (p. 10 para 16) was due to a much higher increase in the actual value of sub-projects compared to appraisal. This increase stemmed from greater demand from the beneficiaries for biogas and energy efficient pumps capacity which were more costly investments combined higher prices of the equipment packages than was assumed at appraisal.

### **c. M&E Utilization**

- According to the ICR (p. 24, para 71) the M&E system provided important information and data to proactively manage the project, for example, to monitor the matching grants program, revise matching grants requirements and training materials to better meet beneficiary needs, as well as track progress on activities related to mitigation of irrigated land degradation.
- M&E findings informed the Bank team and the project management to undertake two project restructurings to address delays and low disbursement that occurred in the first three years of project implementation.
- However, the project could have benefitted from a more rigorous and analytical end-of-project impact assessment to fully capture the project's impacts. The ICR (p. 10, para 71) highlighted that while the impact assessment captured feedback of the grant recipients, it did not reflect feedback from other important project beneficiaries including Water Consumer Associations, Participating Financial Institutions, farmers and agribusinesses who attended project training courses and Farmer Field Schools workshops.

The overall rating of M&E quality of is Modest. M&E design had weaknesses as described above; and during implementation and two restructurings the project missed an opportunity to: carry out a baseline survey, introduce relevant indicators that could have better assessed quality and impact of training programs, and conduct a comprehensive end-of-project impact assessment.

### **M&E Quality Rating**

Modest

## **10. Other Issues**

### **a. Safeguards**

The Project was classified as Category B. It triggered one safeguard policy: Environmental Assessment OP/BP 4.01. An Environmental Management Framework (EMF) was the appropriate environmental



assessment and management tool for this project, since the specific sub-projects and sites are selected during implementation, not prior to appraisal (PAD, p. 36, para 90). As such, the Second Rural Enterprise Support Project (RESP-2) EMF was revised and updated to serve as a screening tool for this project. The updated EMF was disclosed in country by the Rural Restructuring Agency on 7 December 2011 and by the World Bank via InfoShop the same day. The revised and updated EMF included a screening checklist and relevant mitigating measures for the minor impacts that could occur as a result of the investments. The EMF served as a screening tool to assess the potential environmental impact of sub-projects, and to guide preparation of sub-project Environmental Management Plans (EMPs) for sub-projects that are assessed as environmental category B.

**Environmental Safeguards.** According to the ICR (p. 25, para 73) project supervision closely monitored compliance with environmental safeguards. Sub-project proposals were reviewed and were subject to environmental screening and assessment and relevant forms were filed among other documents required for approval. A total of 39 demonstration sub-projects among which 12 were of Category B and 27 of Category C were approved. Category C sub-projects were related to water lifting systems using solar panels technology; solar water heating collectors; and energy efficient irrigation pumps. The biogas sub-projects were of Category B. The ICR did not include an implicit statement of compliance, but stated that "environmental categorization was done adequately and was based on the sub-project business plans and on the Declaration of potential hazardous impacts approved by the State Ecological Expertise (ICR, p. 25, para 73)."

## **b. Fiduciary Compliance**

**Financial Management.** According to the ICR (p. 26, para 76) financial management and internal control arrangements were adequate. Financial monitoring reports/interim financial and audit reports were submitted on time. Auditors provided unqualified opinions in the audit reports including audit reports for FY 2017 and for 1Q 2018. The ICR (p. 26, para 76) reported that "financial management arrangements consistently assessed as "Satisfactory" throughout project implementation.

**Procurement.** The ICR (p. 26, para 77) did not report any procurement issues and reported that "procurement arrangements were rated Satisfactory."

## **c. Unintended impacts (Positive or Negative)**

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## **d. Other**

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## 11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Moderately Satisfactory	Moderately Satisfactory	---
Bank Performance	Moderately Satisfactory	Moderately Satisfactory	---
Quality of M&E	Modest	Modest	---
Quality of ICR		Substantial	---

## 12. Lessons

The ICR included four lessons. The following lesson is adopted from the ICR with some adaptation of language:

- **Lack of adequate assessment of the situation and needs of small farmers in project design may lead to lack of uptake as the content of the matching grants packages might not be relevant or adequate for the intended beneficiaries.** The project's experience emphasized the need to better understand the constraints faced by small farmers. These could include: access to credit, the minimum size of viable investments or access to knowledge about renewable energy or energy efficient technology. Although investments in biogas digestors were key to reduce carbon emissions, the project's experience revealed that these technologies require volume and scale to become efficient and cost-effective. The novelty of this type of investments and the requirement for volume and scale up were possibly another constraint for small farmers to apply for matching grants.

The following lesson is drawn by IEG:

- **Adequate assessment of relevant aspects of the project and implementation arrangements may ensures a satisfactory Quality at Entry and smoother implementation experience.** The project design suffered from a number of shortcomings that undermined implementation. Carrying out adequate assessments and necessary studies might result in a longer preparation stage, but warrants a better understanding of local conditions. In turn, this ensures that relevant mechanisms are in place to facilitate smooth implementation of the project.

## 13. Assessment Recommended?



No

#### 14. Comments on Quality of ICR

The ICR is well written. It provides thorough coverage of project activities and candidly reports on most shortcomings. Discussion of outcomes reflects the achievements of the project on the ground, however, for reasons beyond the control of the ICR, attribution was not clear for the second objective. The ICR also did not thoroughly discuss the risks identified at appraisal; and whether mitigation measures worked for risks that materialized during implementation.

The ICR could have improved on the following points:

- Expand the discussion on the risks to development outcome.
- Under Bank supervision, the write up has an overly positive tone. It would have been more balanced if the discussion touched on what supervision could have done better.
- Under safeguards, provide an explicit statement of compliance with the Bank's Safeguard policies.

##### **a. Quality of ICR Rating** Substantial