



1. Project Data

Project ID P133828	Project Name IRRIG & LAND MKT	
Country Georgia	Practice Area(Lead) Water	
L/C/TF Number(s) IBRD-90430,IDA-54560	Closing Date (Original) 31-Jul-2019	Total Project Cost (USD) 64,686,507.84
Bank Approval Date 23-May-2014	Closing Date (Actual) 30-Sep-2023	
	IBRD/IDA (USD)	Grants (USD)
Original Commitment	50,000,000.00	0.00
Revised Commitment	70,400,000.00	0.00
Actual	64,686,507.84	0.00

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2. Project Objectives and Components

a. Objectives

The project development objectives (PDO) stated in the financing agreement (FA) and project appraisal document (PAD) were the same and stated as follows: **“to (i) improve delivery of irrigation and drainage services in selected areas and (ii) develop improved policies and procedures as a basis for a national program of land registration”** (FA, page 4 and PAD page vi).



The PDO was revised with the additional financing on February 20, 2020, as the following: **“to (a) improve delivery of the irrigation and drainage services in selected areas; and (b) develop improved policies, procedures, and systems as a basis for a national land management program**

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

Yes

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

Yes

Date of Board Approval

20-Feb-2020

c. Will a split evaluation be undertaken?

Yes

d. Components

The project had three components:

Component 1: Irrigation and Drainage Improvement (Appraisal: US\$45.65 million; Actual, including AF: US\$48.60 million). This component financed the rehabilitation and modernization of existing I&D schemes under the project, which consist of primary, secondary (off-farm), and tertiary (on-farm) canals; other major structures such as headworks and dams; and minor structures in the project areas, including design, construction, and construction supervision. It further financed activities on (a) preparation of the National I&D Strategy; (b) preparation of a National Rehabilitation and Modernization Plan; (c) institutional strengthening of the United Amelioration Systems Company of Georgia (UASCG) in management and operations and maintenance (O&M); (d) upgrading of UASCG machinery and equipment for maintenance; (e) preparation of O&M and financing plans for project-selected schemes; (f) preparation of annual UASCG operational plans for 2015/16; and (g) development of institutional arrangements for on-farm irrigation service delivery, including exploring institutional options for on-farm irrigation system ownership and management, such as water user organization (WUO) development.

Component 2: Land Market Development (Appraisal: US\$2.25 million; Actual, including AF: US\$12.37 million). This component financed the pilot phase of land registration to redefine and test the policies and procedures for registration of agricultural land that would allow most existing land ownership rights to be registered.

Component 3: Project Management (Appraisal: US\$2.10 million; Actual, including AF: US\$3.71 million). This component financed the project management, including coordination and technical supervision of the implementation, financial management (FM), procurement, monitoring, and evaluation, related to Component 1 and similar project management activities related to Component 2.

Revised Components: The Additional Financing brought various changes including revision of Component 1, to strengthen the new National Agency of Sustainable Land Management and Land Use Monitoring (land Agency) created under Ministry of Environmental Protection and Agriculture (MEPA) and support the creation of a spatial land use and land management system, preparation of land use legislation, economic



valuation of land markets, monitoring of land use through remote sensing, and conduct a feasibility assessment of a proposed East Georgia program for irrigation reservoir rehabilitation and construction to support Georgia's 2017 irrigation strategy.

The AF increased the scope of Component 2, and upgraded the IT infrastructure to strengthen NAPR's capacity in processing and storing additional data from systematic registration. The technical oversight of SLR activities was delegated to the Systematic Land Registration Division (SLRD) within NAPR. In the third restructuring of September 2022, support for the nation-wide systematic land registration program was added to the scope of work.

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

Project Cost: The project cost planned at appraisal was US\$ 50.0 million and with an additional financing of US\$20.4, the revised total planned amount was US\$ 70.4 million. Actual project cost at closing was US\$ 64.7 million (92 percent of total planned amount).

Project Financing: IDA credit planned was US\$ 50.0 million (IDA-54560) and IBRD loan US\$ 20.4 million (IBRD-90430), as additional financing and the actual disbursements at closing were US\$ 45.0 million and US\$19.7 million respectively.

Borrower Contribution: There was no borrower contribution.

Dates: The project was approved on May 23, 2014, and became effective in about 10 months on March 13, 2015. Mid-term review took place on August 3, 2017. Original project closing date was extended for about four years from July 31, 2019, to September 30, 2023, to complete all the planned activities particularly under Component 1 and including under the additional financings, and to address delays due to Covid-19 (see below for details).

Restructuring: The project went through three restructurings:

- The first one was a level 2 restructuring, approved on June 7, 2018 improved the articulation of the second PDO indicator on provided irrigation area, reduced its target and extended the project closing date for 24 months to July 31, 2021 to allow completion of activities under Component 1.
- The second restructuring approved on February 20, 2020, was a level I restructuring that provided additional financing (IBRD loan) of US\$ 20.43 million to fill a funding gap and scale up Component 2 activities. It also included slight modification of the second PDO, and the related PDO indicator, and reduction of targets under Component 1. The restructuring also extended the project closing date for 18 months to September 30, 2022.
- The third restructuring approved on September 21, 2022, was level II and included extension of IBRD loan and IDA credit closing dates for 12 months to September 30, 2023 to allow sufficient time to complete the works under Component 1. The results framework (RF) was revised by dropping the original PDO indicator on volume of irrigation water supplied, and by including a new indicator on area with optimal irrigation conditions.

Split Rating: This review will conduct a split rating based on the following: While the PDO revision did not change the intended objectives of the project, the project scope was expanded under Component 2, but scope and targets were reduced under Component 1. Thus, a split rating will be conducted using the AF



date and taking the disbursement amounts before and after this restructuring date to calculate the overall weighted outcome rating.

3. Relevance of Objectives

Rationale

The project objective was highly aligned with the World Bank's strategy as defined in the Country Partnership Framework for FY2019–2022 (CPF) for Georgia. The project sought to address the ongoing challenges in the agricultural sector, particularly to increase the declining irrigation area as well as to address the lack of land ownership rights and land registration to improve the low levels of agricultural growth and rural investment. These development problems fitted appropriately under two focus areas of the CPF. The first focus area in the CPF on inclusive growth and competitiveness included agriculture modernization and access to markets, which was relevant to the project as irrigation improvements aimed to facilitate diversification into crops with better yields, increase productivity, and increase income and market access. In addition, the third focus area on building resilience included management of natural resources and climate risks, which was relevant to the project as the rehabilitation of irrigation canals supported enhanced management of water resources, and improved farmers' resilience to climate risks by reducing the impact of droughts. The project support for improved land management was also aligned with both objectives of the CPF, as secure land titles would improve market access and generally provide better incentives for farmers to manage the land sustainably, rather than extracting the maximum yield no matter the cost to land quality. Lastly, secure land titles could also encourage farmers to shift to crops that would improve carbon capture.

The project objective was also highly relevant to the country priorities and strategies. Georgian Irrigation Strategy 2017–2025 aimed to (a) improve the reliability of the water supply through rehabilitation of infrastructure, (b) ensure financial sustainability of service providers by reducing their dependency on direct government subsidies, (c) ensure efficient allocation of water across alternative uses, and (d) increase the competitiveness of Georgia's agricultural sector by providing reliable I&D services at reasonable prices. These objectives are relevant to the Georgia Irrigation and Land Market Development Project (GILMDP) objectives to improve I&D services via rehabilitation of irrigation networks, thereby facilitating diversification into higher-value crops. Furthermore, the project was relevant to the Agriculture and Rural Development Strategy for Georgia 2021–2027, which aimed to “diversify and develop economic opportunities in rural areas and improve social conditions and quality of life. The PDO was also fully aligned with the government's vision on land sector development in the 2021–2024 ‘Toward Building a European State Program’, which considers completing land reform a top priority for Georgia. Regarding donor coordination, it was expected that the World Bank would take a lead in developing institutional arrangements for irrigation management and rehabilitating related infrastructure, while the United States Agency for International Development (USAID) would support the public agricultural extension services and agribusiness development and improvement of agricultural statistics, and the European Union would focus on supporting cooperative development, food safety improvement, and agricultural policy formulation capacity in the MOA.

At the time of appraisal, the World Bank had already been a long-term development partner of Georgia and Between 2001 and 2009, the World Bank-funded Irrigation and Drainage Community Development Project invested in rehabilitation of both off-farm and on-farm infrastructure and building capacity for management



of on-farm irrigation and drainage systems, but the institutional arrangements for irrigation and drainage services did not develop successfully due to lack of adequate policy environment. The World Bank is continuing its support via a follow-up operation, the Georgia Resilient Agriculture Irrigation and Land Project (P175629) Project, which is currently under implementation and builds on the achievements, foundation laid, and lessons learned from this project.

The project objective was realistic and sufficiently challenging when assessed with respect to the country capacity as well as the World Bank's country and sector experience in Georgia.

Overall, the relevance of the objectives is rated high.

Rating

High

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1

Objective

To improve the delivery of the irrigation and drainage services in selected areas.

Rationale

Theory of Change (TOC): Overall, the causal pathways from inputs to outcomes were valid and direct, and the achievement of the outcomes could be attributed to the project's intervention. The project was designed to improve the delivery of irrigation through irrigation rehabilitation and modernization of selected schemes, strengthening of irrigation and drainage (I&D) institutions at the national level, and support for the development of institutional arrangements for on-farm irrigation service delivery. The outputs expected were modernized irrigation schemes, endorsed national irrigation strategies and plans, strengthened institutions, and completed institutional arrangements for on farm irrigation service delivery. The expected outcomes were farmers with reliable access to irrigation services and strengthened I&D institutions. These outcomes would be expected to improve the delivery of the irrigation and drainage services in selected areas. Together with the outcomes on land registration (described in more detail under the 2nd objective), these would support the long-term outcome of increased agricultural productivity, increased property values, and diversification into higher-value crops. However, the Monitoring and Evaluation (M&E) framework had shortcomings in capturing the project's outcomes.

Outputs:

- 271 km of irrigation canals (main/primary, secondary, and tertiary) were rehabilitated. The ICR noted that the activities focused on irrigation systems and did not intervene nor intend to intervene in upgrading drainage systems, as this was not needed for the project-supported areas (ICR, parag, 33). The works included the rehabilitation of the headworks and main canals in the Zeda Ru (ZR),



Kvemo Samgori (KS), and Tbisi Kumisi (TK) irrigation schemes and rehabilitation of secondary and tertiary canals in the ZR and part of the KS schemes.

- National irrigation and drainage strategy was finalized and endorsed by the government achieving the original indicator.
- **Dam Safety:** Several dam safety activities for the Sioni and Algeti dams, which are the dams at the headworks of the KS and TK schemes, respectively, and a preliminary feasibility assessment for a proposed East Georgia program for irrigation reservoir rehabilitation and construction. Both additional sets of activities were vital to ensuring the integrity of reservoirs for irrigation schemes.
- **Institutional strengthening of the Georgia Amelioration (GA):** GA is the central agency responsible for building and proper maintenance and operation of irrigation schemes around the country. The strengthening included improvement of maintenance guidelines and plans and improvement of water delivery management and technology and billing technology. Furthermore, the GA benefitted from staff training, study tours, vehicle purchases, and purchases of office equipment.
- **Strengthening local irrigation institutions:** The project supported adoption of a legal framework for the establishment of water user organizations (WUOs), which allowed for structural changes of the institutional framework to allow for stronger local institutions. The project also supported establishment of WUO support units (three units were formed achieving the IRI target) at the central level (within the GA) and initiation of extensive consultations with farmers, including the creation of eight FIGs (farmer initiative group)—a precursor to the formation of fully functional WUOs.

Outcomes:

The project improved irrigation structures in an area of 17,400 ha, which represented less than the original target of 26,000 ha of land. The project also fell short of the original PDO indicator, absolute volume of irrigation water supplied to project rehabilitated schemes (million m³), which was 72.9 million m³ at closing, as against the target of 95 million m³ and the baseline of 67 million m³. Due to low achievement results, the achievement of the objective is rated modest.

Rating

Modest

OBJECTIVE 1 REVISION 1

Revised Objective

To improve the delivery of the irrigation and drainage services in selected areas.

Revised Rationale

Objective 1 did not change. After the restructurings via AF, the PDO targets were revised, and some new indicators were added. However, the project TOC was essentially the same.

Outputs:

- **Strengthening local irrigation institutions:** While the project initially aimed to establish WUOs to manage on-farm service delivery within the project timeframe, this proved difficult due to slower-than-anticipated progress in securing farmers' commitment to forming WUOs. Reportedly, this delay was in



part due to the COVID-19 pandemic and due to historical resistance to collective establishments. An end line survey showed that there is significant resistance by farmers on joining water user organizations, with only 10-20 percent of surveyed farmers stating willingness to join a farmer led organization.

Outcomes:

The project improved irrigation infrastructure in 17,400 ha, representing 100 percent achievement of the revised target value at project closure (2,900 ha is area with new irrigation services). The 2022 restructuring introduced a sub-indicator to measure the area supplied with optimal irrigation conditions. According to the project team, this indicator measures the area provided with an irrigation service that allows optimal distribution to farmers' plots. Optimal irrigation conditions result from full rehabilitation of irrigation schemes, which includes the rehabilitation of the main canals, but also involves improvement of secondary and tertiary canals, pipelines, and the installation of hydrants in case of pressurized irrigation. At project closure, 8,692 ha of area with optimal conditions were reported, almost fully (99 percent) achieving the set target of 8,750 ha. While the ICR noted that the rehabilitation of the canals has led to more active use of irrigation services, only about 50 percent of the rehabilitated ha provides optimal conditions for irrigation. In the three main irrigation schemes addressed by the project, the area of irrigated land based on contracts signed by farmers with the Georgia Amelioration (GA) increased from 3,749 ha in 2016 to 8,387 ha at project closure. This increase in area under contracts with the GA shows that irrigation has become more accessible to and more actively used by farmers, but these figures show that only half of the improved irrigated ha that was supported by the project is currently utilized for irrigation, though this utilization is expected to increase over the next years. While this led to a decrease in water loss of 30–40 percent in the main canal and an increase of 73 percent (from 492.68 m² to 850.00 m²) in irrigated land between 2016 and 2019 in TK., areas dominantly served by only a rehabilitated main canal do not have optimal irrigation conditions; this can be secured with additional rehabilitation of the secondary and tertiary canals, among other measures.

The Results Framework at project closure also included two outcome indicators on 'irrigated area per unit water supplied', which replaced the original indicator on absolute volume of irrigated water supply to the project rehabilitated schemes to improve the project attribution of the delivered results and measure efficiency of water use separately for the KS and ZR schemes. The final achieved values for this indicator were 1.91 m²/m³ for KS, which represents 126 percent achievement compared to the baseline of 0.57 m²/m³ and target of 1.63 m²/m³. For ZR scheme the achievement was 0.68 m²/m³ for ZR, representing a regression from the baseline of 0.79 m²/m³ and well below the target of 0.93 m³. The ICR explained that this regression in ZR can be attributed to two factors: (a) data that do not provide a complete picture, as significant construction was still ongoing during the 2023 irrigation season and realistic data are only expected in 2024 and (b) the fact that ZR provides all available water to the farmers, with unused water returned to the river basin. In contrast, in KS, works were completed sooner, and the irrigation scheme is structured differently, leading to data that give a more complete picture.

The project surveyed project beneficiaries and compared results with a control group, the results showed significant differences between surveyed project beneficiaries and non-project farmers, but there was still some room for improvement particularly on the quality and timeliness of irrigation service. For example, in 2022, about 65 percent of the project farmers stated that volume of irrigation water fully met their needs compared to 4 percent for non-project farmers; and only 49 percent of project beneficiaries stated that quality of irrigation water was high as compared to 20 percent of control group farmers; and just 56 percent of project beneficiaries stated timely delivery of irrigation water compared to 17 percent for control group.



The ICR also provided results on increased yields ranging from 13-169 percent, due to availability of irrigation water.

According to the ICR, the rehabilitation works allowed for 10,679 landowners, of which 2,127 were female, to benefit from new and improved irrigation infrastructure services constructed under the project, exceeding the target of 7,000 landowners (including 1,000 females).

The achievement of the revised objective is rated modest. The project met the revised targets for irrigation infrastructure but there was still room for improvement on farmers' actual utilization of irrigation water, with only about half of the developed area currently being utilized for optimum irrigation. In addition, only around half of surveyed farmers were pleased about timeliness and quality of the irrigation water. The project also supported institutional capacity building at the central level and local level. While adoption of legal framework on irrigation was achieved, and WUO support units and farmer initiative groups were established as a first step towards establishing WUOs, according to the ICR, the farmers still showed resistance and lack of interest in joining an irrigation group to manage local irrigation network by the time the project closed. The ICR's explanation for this result was due to overall negative emotions associated with collective efforts, coming from Soviet era (ICR, para. 94). The ICR noted that these issues will be dealt with a follow up operation. Based on the remaining shortcomings on the irrigation service delivery, the achievement of the objective is rated modest.

Revised Rating

Modest

OBJECTIVE 2

Objective

To develop improved policies and procedures as a basis for a national program of land registration.

Rationale

TOC: The TOC for the second objective was also sound. The project planned to improve policies and procedures as a basis for a national program of land registration through development of guidelines for land registration, implementation of pilot registration in selected areas, and design and implementation of a system for monitoring land registration and evaluating its impact. The outputs were guidelines for land registration, recommendations for policy revisions and legal reforms and dispute resolution mechanisms; surveyed land parcels and land title registration; implementation of a system for monitoring land registration and its impact. The immediate outcomes were systematized recording of land registration and improved systems for national land management program. Medium term outcomes were increased security of ownership, application of systematic land registration nationwide. These outcomes would support the achievement of the objective to develop improved policies and procedures as a basis for a national program of land registration. The outcomes under this objective and the first objective would support the long-term outcome of increased agricultural productivity, increased property values, and diversification into higher-value crops.

Outputs:

The project supported development of the strategy for land registration and improvement of cadastral data in the pilot areas, the communication strategy and action plan for the land registration pilot project, the



guidelines for the Systematic Land Registration (SLR) pilot, and a robust legal framework. The lessons learned during pilot registration were used to further refine these documents and laws and establish the legislative framework for the national program of land registration. Most importantly, the registration procedures were simplified and NAPR was given sole responsibility for all steps in the SLR process, which significantly accelerated the entire process, including appeals.

The intermediate outcome indicator on 48,000 land titles registered in pilot project areas was revised and presented as number of parcels/area covered with land registration (see revised objective). The project team clarified that this was a change aimed to clarify/provide more precise and accurate formulation of this indicator. The number of land titles issued in the pilot areas was equal to the number of land parcels recorded in the pilot areas, excluding the baseline.

Outcomes:

The project went beyond land registration to land management at closing. The project achieved the PDO indicator, 'recommended policies and procedures for national program submitted'. Thus achievement of the original objective is high.

Rating
High

OBJECTIVE 2 REVISION 1

Revised Objective

To develop improved policies, procedures, and systems as a basis for a national land management program

Revised Rationale

TOC: The revisions under the second objective provided an opportunity to scale up and expand the project impact beyond the initially envisaged land registration program and to contribute to improved land management. Additional interventions included strengthening of the Land Agency, feasibility assessment of reservoir rehabilitation, and NAPR IT system upgrade. While this addition of activities resulted in minor enhancements to the details of the TOC, the general logic remained the same.

Outputs:

- The project financed an upgrade of NAPR's IT and information and communication technology (ICT) infrastructure that enabled the project to boost NAPR's capacity in processing and storing data from SLR, improve its IT capabilities for other services, and streamline the registration process.
- Key outputs of the development of IT system design and the ICT upgrade and software development that proved crucial in achieving this outcome were the development of the Immoveable Property Registration System (IPRS), the Electronic Minutes (E-Minutes) application, and smart contracts.
- The digitalization of the systematic land registration (SLR) process and subsequent introduction of the E-Minutes application by NAPR resulted in a 50 percent decrease in the time for data processing compared to before the introduction of this application. In addition, there was 70 percent decrease in applications for remeasurements during the public display process, compared to before the introduction of real-time processing, which previously had taken place offline and was paper based.



- This digital transformation of the SLR process also accelerated and improved consistency and quality of business processes and data and resulted in a dramatic reduction in time needed for data collection and processing and a 70 percent decrease in cost compared to before this transformation.
- The IT system design was fully completed, and the ICT upgrade and software development was nearly complete at project closure, with 7 of 10 sub-activities completed and the remaining 3 nearing completion (and in the process of completion by the borrower).

The project surpassed most of the indicators, as presented below:

- The project surveyed 462,314 land parcels during the nation-wide systematic land registration program, significantly exceeding the target of 270,000 parcels.
- The project supported recording of 174,174 land parcels with use or ownership rights in pilot areas, which was slightly below the target of 178,000 parcels).
- The project exceeded indicator 'target land area with use or ownership rights recorded as a result of the project' by recording 191,377 ha (against the target of 180,000 ha).
- The indicator 'target population with use or ownership rights recorded as a result of the project' was surpassed (83,984 people of which 40,600 are females, against the target of 68,000 people of which 30,600 are female).
- The project received and resolved 99.97 % of all the complaints on the systematic registration process achieving the target.

Outcomes:

- The project prepared and implemented policies and procedures for systematic registration and 97% upgraded NAPR IT system, almost achieving the target for this indicator.

The ICR noted that surveyed farmers indicated that by completing land registration and clarifying title documents and cadastral descriptions, land ownership became more secure and conflicts with neighbors reduced. Furthermore, farmers felt more comfortable investing in their land (e.g. for drip irrigation), especially since properly registered land generally leads to better loan conditions when using the land as collateral. In addition, farmers noted that they could apply for and receive some agricultural subsidies that require registered land and could also insure their crops (however, no figures were presented on these points). The ICR reported that proper land registration will also encourage land transactions, by making buying and selling agricultural land easier.

Based on the significant results, the achievement of this objective is rated High.

Revised Rating

High

OVERALL EFFICACY



Rationale

First objective is rated modest due to low achievement levels on irrigation works not meeting the original targets. The achievement of the second objective is rated high based on significant achievement on program on land registration. Overall Efficacy is rated Substantial with moderate shortcomings.

Overall Efficacy Rating

Substantial

OVERALL EFFICACY REVISION 1

Overall Efficacy Revision 1 Rationale

The first objective was essentially the same and the rating is modest. The project met the revised targets for irrigation infrastructure but there was still room for improvement on farmers' actual utilization of irrigation water, with only about half of the developed area being utilized, and remaining problems on service delivery particularly on timeliness and quality of irrigation water. The revisions under the second objective provided an opportunity to scale up and expand the project impact beyond the initially envisaged land registration program and to contribute to improved land management. Since the PDO targets were either surpassed or met, the achievement of the second objective is rated high. The overall efficacy for the revised project is rated Substantial with moderate shortcomings.

Overall Efficacy Revision 1 Rating

Substantial

5. Efficiency

Economic and Financial Efficiency: The project conducted ex-ante and ex-post economic and financial analysis to assess the efficiency of the project. Ex-ante analysis estimated benefits for farmers through intensification (increasing yield ranging from 30-50 percent and cropping intensity from 100 percent to increase in 115 percent due to double cropping), expansion into previously unused arable land (13,000 ha unutilized land into production) because of improved irrigation service. The effect of Component 2 was not counted in the analysis. Based on these assumptions, the analysis estimated an \$690 of incremental annual gross margin per farm household. The financial internal rate of return (FIRR) for the Project is 19.6 percent with a financial net present value (FNPV) of US\$27.2 million. The economic internal rate of return (EIRR) to the project investments is 17.0 percent, with an economic net present value (ENPV) of US\$16.3 million. During the AF stage the methodology was adjusted to account for incremental benefits arising from rising prices for irrigated land, as the AF project had a stronger land component.

At completion, the project achieved benefits mainly through (a) an increase in crop yield for almost all major crops in the project areas; (b) an increase in cropping area for the irrigation component; and (c) direct cost savings to beneficiaries during land registration, as NAPR provided the land registration free of charge. The yields were adjusted using the yields measured in the last survey at the end of the project and the analysis



conservatively assumed that the latest recorded yield would continue over the project lifetime with no further yield increase. Cropping intensity was assumed at 2 for some crops only. The project’s fiscal and economic impacts were evaluated using the same 20-year period (after the start of the project), and the same 10 percent discount rate was used to calculate the NPV, as was done at appraisal of the parent project and at appraisal of the AF.

The economic analysis shows that the overall project was economically justified with an EIRR of 14.73 percent (against an appraisal projection of 17 percent, decreased to 14.9 percent at AF) and an ENPV of US\$4.56 million (against an appraisal projection of US\$16.3 million, decreased to US\$15.8 million at AF) for a 10 percent discount rate. The financial results at completion show an FIRR of 12.57 percent (against an appraisal projection of 19.6 percent, lowered to 15.3 percent at AF) and an FNPV of US\$3.47 million for a discount rate of 10 percent (against an appraisal projection of US\$27.2 million, decreased to US\$17.2 million at AF).

Operational and Administrative Efficiency: Although the project implementation units were committed, project closing date had to be extended three times, due to initial design flaws and unforeseen delays like the COVID-19 pandemic. The pandemic also caused a 40 percent increase in construction material costs and shortages, leading to financial impacts and delays, and some contract cancellations, particularly on Component 1. Furthermore, economic factors and exchange rate fluctuations resulted in a loss of \$5.5 million, or eight percent of the project funds. However, the extensions allowed for the expansion of Component 2 and additional support for the National Agency of Public Registry to advance Systematic Land Registration. On the other hand, Component 2 saw good implementation efficiency with IT system upgrades, automated processes, and improved procedures, leading to significant time and cost savings in land registration and a reduced timeline for the National Systematic Land Registration Reform (NSLRR) to three years. Despite cost overruns in Component 1, which were largely due to underestimations and uncontrollable factors, the project’s implementation efficiency was reportedly adequate.

While there were some moderate shortcomings in the administrative and operational efficiency of the project, particularly for Component 1, the economic and financial analysis conducted at project closing showed economic and financial justification for the efficiency of project outcomes. Overall, the project’s efficiency in achieving the project objective is rated Substantial.

Efficiency Rating

Substantial

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	✓	17.00	91.00 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	14.70	100.00 <input type="checkbox"/> Not Applicable

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



6. Outcome

The outcome of the project is rated moderately satisfactory, based on a split evaluation as presented below:

Rating Dimension	Original Objectives	Objectives after AF
Relevance of Objectives	High	
Efficacy		
Objective 1	Modest	Modest
Objective 2	High	High
Overall Efficacy	Substantial	Substantial
Efficiency	Substantial	
Outcome Rating	Moderately Satisfactory	Moderately Satisfactory
Outcome Rating Value	4	4
Disbursement, percent	38.6	61.4
Weight Value	1.54	2.46
Total Weighted Rating	4.00	
Overall Outcome Rating	Moderately Satisfactory	

a. Outcome Rating

Moderately Satisfactory

7. Risk to Development Outcome

The ICR identified some key risks to the project development outcomes as summarized below.

The sustainability of irrigation service delivery outcomes hinges on the ability of national and local institutions to maintain irrigation canals. Institutions were strengthened during the project, with the establishment of WUO support units and Farmer Initiative Groups (FIGs). WUOs are crucial for local ownership and fee collection for irrigation infrastructure, and their absence poses a risk to the maintenance and operation of the networks. The capacity of the responsible agency, GA, is also threatened by the impending retirement of experienced staff and the need to attract new technical personnel. In addition, future water availability is uncertain due to climate change and increased demand from large agribusinesses, which could compromise the sustainability of improved irrigation and drainage services. The follow up Georgia Resilient Agriculture Irrigation and Land Project is set to mitigate these risks by improving irrigation and drainage services and agricultural production, as well as strengthening capacities for irrigation and land management. It will provide continued support to NAPR and GA and further the establishment of WUOs, securing the outcomes of the initial project.

The sustainability of land registration improvements relies on the National Agency of Public Registry (NAPR) being well-staffed and funded to continue survey activities and maintain land title records. Despite potential disincentives for land registration, such as fear of taxation or loss of benefits, the government has created counter-incentives, and a sustained increase in transactions indicates a robust system.



8. Assessment of Bank Performance

a. Quality-at-Entry

The project, as identified and appraised by the World Bank team, was and is of high strategic relevance to Georgia. The project's PDO was clear and realistic, with well-organized components of irrigation and land management that complemented each other. Although risks were identified and addressed, the potential underestimation of implementation readiness as well as the under-budgeting of the costs for Component 1 created bottlenecks later during implementation.

Implementation design was appropriate; having two implementing agencies matched the project's dual focus on irrigation and land aspects. Component 1 faced challenges due to inadequate initial technical designs and water quality issues, particularly sediment affecting drip irrigation, which could have been addressed at design stage.

Regarding the RF, Component 2 was effectively structured with reliable indicators, the Results Framework fell short in tracking progress toward Outcome 1, Implementing baseline, midterm, and endline surveys for Component 1 was a sensible decision, enabling better outcome tracking despite the Results Framework's deficiencies.

Based on the above the quality of entry is rated as moderately satisfactory.

Quality-at-Entry Rating

Moderately Satisfactory

b. Quality of supervision

The ICR noted that the World Bank team provided comprehensive support throughout the project, addressing technical, fiduciary, and safeguard aspects (ICR, parag. 83). The team responded promptly to challenges, adapting the project design and Results Framework as necessary. Despite initial issues with the project's quality and weak Results Framework, the team made significant adjustments to maintain progress. The adjustments, made during three restructurings, one with additional financing, were focused on maximizing development impact despite scope reductions. The project experienced changes in leadership with three different Task Team Leaders, yet supervision remained consistent, with regular and thorough missions ensuring progress toward outcomes. The team was well-equipped with the necessary expertise, although no core team staff were stationed in Georgia. Reporting was regular and detailed, with the Mid-Term Review playing a key role in the first restructuring. The World Bank's 19 Implementation Status and Results Reports, along with supervision of fiduciary and safeguards, contributed to a satisfactory supervision rating. Capacity building efforts that will continue under the follow-on GRAIL project are expected to enhance the sustainability of project activities.



Based on the moderately satisfactory quality at entry rating and a satisfactory quality of supervision rating, the overall Bank performance rating is moderately satisfactory.

Quality of Supervision Rating

Satisfactory

Overall Bank Performance Rating

Moderately Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

The project TOC was sound with connected activities, outputs and outcomes. M&E framework had shortcomings in assessing Objective 1, particularly regarding the use of irrigation services by beneficiaries. A restructuring introduced a new sub-indicator for optimal irrigation conditions due to the original indicator's vulnerability to external factors. Despite replacing it with two new indicators during the 2022 restructuring, these also proved to be influenced by external variables, complicating the clear measurement of Outcome 1. However, Outcome 1's achievement was documented using a mix of PDO indicator data and additional sources, including surveys and data on land productivity and crop value, although the Results Framework lacked robust tracking and measurement capabilities for this outcome. Other indicators were generally sufficient for measuring progress. The M&E system incorporated surveys by MEPA for Component 1 and a baseline survey for Component 2 to evaluate pre-intervention conditions and the project's impact. To enhance the measurement of PDO1, the project could have benefited from specifically designed indicators for various aspects of irrigation service delivery such as access, reliability, quality, affordability and equity. In addition, introducing indicators for land productivity or landowner satisfaction with I&D services, based on survey data, could have further strengthened the framework.

b. M&E Implementation

MEPA occasionally faced data reception issues from the GA, which were mitigated by hands-on monitoring. The automation of Component 2's indicator monitoring significantly improved data timeliness and accuracy, contributing positively to the M&E process. PIUs consistently reported on environmental and social safeguards performance in quarterly progress reports. The World Bank and PIU jointly addressed M&E challenges, such as initially poor environmental and social reporting, which improved with the PIU's continuous efforts. Progress in work quality and M&E practices enhanced over the project lifecycle.

c. M&E Utilization



The M&E system was essential for managing the project and guiding decisions, tracking progress towards PDOs and outputs by MEPA, NAPR, and the World Bank. It also played a role in assessing the need for project restructuring.

Based on the shortcomings of M&E design, M&E quality is rated as modest.

M&E Quality Rating

Modest

10. Other Issues

a. Safeguards

The project complied with environmental safeguards, triggering multiple operational policies (OP/BP 4.01 Environmental Assessment, OP 4.09 Pest Management, OP/BP 7.50 Projects on International Waterways, OP/BP4.37 Safety of Dams and earning a Category B classification. An Environmental and Social Management Framework (ESMF) and Environmental Management Plans (EMPs) were created and implemented, with swift action taken on any construction issues, leading to a generally satisfactory environmental performance on OP/BP 4.01, OP 4.09, and OP/BP 7.50. Regarding OP/BP4.37, emergency preparedness plans were developed, and dam monitoring instrumentation was installed for Sioni and Algeti dams, located at the headworks of the KS and TK schemes. However, more comprehensive operation, maintenance, and monitoring systems are needed to ensure long term safety.

Social safeguards were carried out, with a rapid social assessment shaping the project's strategy. The project activated OP/BP 4.12 Involuntary Resettlement, resulting in a Resettlement Policy Framework and Resettlement Action Plans for each site. Any issues were quickly addressed, and the project was largely compliant for OP/BP 4.12 policy.

A grievance redress mechanism (GRM) was established, effectively addressing issues in Component 2 and improving over time for Component 1 with a shift to a proactive approach. Most grievances were minor and resolved, although some, such as water quality concerns, were not reported through the GRM. The experiences with the GRM have informed improvements in the subsequent project.

b. Fiduciary Compliance

Financial Management: The ICR reported that since MEPA had prior experience in implementing World Bank projects, it had adequate FM capacity from the outset. On the other hand, NAPR initially lacked FM capacity, but a financial manager was appointed within NAPR at the project's inception. Additionally, there was continuity of qualified FM staff in the PIUs. Throughout the project, FM generally complied with World Bank policies. The client provided timely responses and proactively identified potential issues upfront to prevent or promptly address them. Submission of interim financial reports and audits was generally on time and of satisfactory quality. There were no ineligible expenditures or unresolved issues throughout the project (ICR, parag. 81).



Procurement: The ICR noted that The World Bank procurement guidelines were generally followed, although some challenges emerged in the initial project stages, causing delays. Throughout the project, eight post-review reports were completed, consistently identifying deviations from processes and issues with contract management, although significant improvements were observed during project implementation. (ICR, parag 80). .

c. Unintended impacts (Positive or Negative)

One unintended outcome of the digital transformation of the SLR process was that the previous sporadic registration process (that is, where farmers initiate registration outside systematic efforts by NAPR) was incorporated under the E-Minutes application. This application streamlined field data collection, significantly increased the accuracy of registration data.

d. Other

Gender: The ICR reported that in Component 1, the project aimed to increase the percentage of female water users with access to irrigation services. At appraisal, only 3.7 percent of water users with access to irrigation services were female, and the project increased this to 20 percent, exceeding the final target of 18.6 percent. Furthermore, in Component 2, the project-supported Law on Sporadic and Systematic Land Registration of 2016 stipulated that all household members able to provide official records or other proof would be registered as co-owners of the land plot, to enable women to be officially recognized as co-owners. Data from NAPR show that while the national average of female landowners and co-owners in 2020 stood at 42 percent, in the project areas, females represented 48.3 percent of owners with use or ownership rights recorded, exceeding the target of 45 percent and up from 29 percent before the reform. The project also promoted and contributed to an increase in the employment of women surveyors in a profession that had traditionally been largely dominated by men. The number of women surveyors employed under the project increased from 0 to now 100, out of 720 surveyors involved in the NSLRR (ICR, parag. 58).

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 formulated several lessons, some key lessons are summarized as follows:

Pairing irrigation and land management engagements can lead to strong synergies. In this project, farmers in the selected areas benefitted from improved irrigation and drainage services and more secure land tenure. Together, these aspects can create a better environment for farmers to invest in their farms and especially in more efficient irrigation infrastructure (such as drip irrigation), since the fear of losing their land or of not getting water is greatly reduced.

To avoid unreasonable interruptions in water supply during irrigation season, irrigation civil works need to take place outside the irrigation season; thus, it is best to allocate sufficient time for such civil works. While the project took measures to supply farmers with irrigation water even while civil works took place (via temporary earthen canals), civil works are unpopular and difficult to conduct during the irrigation season, which spans from May to September in Georgia. Furthermore, the timeline should also consider that it often takes 1–1.5 years to progress from the design to the commencement of civil works. Thus, ample time should be allocated to complete such works.

Citizen engagement via detailed training and consultation with farmers, particularly during the design phase, is essential for understanding and addressing local needs and demands for irrigation as well as establishing collective organizations to manage the systems. This approach will ensure maximum cooperation and support from farmers during the implementation phase and avoid changes to the design and delays in the implementation of civil works. Furthermore, this approach will also help with establishment of collective organizations, such as WUOs, which requires careful planning and lengthy consultations, especially in former Soviet countries where collective efforts often evoke negative emotions. Projects should start the mobilization process as early as possible, even in parallel with designs, to allow adequate time for raising awareness and educational outreach.

Farmer extension services via technical field training are essential when introducing new irrigation technologies and it is best to engage technical training providers to provide this service. The pressurized pipe system with double hydrants for on-farm delivery used in the KS irrigation scheme was the first of its kind in Georgia. However, the project did not invest up front in farmer training to demonstrate to water users how to operate and maintain this innovative system. Given that this transition requires technical field trainings for farmers and that the construction and supervision contractors cannot be relied on to train all water users, project funds should be earmarked for dedicated technical training providers to provide this training at various stages (at design, construction, and handover) to farmers to ensure its utilization and sustainability.

13. Assessment Recommended?

No

14. Comments on Quality of ICR



The ICR is candid and provides a detailed overview of the project. It provides an accurate and substantiated set of observations supported by evidence to the extent possible given the weaknesses in the project's M&E framework. There is a logical linking and integration of the various parts of the report. The report follows and adequately responds to the Bank guidance both regard to ratings and the performance narrative, which is sufficiently evaluative. The theory of change of this complex project is well-articulated and informs the reader as to how the ratings have been reached. In addition, the photos presented in Annex 12 provides a rich context regarding the project activities and its results. The Lessons and Recommendations are mainly based on specific experiences of the project. Overall, the quality of the ICR is rated Substantial.

a. Quality of ICR Rating
Substantial