

Ministry of Environmental Protection and Agriculture of Georgia
World Bank/Government financed Georgia Resilient Agriculture, Irrigation, And Land
Project (GRAIL)

DAM SAFETY PANEL OF EXPERTS (DSPE)
FOR ILTO DAM FEASIBILITY STUDY

Terms of Reference

GEOTECHNICAL SPECIALIST

1. Background

The Government of Georgia and the World Bank jointly developed new investment project in Georgian Agriculture – Georgia Resilient Agriculture, Irrigation, And Land (GRAIL) Project.

The total cost of the project is 138.6 mln EURO which is equally split (50/50) between the International Bank for reconstruction and Development (IBRD) and the Government of Georgia.

The Project Development Objective (PDO) is to: (a) improve irrigation, and drainage services, and agricultural production in project areas, and (b) strengthen national irrigation and land management institutional capacity for climate resilient planning.

The primary project beneficiaries comprise farmers and agricultural enterprises across the project targeted regions. Overall, the rural population will benefit from enhanced services provided by land management, irrigation services, and agricultural support. In the public sector, the project will support institutional strengthening of the Ministry of Environmental Protection and Agriculture (MEPA), including Georgia Amelioration (GA), the National Environment Agency (NEA), Rural Development Agency (RDA), and Land Management Agency (LMA).

2. Project description

The project includes 3 components: (i) Resilient Irrigated Agriculture; (ii) Improved Land Management Capacity; (iii) Project Management.

Component 1: Resilient Irrigated Agriculture - This component encompasses implementation of high priority investments in irrigation and drainage (I&D) infrastructure, agriculture support, and institutional strengthening for national irrigation and rural development agencies aligned with the country's agriculture strategy, irrigation strategy, and climate change adaptation and mitigation agendas. It finances civil works, goods, equipment, and related services as well as technical training for agency staff and farmers to boost productivity of irrigated agriculture. The infrastructure investments will enhance the reliability of water supply for irrigation to reduce risks from climate-induced precipitation variability. The agriculture investments will promote climate smart agriculture (CSA) technologies (for example, crop varieties adapted to crop water stress, on-farm water saving techniques and technologies, anti-hail, and frost protection equipment) that enhance farm-level productivity and promote agronomic practices that generate adaptation and mitigation benefits for smallholder farmers in water stressed areas. The digital decision support services to farmers, with improved access to water saving irrigation technologies, and training for rural water users will improve on-farm water use efficiency. The investments also will be designed to minimize greenhouse gas (GHG) emissions through reductions in energy consumption by

promoting water conservation through water metering and on-farm interventions. The component includes the following sub-components:

- Subcomponent 1.1: Irrigation & Drainage Infrastructure Rehabilitation and Modernization. The activities financed under this subcomponent will include the rehabilitation/modernization of main, secondary, and tertiary canals and drains with all the ancillary structures (for example, headworks, flow regulating and measurement structures, outlets, bypass, flood protection, water meters). The rehabilitation and modernization of I&D infrastructure will improve food security and increase rural livelihoods and economic development. The climate adaptation co-benefits for this subcomponent are linked to the modernization of I&D infrastructure which will improve conveyance efficiency, reduce water losses, and increase the uptake of renewable energy.

This subcomponent will include the preparation of a National Irrigation Master Plan to be guided by: (a) the provision of reliable water supply to existing or potential irrigation schemes, including under water scarcity scenarios; (b) technical feasibility of the investments; (c) economic and financial justification; (d) environmental sustainability, including at a wider basin scale; (e) social inclusivity; and (f) adaptation to climate change in water stressed areas, including drought-prone and flood-risk areas.

- Subcomponent 1.2: Irrigated agriculture and value chain development. This sub-component will: (i) provide primary producers (farmers), in areas where irrigation schemes will be modernized, with access to matching grants, training, and knowledge on market aspects, including compliance with international food safety and other market standards, and other factors that will enhance the viability of the farm enterprise; (ii) provide agribusinesses (including agro-processors, cold chain operators, farm input suppliers, and commercial plant nurseries), in areas where irrigation schemes will be modernized, with financial support through matching grants to enhance their capacity and competitiveness; and (iii) implement a capacity building program at RDA and its agriculture extension service operated by a network of Information Consultation Centers (ICCs) at the municipal level. RDA will administer the matching grants program.
- Subcomponent 1.3: Improved Performance of Irrigation Service Delivery. This subcomponent aims to achieve operational and financial sustainability through reform of the institutional environment for OMM of irrigation. The main activities under this subcomponent focus on comprehensive reform of GA with a focus on the redefinition and decentralization of functions to the lowest practical level. Through this subcomponent, the project will support the reform process by financing the following activities:
 - (a) Comprehensive institutional reform program to improve functions of Georgian Amelioration (at the central and service center levels).
 - (b) Implementation of a revised irrigation tariff, with a strategically planned and phased rollout that supports an increase in fee collection rates simultaneously with modernization of roll-out.
 - (c) Goods provided to male and female farmers in water saving and management technologies, in alignment with the matching grants program under Subcomponent 1.2,
 - (d) Establishing and strengthening the operations of water management organizations at the local level (either WUOs and/or GA service centers), which will include training that specifically targets women to increase their active involvement in the work of WUOs.
 - (e) Establishing the Hydrological and Agricultural Informatics Center (HAIC) within MEPA specifically to address climate risks to agriculture. HAIC will provide data and information

on water, land, agriculture, and climate and will upgrade the capacity of GA, the LMA, and NEA in climate resilient planning.

Component 2: Improved Land Management Capacity - This component will finance activities aimed at improving national land administration and management systems and facilitating access to and use of geospatial data through development and implementation of a National Data Spatial Infrastructure (NSDI). It is expected that implementation of the activities would contribute to the activation of agricultural land markets, facilitate investments into the agri-businesses, and contribute in a meaningful way to climate change mitigation and adaptation measures. The component would also provide regulatory and operational support to the LMA to optimize monitoring and management of agricultural land including female land ownership and gender inclusiveness of the land consolidation process.

- Subcomponent 2.1: Strengthening of agricultural land management and monitoring. This subcomponent would support the creation of a solid foundation for improved land management and agricultural land market development, and land use efficiency. The subcomponent would finance the following:
 - (a) Operationalization of the Land Information System (LIS) including update of the land balance database and report;
 - (b) Enhancement of the Farm Registry for Georgia;
 - (c) Support to the preparation of the Sustainable Land Management (SLM) strategy and National Land Consolidation (NLC) strategies and piloting of the NLC strategy in the GRAIL Project areas;
 - (d) Redesign of methodologies of land balance and inventory and state agricultural land management activities, leveraging good international practices and their implementation in selected areas, such as use of remote sensing technologies for creating and monitoring land use, land cover data and the creation and monitoring of the soil quality database; and
 - (e) Preparation and implementation of training and capacity building for the staff of the LMA, NASP, and other relevant stakeholders' potential partners and users of the LIS.
- Subcomponent 2.2: Enhancement of the land administration service delivery and building digital governance infrastructure. This subcomponent will finance enhancement of the NAPR IPRS and operationalization of the NSDI.

Component 3: Project Management - This component, divided into two subcomponents, will finance two Project Implementation Units that will be responsible for project management, including coordination and technical supervision of project implementation, financial management (FM), procurement, monitoring, and evaluation (M&E), social and environmental standards management and oversight including gender-focused activities, communications and outreach, and progress reporting. The first Project Implementing Unit (PIU) is established within MEPA, which is responsible for management of Component 1 and Subcomponent 2.1. The second PIU is established within the NAPR, which is the Project Implementing Entity and is responsible for implementation of Subcomponents 2.2 and 3.2.

3. Objective of the Consultancy

The overall objective of the DSPE is to provide independent review and recommendations to the Ministry of Environmental Protection and Agriculture of Georgia (MEPA) (Client) for ensuring that safety issues of the Ilto Dam feasibility study to be financed by MEPA and World Bank are

adequately addressed in terms of design, construction, operation and maintenance as required by the Dam Safety Safeguard Policy (ESF/ESS4) of the World Bank.

Feasibility study shall be carried out in line with the relevant regulations of the Georgian Government as well as the international technical standards and guidelines, such as International Commission of Large Dams. In addition, DSPE will provide the Client with recommendations on detailed design, bidding document, etc.

4. Scope of Services

The DSPE is expected to consist of at least two (2) members: (i) dam specialist (dam engineering design and construction) / Chairperson and (ii) geotechnical specialist. In addition to the two experts, other experts, subject to actual requirements, can be mobilized for implementing specialized review.

The Client will organize periodic working missions of the DSPE at the dam sites depending on requirements in each phase of project implementation. The Client will provide DSPE with documents, information and data required for safety review in coordination with consultants and contractors.

The DSPE shall prepare and sign a Report before completion of each mission. The Report should indicate issues to be paid attention to and propose recommendations. The Chairperson (Dam Specialist) shall be responsible for coordinating activities of the DSPE, presiding at meetings, making final decisions and preparing the DSPE's Reports.

The DSPE's tasks include, but are not limited to:

- Examine dam-related studies;
- Advise MEPA on issues relating to the conception, design, and safety of dams, their appurtenant structures, the catchment area, the area surrounding the dam, the population around dams and downstream areas;
- Assist MEPA in Project preparation, technical design, procedures applicable to construction/rehabilitation work on dams and related works (electrical installations, diversion of watercourses during construction/rehabilitation work, etc.);
- Review terms of reference (TOR), pre-feasibility and feasibility reports, dam safety reports and dam safety plans (construction supervision and quality assurance plan; instrumentation plan; operation and maintenance plan; emergency preparedness plan);
- The DSPE will meet as frequently as necessary, depending on the status of the dam involved, but no less than two times a year during the study of Ilto dam. Reports summarizing discussions and findings including comments and recommendations of submittals duly signed by each participating member of the DSPE shall be provided;
- Ensuring compliance with ESS4 objectives - Appendix 1;
- Review monthly and quarterly project reports to assess progress.

5. Key Tasks of the Geotechnical Expert

The primary tasks of the Geotechnical Expert on the DSPE will include, but not necessarily be limited to, the following:

- (i) Take an active part in carrying out the DSPE's key tasks.
- (ii) Participate in the DSPE's technical missions and contribute to the drafting of technical reports.
- (iii) Maintain ongoing dialogue and consultation with DSPE's members.
- (iv) Coordinate with the DSPE chair and other panelists for fulfilling the assignments in the field and his/her home offices under the guidance of MEPA.
- (v) Review the existing geological and geotechnical investigation documentation, such as drilled core assessment, permeability tests, in-situ and laboratory tests, etc.; and assess the need for additional investigations and tests.
- (vi) Review the tender documents for additional geological and geotechnical site investigations.
- (vii) Review the technical specifications and drawings of the tender documents and provide technical support for the additional geological and geotechnical site investigations and tests, including pre-qualification, bid evaluation, and contract negotiation.
- (viii) Review the seismological aspects of the dam site and areas as required.
- (ix) Review the geological and geotechnical aspects of design reports of the Dam design (Ilto dam) and safety improvement works (existing dams).
- (x) Perform dam site inspections, along with the results of site investigations, surveys and test results, and check their adequacy.
- (xi) Review the adequacy of the instrumentation plan, such as settlement survey, slope inclinometers, and extensometers, including their numbers, locations, monitoring frequency, etc.
- (xii) Attending meetings with other consultants, contractors and the WB under the guidance of MEPA.

6. Implementation of Contract:

- (i) The work schedule and milestones shall be agreed with the Project Director in coordination with other relevant office after appointment. Members of the DSPE are expected to conduct a mission including sites visit in general twice during site investigation and design phase for an estimated duration of 4 days per mission.
- (ii) The DSPE will be maintained on an on-call basis throughout project preparation and implementation period to provide technical review and guidance

- (iii) At the request of the Project Director, DSPE members may provide technical support at their home offices and through video/audio conferences.

7. Outputs

The DSPE shall submit one consolidated Report after each mission. The Dam specialist (chairperson) shall consolidate inputs from all panelists. This report shall indicate issues to be paid attention to, needs for further detailed analysis, and propose solutions. The Panel shall work with other relevant agencies and entities in the project, design and supervision consultant and contractors to clarify relevant issues, if required. The World Bank may also send its Dam Safety Specialist to the meetings. The Panel shall also prepare other reports, if required.