

Project Concept Document

Project Information

Project name	Construction of Mastara Reservoir (hereinafter - the Project)
Sector	Agriculture
Type of project	Greenfield
Project host state	Republic of Armenia
Location and place of registration of investment project	The Project will be implemented in Armavir region of the Republic of Armenia.
Concept background	<p>Agriculture is a very important sector of the Republic of Armenia in terms of GDP, employment and export earnings, as it is the principal source of:</p> <ul style="list-style-type: none">• Temporary employment for unemployed or underemployed people;• Livelihood in rural areas, where farming accounts for about 51% of the total income of rural population (in Armenia there are approximately 335,000 farms with an average land parcel of about 1.4 hectares, mainly focused on providing for their subsistence). <p>The key drivers of productivity in the farming sector are irrigation and drainage. According to some estimates, about 80 percent of agricultural GDP is produced on irrigated land. It is acknowledged that irrigated land combined with appropriate infrastructure should play a fundamental role in ensuring the livelihood for more than 60 percent of rural workforce, as well as in the formation of almost all agricultural export earnings. Moreover, the surface runoff in Armenia is distributed extremely unevenly, both geographically and seasonally throughout the year. Regulation of runoff is impossible without reservoirs. In the context of shortage of water resources and depletion of groundwater reserves in Ararat Valley, the Government of the Republic of Armenia has put forward construction of reservoirs, including Mastara, as one of its top priority programs.</p>
Purpose of Project	<ul style="list-style-type: none">• Reduction of irrigation water costs;• Stable supply of irrigation water for de facto irrigated lands;• Expansion of irrigated lands;• Reduction of risks of flooding;• Reduced consumption of groundwater in Ararat Valley.
Project components	<p><i>I. Construction of reservoir (about US\$30.2 million);</i></p> <p>This component requires construction of a reservoir on the Selav-Mastara river in Armavir region. The reservoir will be filled with molten glacier water flows from Mount Aragats and by rain showers in spring. The total capacity of the reservoir will be 10.2 million m³, useful capacity - 8.2 million m³, the dam height will be equal to 30 m.</p> <p>As a result of the implementation of this component:</p> <ul style="list-style-type: none">• The 51 deep well pumps currently used in the catchment zone will be replaced by gravity irrigation technologies, which will reduce energy costs (by 2.1 million kWh annually), and water intake from the groundwater basin

(by 5.3 million m³ per year);

- Water supply availability for 4,384 hectares of land will be increased.

II. Upgrading of technologies of WUAs in the catchment area (about US\$0.6 million);

Creating opportunities for energy efficiency and saving constitutes the key vector for development of the irrigation-based farming sector of Armenia. As part of this component the water user associations "Shenik" and "Armavir" intend to launch a program of technological upgrade of the electrical workshops of the deep well facilities that will remain up and running after the construction of the reservoir, as well as to further develop the power cost accounting system and to enhance business management efficiency.

Upon completion of this component, reduction in energy costs and improved management of WUA are expected, which should contribute to higher overall effectiveness of the Project.

III. Program management (about US\$ 0.7 million)

Proposed project financing structure:

	Amount (US\$ million)
Republic of Armenia	6.3
EFSD	25.2.
Total:	31.5

Hence, the total cost of the Project amounts to US\$ 31.5 million. The estimated amount of co-financing for the Project funded by the EFSD is equal to US\$25.2 million.

Proposed loan terms:

- Currency of loan - US dollars;
- Interest rate – 2 % per annum;
- Loan maturity – up to 20 years, including grace period of 10 years.

The source of debt service and repayment of the borrowed funds - National Budget of the Republic of Armenia.

The Republic of Armenia Government Decree No. 730-A (18 June, 2012) approved the Program of the Government of Armenia for the period 2012-2017, which determines (para 3.1.7.2.) the following priorities for its investment policy:

- Implementation of new water supply systems in rural areas;
- Construction of reservoirs, upgrading of irrigation infrastructure;
- Rehabilitation and retrofitting of key hydraulic engineering facilities;
- Proper operation and maintenance of existing assets.

The Government Decree of the Republic of Armenia No. 442-N (of 27 March, 2014) approved the Program of Sustainable Development for 2014-2025, which promotes modernization of irrigation systems and improvement of water supply as one of its development priorities.

Project funding structure

Proposed performance bond to EFSD

Government support

Construction of the Mastar reservoir is included in the list of top priority activities and objectives of the Government program for 2015 (the Republic of Armenia Government Decree № 111 of 15 January, 2015).

Project economic and financial performance forecasts¹

Financials²:

Internal rate of return	17.2%
NPV, US\$ million	14.056
Economic return on investment <i>ab initio</i>	10 years

Sensitivity analysis of financial performance:

	Internal rate of return	NPV, US\$ million
For income reduction by 30%	12%	3.544
For increase in costs by 30%	13.1%	7.228
For income reduction by 30% and concurrent increase in costs by 30%	8.4%	-3.283
For implementation delay by 2 years	16%	9.259

Environmental impact of Project

The impact of the program on human health and on the environment is negligible. The program carries no risk of biodiversity destruction, or damage to forests, or adverse impact on hydrology of the natural waterways, or on the ecosystem. Assessment of the impact of the Project on the environment will be made in accordance with relevant international standards during preparation of the Project.

Project readiness

The degree of readiness of the Project is high enough: In 1970 “Armgiprovodkhoz” developed a conceptual design of Mastara reservoir on the basis of hydrological studies and with due account of the local context. In 2014 preliminary engineering calculations were made to assess the its cost effectiveness.

Program progress monitoring

The following performance indicators are provisionally proposed for assessment purposes:

- Reduction of power consumption by selected irrigation systems;
- Reduction of operation and maintenance costs of selected irrigation systems;
- Reduction of water losses by selected irrigation systems;
- Expansion of irrigated lands;

Information on Project Company

Project Company

The Organization, authorized to oversee the Project implementation, shall be the State Committee of Water System of the Republic of Armenia (SCWS).

SCWS was established at the Government by the Decree of the Government of the Republic of Armenia No. 92 of 9 February, 2001.

On 19 May, 2005 the Decree of the Government of the Republic of Armenia No. 663-N transferred SCWS from the Government jurisdiction to the Ministry of

¹ The data presented were calculated in 2014 for the first component of the Project (construction of Mastara reservoir per se). During the preparation of the Project detailed efficiency-related data for the entire Project will be provided.

² Project financials have been calculated based on positive cash flow projections for the anticipated gains from cost cutting and growth of agricultural production.

Territorial Administration.

On 4 December, 2014 the Government of the Republic of Armenia by its Decree No. 1346-N transferred SCWS from the Ministry of Territorial Administration to the Ministry of Agriculture.

Field of activity: Water supply and irrigation infrastructure of Armenia.

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Project operator

All current Project implementation activities, supervision of the works carried out by organizations and stakeholders, coordination of technical assistance shall be the responsibility of the Water Programs Management Bureau (WMB) of SCWS (as established by the Decree of the Government of the Republic of Armenia No. 577 of 15 December, 1994).

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In over 20 years of implementation activities under different water programs financial and procurement departments of WMB have acquired extensive experience and are fully compliant with the relevant international requirements.

Project financial statements are prepared in accordance with international financial reporting standards. Financial audits have detected no problems; the Audit reports showed no reservations, and the procurement skills have been continuously improved.

All technological and production processes will be described in the Operating Manual of the program, subject to approval of the Project for funding.