

## TC Document

### I. Basic Information for TC

▪ <b>Country/Region:</b>	<b>HAITI</b>
▪ <b>TC Name:</b>	<b>Support to a new strategy for agricultural water management in Haiti to face with climate change impact</b>
▪ <b>TC Number:</b>	<b>HA-T1327</b>
▪ <b>Team Leader/Members:</b>	Jacquet, Bruno (CSD/RND) Team Leader; De Salvo, Carmine Paolo (CSD/RND) Alternate Team Leader; Matthieussent Romain, Sarah C. (INE/WSA) Alternate Team Leader; Jean Denis, Sardou (CSD/RND); Joseph, Cedrick Guy (CID/CHA); Damais, Gilles Georges (CSD/RND); Restrepo, Lisa Sofia (CSD/RND); Cardinael Celine Agathe Marie (CSD/RND); Derilus Fabiola (CID/CHA); Sanabria, Angel (VPC/FMP); Gilles, Aurelie Flavy (CID/CID); Chavez, Elizabeth (CSD/RND); Vila Saint Etienne, Sara (LEG/SGO); Medellin Almanza, Nadin Fabiola (SCL/GDI) Matthieussent Romain, Sarah C. (INE/WSA) Alternate Team Leader; Jean Denis, Sardou (CSD/RND); Joseph, Cedrick Guy (CID/CHA); Damais, Gilles Georges (CSD/RND); Cardinael Celine Agathe Marie (CSD/RND); Derilus Fabiola (CID/CHA); Sanabria, Angel (VPC/FMP); Gilles, Aurelie Flavy (CID/CID); Chavez, Elizabeth (CSD/RND); Vila Saint Etienne, Sara (LEG/SGO); Medellin Almanza, Nadin Fabiola (SCL/GDI)
▪ <b>Taxonomy:</b>	<b>Client Support</b>
▪ <b>Operation Supported by the TC:</b>	<b>N/A</b>
▪ <b>Date of TC Abstract authorization:</b>	<b>11 Jul 2024.</b>
▪ <b>Beneficiary:</b>	Ministry of Agriculture, Natural Resources and Rural Development
▪ <b>Executing Agency and contact name:</b>	<b>Inter-American Development Bank</b>
▪ <b>Donors providing funding:</b>	<b>OC SDP Window 1 - Operational Capacity and Policy Dialogue for OC-concessional eligible countries(W1D)</b>
▪ <b>IDB Funding Requested:</b>	<b>US\$250,000.00</b>
▪ <b>Local counterpart funding, if any:</b>	<b>US\$0</b>
▪ <b>Disbursement period (which includes Execution period):</b>	24 months
▪ <b>Required start date:</b>	January, 2025
▪ <b>Types of consultants:</b>	Firm and individual consultants

▪ Prepared by Unit:	CSD/RND-Env, Rural Dev & Disaster Risk
▪ Unit of Disbursement Responsibility:	CID/CHA-Country Office Haiti
▪ TC included in Country Strategy (y/n):	No
▪ TC included in CPD (y/n):	Yes
▪ Alignment to the Institutional Strategy 2024-2030:	<b>Afro-descendants; Diversity; Environmental sustainability; Gender equality; Institutional capacity and rule of law; Productivity and innovation</b>

## II. Objectives and Justification of the TC

- 2.1 Haiti is in the intertropical zone and has a diversity of ecosystems due to variations in altitude, soil type and exposure to prevailing winds. The climate and this diversity of ecosystems represent an opportunity for national agricultural production. However, the effects of climate change on agriculture are evident and expected. Indeed, Haiti is in a very high-risk position with respect to the occurrence of adverse climatic phenomena such as hurricanes, tropical storms, waves and tropical currents. Measured through the [ND-GAIN index, its degree of exposure](#) is 35.5 in 2021 (position 169 out of 185 countries). Over the period 1981 to 2020, the country was hit on average, by 2.1 tropical storms and 0.8 major hurricanes per year (Karnauskas, 2022), thus causing significant material damage and loss of human life (CIAT, 2012). Climate models for Haiti predict temperatures to increase up to 2.3°C by 2060, precipitation to decrease up to 20% in the mid-2030s, and frequency and intensity of extreme weather events to increase. This implies important adaptation challenges for the agricultural sector.
- 2.2 Moreover, Haiti is a country in a fragile situation, with low-income levels, socio-economic challenges, high insecurity context and political upheaval. Haiti is ranked 10th out of 178 countries on the Fragile States Index (2023). It is expected that the fragile and conflict-affected states (FCS) will disproportionately suffer from climate change, including because of their geographical location and dependence on agriculture and drought will increase hunger, from already high levels ([IMF, 2023](#)). This could contribute to both malnutrition and increased dependence on imports to meet food security needs. Nearly half the population (48%) faces high levels of acute food insecurity, classified as crisis or worse (IPC phase 3 or higher) between August 2024 and February 2025. Of these people, 6,000 experience catastrophic levels of hunger and livelihood collapse, classified as IPC phase 5 (catastrophe).
- 2.3 In FY2022, the agricultural sector accounted for 15,7% of Haiti's GDP (BRH, 2022). Agricultural productivity in Haiti has stagnated over the past decades (USDA, 2016). 5 Total factor productivity (TFP) growth has decreased from 3.2% over the 2001-2011 decade to 2% over the 2012-2016 period (Nin-Pratt et al., 2020). The growth rate of agricultural production has been respectively -5% in 2018 and 2% in 2019 (FAOSTAT,

2021). This low agricultural output and declining agricultural productivity exacerbates food availability and supply, and more specifically contributes with the current food insecurity context. Among the many factors that affect agricultural productivity in Haiti such as agricultural policies which fail to adequately address issues linked to land, low access to credit and insurance, low access to markets, climate risks, watershed degradation, low levels of investment in public goods including research and productive infrastructures, the main factor remains the low access to technologies and inputs of production not adapted to unfavorable climatic conditions.

- 2.4 According to the national plan for adaptation to climate change 2022-2030, the spatio-temporal variabilities of the climate regime, the frequency and intensity of unfavorable climatic conditions are expected to increase with climate change. Indeed, compared to the reference period 1995-2014, certain models predict, for the period 2020-2039, an increase in average temperature varying between 0.7°C and almost 1°C (World Bank, 2019). By 2050, the increase in the country's average temperature, compared to the period 1986-2005, could exceed 2°C (USAID, 2017). Over a more distant time horizon (2090-2100), this increase could reach 4.7°C. However, it will not be homogeneous. Regions located in the center and a little to the east will record a more pronounced increase compared to those located near the coasts (UNDP, 2014). The sector most at risk from this increase in temperature is agriculture, particularly due to access to water.
- 2.5 The Haitian agricultural sector is characterized by the small size of farms of 0.9 ha on average (RGA/MARNDR, 2009). This sector displays the lowest level of performance in the region with a land productivity of 563 US/ha (Geert Van Vliet, 2016) and an annual remuneration of 200 US per employee (RGA/MARNDR, 2009). A reduction in productivity is estimated between 0.5 and 1.2% and distribution areas of important crops such as beans, bananas, coffee, rice, and corn are anticipated for future horizons. However, these changes could be more favorable for cocoa trees in coffee-growing areas. Access to water could more severely affect the Nord and Artibonite departments (PNA, HAITI, 2022-2030). Impacts, vulnerabilities, and risks in the agriculture sector are and will be due to increased temperatures, intense rains, floods, droughts, hurricanes, and rising sea levels.
- 2.6 Regarding water resources, which is the sector that has been the subject of more evaluations after the agricultural sector, the situation is also critical. A decrease in annual rainfall of 6 to 20% is expected, with a shift in the seasonality of rains. Intense rains, abnormally elevated temperatures, unprecedented changes in rain patterns combined, among other things, with continued population growth pose serious problems, including water deficits, trends towards desertification of certain areas and risks of significant erosion. Given the cross-cutting nature of these resources, other sectors such as energy will also be negatively impacted by water-related issues. The area's most at risk would be the metropolitan region of Port-au-Prince, the coastal regions of the Artibonite department, notably the city of Gonaïves and the southern portion of the North-West department (MDE, MPCE, UNDP, 2021).

- 2.7 Moreover, water management is key to both facing climate change and rising productivity level. The irrigation sector is characterized in Haiti by an agricultural area of 870,000 ha of which the irrigable area is oscillating between 135,000 and 150,000 ha. However, only 90,000 ha would be developed, of which 80,000 are irrigated, benefiting from 250 irrigated systems. The irrigated area represents approximately 50% of plain land. Many irrigated systems in Haiti are gravity systems, supplied with water from springs and rivers (diversion capture). They are small on average, particularly in the South-East (less than 500 hectares), and medium-sized (between 500 and 2,000 hectares). However, there are also some large systems in the country (the largest - 32,000 ha - is in the Artibonite department).
- 2.8 On the other hand, the maintenance of these systems is expensive (deterioration of infrastructure by cyclones, degradation of watersheds causing frequent silting of irrigation infrastructures, etc.) and good management is necessary to be able to make them work. Indeed, even where irrigation systems are present, an estimated 25% of irrigated land is unused, due to factors such as lack of maintenance, unsustainable technologies and poor crop selection, among others (IFM, 2023). The experience of solar pumping systems in the Plaine des Gonaïves financed by IDB through HA-L1107 is an innovative approach to reduce the cost of water, to facilitate access from boreholes and to optimize its use in the plots. However, following the fall of the Duvalier regime, a period during which water management was taken over by the State in an authoritarian manner through irrigation trustees, irrigators were left to their own devices to take charge of the entire management of irrigated areas. Due to the lack of resources available to the State today, very little support is provided to. One of the biggest governance weaknesses in the irrigation sector is the difficulty in managing reliable hydrological data by adopting modern tools like HydroBID and HydroFlow for all hydrographic systems in the country. Hence the need, through this cooperation, to work to strengthen links between universities (National and International) and the MARNDR to develop this new strategy, particularly to avoid conflicts over common resources such as that of the Massacre River between Haiti and the Dominican Republic.
- 2.9 One of the greatest weaknesses of national policies and programs on water management is no considering irrigated areas and watersheds that supply irrigation as a unique system. This approach hampers the sustainability of investments. These interventions are even less effective when there is no normative framework that regulates water management. More than 90% of investments targeting irrigation are made in infrastructure and governance of irrigated areas without considering the degradation of the biophysical environment. Environmental indicators have not seen any real improvement in recent years. Indeed, the national forest cover is among the lowest in the region (between 4% and 32% depending on the calculation method; Churches et al., 2014) and the deforestation process is only accelerating.
- 2.10 Indeed, of the country's 33 major watersheds, more than 25 are in an alarming state of degradation (Swartley and Toussaint, 2006; MARNDR, 2016). Biological diversity

and water resources are negatively impacted by soil and forest degradation. According to a case study carried out in the West Department in 2013, out of 46 existing rivers, 5 have disappeared, have become temporary only with torrential floods and the rest, around twenty, have permanent flows with low flow rates and whose beds are filled with sediment (Severin A, DDAO/MARNDR, 2013). A reform is needed at national level (MARDNR, MED, DINEPA, DONATOR, Universities...) to restructure this obsolete management and prioritize the training of executives to develop more integrated policies starting from the watershed to the irrigated area.

- 2.11 Women and girls are the main users and managers of water in the household, while men are generally in charge of managing the use of water for irrigation. When water for the home is scarce or non-existent, 72 per cent of the responsibility for carrying water falls on girls and women and 28 per cent on boys and men<sup>1</sup>. Due to this important role they play and the knowledge accumulated, women become powerful agents of change, capable of making significant contributions to the use and management of water, which could be crucial to achieve resilience and sustainability in the strategies that are designed. To this end, it is necessary to fulfill gaps and promote their participation in the decision-making spaces for the use, management and provision of Water resources. It is therefore necessary to train and raise awareness on this issue, as well as to promote the participation of women in decision-making spaces.
- 2.12 There is another potential gap in Haiti related to the access to water for irrigation for women responsible for agricultural production but with less access to water than men in equal conditions. The TC will contribute with providing evidence on that aspect also.
- 2.13 In that context, the Government of the Republic of Haiti requested the Bank's technical and financial support through non-reimbursable technical cooperation to carry out studies to develop an updated water resources management strategy for agriculture.
- 2.14 **Objective.** The objective of this technical cooperation is to elaborate technical key inputs for the preparation of a new strategy for agricultural water management in Haiti to face with climate change impact. It has been designed as a support to the client through the provision of knowledge and strategic dialogue on water resources management for irrigation The technical cooperation has four components.
- 2.15 The TC is consistent with the Updated IDB Group Institutional Strategy: Transforming for Scale and Impact (CA-631) and is aligned with the objectives of: (i) reduce poverty and inequality; and (ii) address climate change, since it will generate technical knowledge to optimize the use of water resources in agriculture for smallholder's farmers, taking into consideration climate change impacts. The TC is aligned with the operational focus areas of: (i) biodiversity, natural capital and climate action;

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<sup>1</sup> Monje, Andrea; Nuñez, Anamaría y Subiza, Dolores (2016). *¿Tiene género el agua?* Infografía. Washington, DC: Banco Interamericano de Desarrollo, BID.

(ii) Institutional Capacity, Rule of Law and Citizen Security; (iii) Sustainable, Resilient and Inclusive Infrastructure; and (iv) Productive development and innovation through the private sector. In addition, this TC is consistent with the Agriculture Sector Framework Document (GN-2709-16).

- 2.16 This TC is also aligned with the Country Strategy 2017-2021 (GN-2904) extended for the transition period until 31 December 2024, on the strategic axis: 1) Improving the business climate to improve productivity; it will contribute to strengthening the quality of agricultural infrastructure, promoting productivity in the agricultural sector, and consequently improving household income and fighting food insecurity. In addition, this TC responds to the 3 cross-cutting themes of the country strategy, namely: (i) Resilience to climate change; (ii) Protection of the natural environment; and (iii) Gender equality. Finally, it is also aligned with the identified funding source OC SDP Window 1 - Operational Capacity and Policy Dialogue for OC-concessional eligible countries (W1D) since it will contribute to strengthen the capacities of the Government of Haiti in managing water resources and public investments in this field.
- 2.17 There is a large previous experience in Haiti with investments in watershed management and irrigation programs, with mixed results but many lessons learned that can be systematized for the design of a more comprehensive and adapted approach to the new challenges. For instance, there is a consensus on the importance of social engineering as a critical input to ensure the sustainability of physical investments. It is also critical to work on access to markets before or at least at the same time with infrastructure rehabilitations. Some of the technical outputs of the TC may also be useful whether new investment operations financed by the Government and/or international donors should be prepared in the future.

### III. Description of activities/components and budget

- 3.1 **Component 1: Diagnosis on hydro resources available in Northern Haiti** (Artibonite, Northwest, North and Northeast departments), except the Artibonite watershed<sup>2</sup>. With this component an updated situation of water resources in northern Haitian watersheds will be prepared, based on the existing information available in public institutions, academic entities and NGOs. A firm will be contracted to prepare a comprehensive report as a main input for the elaboration of the new strategy. The consultant will: (i) process available data on water availability in the main watersheds of the four departments of the northern region; (ii) describe the current uses of water resources and constraints, in particular in the current climate change context; (iii) elaborate an inventory of existing irrigation systems and investment projects in these areas; and (iv) characterize the existing social organization for the use of the

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<sup>2</sup> Due to: (i) the current political and social situation in the Artibonite Valley (gang activities); (ii) the abundance of previous studies and investments, especially financed by IDB in the last decade; and (iii) the willingness to prioritize small and medium size infrastructures for a better impact, this TC will not include the analysis of the Artibonite irrigation system and watershed.

water resources in a representative sample of situations. This characterization will include a specific analysis of potential existing gender gaps in the access and governance of water resources. The main output of this component will be a comprehensive report on the current situation of water resources in the northern Haitian watersheds.

- 3.2 **Component 2: Comparative analysis of past and current irrigation and watershed management strategies deployed by institutional actors and farmers.** An individual consultant will be hired to synthesize lessons learned about support to collective irrigation and water resources management in Haiti and the region. Based on literature and interviews, the consultant will establish a representative typology of existing irrigation systems and project that have promoted irrigation and watershed management in the last decades at national level. He will establish a comparison between types in terms, at least, of costs and benefits, efficiency in water use, gender and diversity inclusion and sustainability. The main output of this component will be an analytical report on strategic recommendations based on lessons for public support to irrigation and water resources management in Haiti.
- 3.3 **Component 3: identification of opportunities and constraints for potential new investments in collective irrigation and water resources management in northern Haiti in a climate change context.** An individual consultant will be hired to propose the structure and outline of a new strategy for irrigation and water resources management in Haiti. Based on Components 1 and 2 products and the review of regional experiences (benchmarking), the consultant will elaborate an output that includes the main axis of a renewed investment strategy in irrigation and water resources management for the northern region that would help to face with the expected medium- and long-term impacts of climate change. The proposal will include specific guidelines to address the gender gaps identified in Components 1 and 2. Once approved by the Bank and the Beneficiary, this proposal will be used by the Ministry of Agriculture' authorities for further main decision in terms of public investments in water resources management and irrigation (where, how, when).
- 3.4 **Component 4: Dissemination of products and results.** Main expected outcomes of the TC will be shared and discussed with stakeholders during 2 workshops before diffusion. If the political and social situation allows it, they will take place within the Haitian Ministry of Agriculture offices. If not, they will be organized on a virtual modality.
- 3.5 The estimated total cost of this operation is US\$250,000 to be financed with resources from OC SDP Window 1 - Operational Capacity and Policy Dialogue for OC concessional eligible countries (W1D). The operation will not receive counterpart funding.

**Indicative Budget**

<b>Activity/Component</b>	<b>Description</b>	<b>Total Funding</b>
Updated data about hydro resources	Situation of water resources in the northern Haitian watersheds	130,000
Comparative analysis of past and current strategies	Typology of projects and initiatives	60,000
Opportunities and constraints for a renewed strategy	Main axis of a renewed investment strategy in irrigation and water resources management for the northern region of Haiti	40,000
Diffusion	Workshops and publications	20,000
<b>TOTAL</b>		<b>250,000</b>

3.6 This TC will be managed by the RND team in charge of the Haiti agriculture portfolio management. The senior sector specialist assigned to RND Haiti portfolio will be responsible for the supervision of this TC as Team Leader. He will count with the permanent technical support provided by the agriculture sector specialist based in the country office (consultant). The supervision of this TC may also count with the support of an additional technical expert on water and irrigation management that could be hired, if needed, with additional resources dedicated to portfolio supervision.

3.7 The IADB/GCM TC reporting system will be used to monitor progress and report the execution of the TC.

**IV. Executing agency and execution structure**

4.1 This TC will be executed in a 24-month period, and all products will be delivered during the second year of execution (see results matrix in annex).

4.2 The Bank, through CSD/RND, will be responsible for the execution of the TC. The main beneficiary and counterpart for the execution of the Program will be the Ministry of Agriculture, Natural Resources and Rural Development (MARNDR) as a public entity responsible for the sectorial policy, which will be involved in all stages of the operation. The MARNDR will provide, among others: (i) information necessary for the preparation of the expected outputs; (ii) accompaniment for potential field visits (when possible) and interviews and (iii) convening of relevant actors in the sector. It is considered that the operational capacity of the MARNDR is currently extremely weak, due to the social and political situation in Haiti, and in this context the activities envisaged in the project would not be carried out in an adequate and timely manner, with possible delay in the execution of the TC, preventing the achievement of its objectives. Furthermore, the current political and social situation in the country may discourage firms and consultant to participate in local public procurement processes and sign contracts with the Haitian public administration.

4.3 In this regard, in order to expedite and ensure the completion of the objectives of this operation, the MARNDR has requested that the Executing Agency for this TC be the Bank. To this end, all administrative procedures, technical supervision, necessary coordination, responsibility for the final product, monitoring and final evaluation will be the responsibility of the CSD/RND Division. The CSD/RND team will contract the consultancies, organize the activities and supervise the products developed by the



consultancies. The monitoring and final evaluation will be carried out under the responsibility of CSD/RND.

- 4.4 The direct execution of the Technical Cooperation (TC) by the Bank ensures that procurement processes, including the contracting of consultancies, are not subject to delays or uncertainties stemming from government execution mechanisms. Additionally, financial execution will not rely on the availability of public budget funds. It is crucial for the first contracts to become effective in the first quarter of 2025 to deliver results within the current government's term. Direct execution by the Bank will also enable the provision of technical inputs and public policy recommendations, facilitating the preparation of the Bank's next country strategy. This outcome is achievable only if the Bank oversees the contracting process, as the time required for ministry-led procedures would not align with the necessary schedule. The urgency of these time constraints constitutes a special condition that justifies execution by the IDB, as outlined in the Procedures for the Processing of Technical Cooperation Operations and Related Matters (OP-619-4).
- 4.5 Final terms of reference of the consultancies and all technical outputs will be prepared with and validated by the Haitian Ministry of Agriculture and Natural Resources. A technical focal point will be appointed in the Ministry to facilitate the coordination with the Bank's team in charge of the supervision of the TC. The Bank's team and the Ministry of Agriculture focal point will meet at least monthly to monitor the execution of the TC and take the relevant decisions to ensure that the technical staff and consultants in charge will deliver on a timely manner.
- 4.6 The activities to be executed under this operation will be included in the Procurement Plan and will be executed in accordance with the Bank's established procurement methods, namely: (i) hiring of individual consultants, as established in the Complementary Workforce Document (AM-650); and (ii) contracting of services provided by consulting firms in accordance with the Institutional Procurement Policy (GN-2303-33) and its associated guidelines.
- 4.7 The knowledge products generated within this technical cooperation will be the property of the Bank and may be made available to the public under a creative commons license.
- 4.8 There are no conditions to be fulfilled neither prior to first disbursement nor for the execution of the TC.

## **V. Major issues**

- 5.1 If the sociopolitical situation remains conflictive, fieldwork would be very difficult; in that case, the consultancies will be implemented on a virtual modality basis, which will not affect so much the expected results of the TC, as most of the studies will be based on existing data that will be shared and interviews.

## **VI. Exceptions to Bank policy**

- 6.1 There is no exception to Bank policy.

## **VII. Environmental and Social Aspects**

- 7.1 This Technical Cooperation is not intended to finance pre-feasibility or feasibility studies of specific investment projects or environmental and social studies associated with them; therefore, this TC does not have applicable requirements of the Bank's Environmental and Social Policy Framework (ESPF).

7.2 According to the Bank's Environmental and Social Policy Framework (ESPF), there are no minimum, or no environmental and/or social impacts associated with this operation. The Environmental and Social Impact Category for this operation is "C". Environmental and Social Performance Standards (ESPS) 1, 2 and 10 were triggered and actions will be considered during project design, considering the management system given by the local regulatory framework and the preparation by the borrower of an Environmental and Social Management System (ESMS) in accordance with the scope and nature of the expected impacts and risks associated with the operation.

**Required Annexes:**

[Request from the Client - HA-T1327](#)

[Results Matrix - HA-T1327](#)

[Terms of Reference - HA-T1327](#)

[Procurement Plan - HA-T1327](#)