

Project Summary¹

SIGRA

Project:	Analyze, design, construct, and start the operation of an Information System for Agricultural Risk Management (SIGRA) in its agro-climatic component that is linked to the Information System for Rural Agricultural Planning (SIPRA in Spanish) which contributes to the formulation of public policy and decision-making.
Objectives:	<ul style="list-style-type: none"> • Support the registration of the information needed for managing agro-climatic risk and further the coordination and reinforcement of the information processes and services within the network of prioritized allies while considering the gender and inclusion framework. • Implement methodologies and develop models to estimate the parameters of agro-climatic risk assessment. • Implement methodologies, models, analyses, and indicators for agricultural risk management from an actuarial perspective and based on meteorological and agricultural information from surface and satellite. • Implement and put a technological solution into operation that will make it possible to contribute to the management of agro-climatic risk while taking gender and inclusion considerations into account. • Enhance the dissemination, use, and appropriation of the information products and services for the management of agro-climatic risk. • Implement strategies to reinforce the UPRA IT management which will make it possible to give SIGRA sustainability and continuity and ensure its coordination with the Information System for Rural Agricultural Planning – SIPRA.
Background:	Agricultural work is considered one of the most risky jobs compared to other economic activities due to the constant exposure to various types of risks, whether natural, health, market, financial, etc. These types of risks can affect productivity, yields, profitability, and producers' income. They may be affected by a high level of indebtedness and a decrease in their financial ability to meet their

¹ This summary is for informational purposes only. Full information is provided in the terms of reference (TORs), available in Spanish. In case of differences, the Spanish version shall prevail.

	<p>obligations, make new investments, implement innovations and development as well as the impact on the marketing of products and the effect on food security in their territories.</p> <p>Currently, the country does not have a proper, homogeneous, automated and easily accessible platform that brings together and centralizes the use of the necessary information to carry out comprehensive management of agricultural risks. Therefore, it is necessary to implement an agricultural risk management system (SIGRA) that collects and organizes the information generated by national entities with respect to the climate, soil and its uses, pests and diseases, research and technology, infrastructure, sector statistics on the production process (yields, production costs, etc.), prices, credit, etc. by means of its web platform and technological tools. Through models developed for analysis, these supplies would be transformed into products with technical parameters and standards of quality that would be useful to various public and private stakeholders for their decision-making.</p> <p>Within the framework of the Inter-administrative Master Agreement No. 20161095 between the Nation – Ministry of Agriculture and Rural Development – MADR, the Financing Fund for the Agricultural Sector – FINAGRO and the Planning Unit for Rural Lands, Land Preparation, and Agricultural Uses – UPRA signed in 2016 and using technical cooperation resources from the Banco de Desarrollo de América Latina, CAF, support was provided to carry out the study entitled “Study focused on identifying opportunities for improvement in agricultural insurance with respect to climate risks to which banana, sugar cane, corn, forestry, rice, tobacco, and cotton crops are exposed.” The study recommended, along with other things, the creation of an “Agricultural Risk Information System” that would include agro-climatic, agronomic, and economic information from public and private sources. According to that study, the system would manage basic and thematic information, construct variables and indicators for decision-making at different levels and by different users.</p> <p>The Mission for Rural Transformation, in turn, done in 2016 based on the 2015 study, “Proposal for the construction of an information system for the</p>
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	<p>Colombian agricultural sector,” emphasized the fact that the information that is produced in the Colombian agricultural sector is fragmented, comes from various sources, and lacks standards of quality.</p> <p>Likewise, the Foundations of the National Development Plan 2018-2022 have established that MinAgricultura will implement strategies to guide a resilient development of the agricultural sector. Included among these are the launching of the Information System for Agricultural Risk Management (SIGRA) and the implementation of risk management plans and tools such as parametric agricultural insurance.</p> <p>In this respect, SIGRA becomes a nationally needed challenge in which there is progress that is relevant to carrying out the design, development, implementation, and production stages with benefits in terms of availability of information for managing agricultural risks and with co-benefits in terms of increasing inter-institutional coordination for the public good.</p> <p>Based on previous studies and the Inter-administrative Framework Agreement No. 20161095, a description of the system and the plan for its design, development, and implementation is available. These tasks set out the methodology that contributes to the estimate of health, market, and financial risks and, in particular, agro-climatic risk, which is the subject of this project.</p> <p>Within the framework of the intersector initiative of the Ministry of Agriculture and Rural Development (MADR) through the Office of Financing and Agricultural Risks and the Office of Information and Communications Technology, the Financing Fund for the Agricultural Sector (FINAGRO), the Vice Presidency of Agricultural Guarantees and Risks, and the Rural Agricultural Planning Unit (UPRA), the Office of Efficient Land Use, Land Adaptation, and the Office of Information and Communication Technologies have joined forces to work towards the management of agricultural risks.</p> <p>That is how the concept of SIGRA was developed in a first phase by CAF – Banco de Desarrollo de América Latina. In it the four risks (climate, health, market, and financial) to be included in the System,</p>
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the types of analysis required, world-class architecture as well as some cases of preliminary functional uses, and recommendations on key resources in order to operate were identified. In this initial phase, it was possible to identify:

- The inter-institutional relationship required by risk component and key associates in the development of SIGRA

In this relationship plan some of the entities that could be part of the network of allies for each risk component were highlighted and prioritized according to their role and relevance. Within the agro-climatic component, which is the subject of this project, IDEAM and Agrosavia, in particular, stand out as key associates.

- The main sources of information identified by SIGRA risk component

However, not all of the information needed (variables for estimating each parameter) is available to do an estimate of the agricultural risks that were prioritized in previous studies: Agro-climatic, Health, Market, and Financial That is why SIGRA will take on the agro-climatic risk component for threats and prioritized productive systems in this first phase since there more information is available on it.

With regard to the agro-climatic component, the information from IDEAM, Agrosavia, and the business associations stands out.

With respect to the risk maps with actuarial criteria, it can be stated that for Colombia, maps of agricultural risks and the determination of the technical bases for the actuarial calculation of agricultural insurance in Colombia were developed in the late 1990s under the auspices of MADR. The work was carried out by the Ecosistemas Ltda Consortium - Ingenieros Consultores – Señal 3 Ltda. In this task, hydrometeorological risks were evaluated and quantified (drought, windstorm, hail, and flooding) for various of the country's departments. In addition, analysis and quantification of the agricultural factors that are essential for actuarial calculations for coffee, sugarcane, and cotton crops were done. The technical bases were defined for the actuarial

	<p>calculations of the risk rates and the risk maps were prepared based on the ILWIS geographical information system.</p> <p>Moreover, the Information System for Rural Agricultural Planning - SIPRA provides the products and information analysis that UPRA generates as a support for rural agricultural planning. In SIPRA, options are provided for consultation and downloading information for unrestricted use. This was developed mostly with ESRI technology and has three layers of architecture: data, services, and presentation, and it is uploaded into a private cloud. The data layer handles the persistence of data through a database in PostgreSQL with an ArcSDE spatial extension (Extension Database Extension).</p> <p>The service layer is supported by ArcGIS Server which provides the capability to generate geographical web services. Geographic web services that the system has are: MapServer for mapping services, GPServer for geo-processing services, ImageServer for raster image services, and GeometryServer for geometry services. They also have SOE (Server Object Extension) services developed in .NET with ESRI SDK. These services are implemented to extend the functionality of the ArcGIS Server and in this case they are used to consult the alphanumeric data that are available in the system.</p> <p>The presentation layer consists of a front end application developed using ESRI Web AppBuilder, an application that ESRI provides with ready to use features, but which also makes it possible to expand and develop new functions. This application is developed in Java Script and uses the Dojo framework. It has features that allow the user to consult, interact and generate reports on the information products contained in the system and that are classified as: basic, intermediate, and advanced. In their development, they were tailored to the needs of the entity and oriented towards supporting the efficient use of rural land with a territorial approach.</p> <p>In line with the measurements done with Google Analytics, the system had 15,731 visits to its pages and 6,733 users in the second half of 2018.</p> <p>The staff at UPRA's ICT Office is responsible for the management of IT, and consequently, of</p>
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SIPRA. This team has professionals trained in different areas who support the operations of the organization from an IT point of view, in its mission, strategic, support and evaluation processes. Currently, there are 13 staff members in provisional status, one political appointee and 54 contractors.

Below, with respect to the domains of the IT architecture framework, is a list of the regular staff of the ICT Office:

- IT Strategy and Management: This is under the auspices of the head of the ICT Office (Land surveyor).
- Information Management: This consists of four professionals: three land surveyors and one economist.
- Information Analysis: This includes three land surveyors
- Information Systems: This is composed of a land surveyor, a computer engineer, and a civil engineer.
- Technological Services: This is under the authority of a Telematics Engineer.
- Use and Appropriation of IT: This headed up by a forestry engineer.

All of the above mentioned officials have postgraduate studies. The 54 contractors, in turn, are professionally trained in fields such as: Communication Science, Business Administration, Telematic Engineering, Computer Engineering, Forestry, Land Surveying, Statistics, Agricultural Engineering, Agronomy, Electronics Engineering, Surveying, Industrial Engineering and Environmental Engineering and all have experience and expertise in ICT.

The UPRA process map considers strategic processes, mission processes, support processes, and evaluation processes. Currently, the Unit is restructuring processes. The Strategic Process of "Knowledge Management" includes ICT innovation management and is developed through the investment project called "Innovation Management Service for Information and Communication Technologies at the National Level in the Efficient Use of Rural Agricultural Land." Their general and specific objectives are detailed below:

	<ul style="list-style-type: none">• General objective: Improve the Management of Innovation in information and communications technologies for the efficient use of rural agricultural land. • Specific Objectives:<ul style="list-style-type: none">○ Reinforce the management of information in accordance with the needs of UPRA processes.○ Enhance the information analysis services in generating institutional products.○ Consolidate the information systems as a support for UPRA management.○ Bolster the dissemination, use and appropriation of UPRA products and services for rural agricultural planning. <p>Likewise, there is, within the support processes, the Information Technology Management process that is developed through the investment project called: “Reinforcement of UPRA’s Capacity for Institutional Development of Adequate Management of Rural Territory at the National Level,” in its objective to “Consolidate the management of information and communications technologies at UPRA.” In it, the IT strategy and management domain are implemented, the guidelines are applied (applicable to UPRA) that make it possible to develop information domains, information systems, IT use and appropriation, and the management of technological services required by the operation, support, maintenance and security required to provide the capacity to comply with the ANS defined in the entity.</p> <p>In addition, UPRA has a Strategic Plan for Information and Communications Technologies 2019 - 2022 that is made up of 4 programs and 9 projects and provides the strategic direction of the ICT Office for this period thus meeting the entity’s mission objectives.</p> <p>UPRA’s Strategic Plan for Information and Communications Technologies (PETIC in Spanish), started from an analysis of the current situation (as of 2018) based on compliance with the guidelines of the MINTIC IT Architecture Reference Framework, and a desired situation was projected which must be achieved through the</p>
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	<p>implementation of the projects formulated to close the gaps.</p> <p>UPRA has succeeded in capitalizing on an important experience in information management for the agricultural sector that has earned it an award as a success case at the national level for the information analysis it has done for the sector.</p> <p>In line with the preceding, as a technical entity that is affiliated with MADR, UPRA directs the planning for rural agricultural land and is trained in the development of systems for the agricultural sector such as the Information System for Rural Agricultural Planning (SIPRA). Thus it is ideally suited to spearhead and manage SIGRA and provide support, development, sustainability, and stability for the tool from a technical point of view along with appropriate interaction between national entities and associations.</p> <p>The project is very important for the country because with its agro-climatic component and the risk maps with their actuarial criterion, SIGRA will be able to improve risk management in the agricultural sector in the following cases:</p> <ul style="list-style-type: none">• Proper quantification, targeting, and prioritization of incentives, supports, and transfer instruments that are granted by the national government and oriented towards mitigating agro-climatic risks that affect the agricultural sector.• Identification, analysis, evaluation, and monitoring of agro-climatic risk conditions that affect the Colombian agricultural sector especially under an analysis within the gender and inclusion framework.• Fostering research on, education in, and knowledge management of agricultural insurance along with other risk transfer instruments in the country.• Planning strategies to mitigate the impact of climatic and natural events that affect the agricultural systems.• Support for the development of a culture of risk management that is focused specifically on the country's agricultural community and exporters of agricultural goods from the perspective of food security.
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	<ul style="list-style-type: none"> • Connecting the institutions that generate the information needed for analyzing agricultural risk in the agro-climatic component. • Development of zoning and monitoring mechanisms for threats, weaknesses, and agro-climatic risks through information technology. • Development of models, predictions, and indicators for the analysis of information and transforming it into products and into suitable language for different interest groups so that it will enable them to make decisions.
<p>Procurement process:</p>	<ul style="list-style-type: none"> • Call for proposals starts 26 September 2019. • Deadline for the reception of intentions of participation and Non-Disclosure Agreements: 03 October 2019 (23:59, Bogotá, D.C., Colombia, UTC-5). • Deadline for the reception of inquiries: 10 October 2019 (23:59, Bogotá, D.C., Colombia, UTC-5). • Publication of answers to inquiries: 24 October 2019. • Call for proposals ends 07 November 2019 (23:59, Bogotá, D.C., Colombia, UTC-5). • Analysis of proposals: between 8 and 21 November 2019. • Notification of awarding: 25 November 2019.
<p>Administrative requirements:</p>	<p>All bids must include two (2) separate files:</p> <p style="text-align: center;"><u>DEVELOPER FILE</u></p> <p style="text-align: center;">GENERAL INFORMATION ON THE DEVELOPER/PROPONENT</p> <p>ABOUT THE DEVELOPER/PROPONENT</p> <ul style="list-style-type: none"> • Include a brief history. • Describe the organizational structure and management. • Explain the services offered and what the most representative business lines have been. • Describe any legal proceedings in which the provider has been involved. Include dates, parties involved, reason for law suit, and current status. <p>ABOUT YOUR CLIENTS</p> <ul style="list-style-type: none"> • Indicate the number of clients you currently have.

	<ul style="list-style-type: none">• Name your main clients and include the following information:<ul style="list-style-type: none">○ Client Name○ Date or length of the relationship;○ Scope of the service provided;○ Name, phone, and email of the contact person. <p>YOUR RELATIONSHIP WITH CAF</p> <ul style="list-style-type: none">• Describe any current or past business relationship with CAF.• Give a detailed description of your experience in this relationship, in the event that it applies. <p>DOCUMENTATION/INFORMATION ABOUT THE DEVELOPER/PROPONENT</p> <ul style="list-style-type: none">• FOR CORPORATE ENTITIES:<ul style="list-style-type: none">○ Document that reports on the corporate entity's capital structure.○ Two (2) recent audited financial statements.○ Updated incorporation document of the company.○ Electronic copy of the Code or Tax Identification Number.(NIT).○ ID of the Company's Legal Representative.○ Document certifying the Representative in the event that the representative is not named in the incorporation document.• FOR CONSORTIUMS AND/OR TEMPORARY JOINT VENTURES:<ul style="list-style-type: none">○ Legal documents certifying the consortium and/or temporary joint venture in accordance with the regulations of the country of origin of the consortium or joint venture.○ Certified copies of the legal filings establishing the Temporary Joint Venture or Consortium.○ Document establishing the person designated by the Consortium and/or Temporary Joint Venture to exercise the legal representation and who, for the purpose of (this document) shall have full authority with broad and sufficient powers to bind the Consortium and/or Temporary Joint Venture. It will include the basic rules
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	<p>governing their relationship and responsibility to compel all members.</p> <ul style="list-style-type: none"> ○ Terms of participation of each of the members of the joint venture. ○ Legal documentation that gives details on the recipient of the fees. ○ All information requested for “CORPORATE ENTITIES” (listed above) for each of the companies. <p>The omission of the incorporation documentation of the temporary joint venture or Consortium from the bid cannot be remedied and shall be cause for rejection of said proposal.</p> <p>The members of the consortium or temporary joint venture shall be jointly and severally liable with regard to the obligations contracted with CAF. This shared responsibility shall be clearly stated in the incorporation filing of the consortium or temporary joint venture.</p> <p>In no case shall the consortium or temporary joint venture nor its members acting separately be able to participate in this invitation with more than one bid.</p> <p style="text-align: center;">INFORMATION ON THE PROPOSED SERVICE</p> <p>METHODOLOGY TO BE USED IN THE BID</p> <p>Explain the work methodology to be used in the greatest detail possible while considering the following and the activities and deliverables described in Appendix 3: Technical Specifications:</p> <p>PLANNING</p> <p>Describe the detailed plan of activities, in which is included:</p> <ul style="list-style-type: none"> ● Activities ● Roles ● Roles ● Major milestones in the development of the job. ● Total duration and duration of each part of the job. ● Estimated commitment (during the time the job takes) of the Developer/Proponent’s resources. ● Working premises.
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- Risks in the project and factors that are critical for success.
- Work plan with activities and deliverables.

DELIVERABLES

Enumerate and describe the deliverables in accordance with Appendix 3: Technical Specifications.

COMPETITIVE ADVANTAGES

- Describe the competitive advantages the developer has for supporting the project.
- Specify the mechanisms that would be used to ensure that the service will be of high quality throughout the project.

SPECIFIC EXPERIENCE OF THE DEVELOPER/PROPONENT

Describe your specific experience with projects related to the goals in this call for bids based on appendices provided in the terms of reference.

TASK FORCE

Specify the Task Force that will be set up to undertake the project in accordance with the appendices provided in the terms of reference.

LEADER OF THE TASK FORCE

Specify the experience of the leader of the task force in accordance with the appendices provided in the terms of reference.

COST FILE

COST STRUCTURE

Describe the cost structure in detail and specify any other direct or indirect expenses arising from the signing, implementation, and completion of the contract as a result of this selection process that CAF must pay directly if applicable.

The Developer/Proponent shall be responsible for any obligation related to the payment, withholding, or collection of any tax, levy, or duty required in the country in which the invoices associated with the contract are issued.

	CURRENCY The value of the bid must be presented in United States Dollars (USD).
Budget:	Up to USD 2,062,976
Duration:	Up to 27 months.