

Amazonia + Program

CONSULTANCY TO CONTRIBUTE TO THE DEVELOPMENT OF TOOLS AND APPLICATIONS TO SUPPORT EARLY WARNING AND MONITORING OF FOREST FIRES, DEFORESTATION, FOREST DEGRADATION AND FOREST REGENERATION IN THE CONTEXT OF AMAZONIA+.

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# GENERAL INFORMATION

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| **Title** | **CONSULTANCY: TO CONTRIBUTE TO THE DEVELOPMENT OF TOOLS AND APPLICATIONS TO SUPPORT EARLY WARNING, FOREST FIRE MONITORING AND MONITORING OF DEFORESTATION, FOREST DEGRADATION AND REGENERATION IN THE CONTEXT OF THE AMAZONIA+ PROGRAM** |
|  |
| **Beneficiaries** |  |
| **Country** | Any country in the Amazon basin |
| **Period for completion of the**  **work** |  |
| **Application deadline** | **March 3rd, 2025 at 12 P.M. (BOGOTA TIME)** - 18:00 (PARIS TIME) |

# CONTEXT AND JUSTIFICATION

* 1. EXPERTISE FRANCE

Expertise France ([www.expertisefrance.fr](http://www.expertisefrance.fr)), is the public agency in charge of France's international technical cooperation. It designs and implements projects that aim to contribute to the balanced development of partner countries, in line with the Sustainable Development Goals (SDGs) of the 2030 Agenda and France's external action priorities. The agency coordinates and implements projects at the national and regional levels in the main areas of public action:

* + - Democratic, economic and financial governance
    - Peace, stability and security
    - Climate, Agriculture and sustainable development
    - Health and human development

In these fields, Expertise France carries out engineering and implementation missions for capacity building initiatives, mobilizes technical expertise and has specific capacity to assemble projects involving public expertise and private skills.

As of January 1, 2022, Expertise France is a subsidiary of the French Development Agency (AFD Group). With a volume of activity of 341 million, more than 380 projects in a hundred countries, Expertise France has more than 625 employees at the headquarters in Paris and more than 600 partners in the world. In Latin America, Expertise France is mainly involved in regional projects or programs. In October 2018, the first Expertise France office in Latin America was opened in Bogota, Colombia. Its main focus is the implementation of the climate and biodiversity programs, EUROCLIMA and Amazonia+ funded by the European Union.

* 1. THE PROGRAM AMAZONIA +

The Amazonia+ Program, funded by the European Union, was created in response to the environmental crisis facing the Amazon biome. It is part of the Team Europe Initiative (TEI) for the Amazon called the Amazon Basin Green Transition Program.

The overall purpose of the Amazonia+ Program is to improve the capacity of the eight Amazon Basin countries (Colombia, Bolivia, Brazil, Ecuador, Guyana, Peru, Suriname, Venezuela) to mitigate CO2 emissions and adapt to the effects of climate change, to significantly reduce deforestation and to improve the protection of their biodiversity.

Specifically, the program targets two outcomes:

1. Strengthen the capacity of the Amazon Basin countries to prevent, monitor, control, combat and remedy deforestation, forest degradation, forest fires and their causes.
2. Improve opportunities for indigenous peoples and local communities to participate in the development and implementation of environmental and forest governance policies and mechanisms.

The Amazon+ Program is jointly implemented by the Agenzia italiana per la Cooperazione alloSviluppo (AICS), the Fundación Internacional y para Iberoamérica de Administración y Políticas Públicas (FIIAPP) and Expertise France (EF), jointly with the European Commission’s Joint Research Centre (JRC). AICS will also provide the secretariat for the program. This is a regional program that will be implemented from February 2023 to February 2027, with a total budget of 18 million euros.

The Amazon+ Program adheres to the objectives and principles of the Regional Agreement on Access to Information, Public Participation and Access to Justice in Environmental Matters in Latin America and the Caribbean (Escazú Agreement), and foresees a joint work with organizations at the regional level. All activities will be organized from a gender perspective in order to identify and differentiate the strategic needs and interests of women and men, particularly indigenous peoples. Specifically, Activity

1.3 proposes capacity building to fill scientific gaps that will contribute to curbing deforestation and forest degradation and fires.

2.3 JUSTIFICATION

The Joint European Research Centre (JRC), plays a key role in multiple phases of the EU policy cycle, contributing to the overall Horizon Europe objective of research and innovation, addressing climate change, contributing to the achievement of the UN Sustainable Development Goals and boosting EU competitiveness and growth.

Under the Amazonia+ program, it facilitates collaboration and strengthens the impact of research and innovation on development and supports the creation and better dissemination of excellent knowledge and know-how. In the context of the AMAZONIA+ program, its activities focus on the program's main actions to prevent, monitor and combat forest fires, on mapping and monitoring forest cover disturbances in the Amazon region using satellite imagery, and on supporting the restoration of damaged areas.

It is necessary to contract a consultancy service that ensures that the service to be offered contributes in the Amazon context to the exchange of techniques and the development of tools for the assessment

of deforestation, forest degradation and forest fire assessment and integrates this knowledge with platforms such as the Global Wildfire Information System (GWIS), contributing to provide valuable and timely information to support informed decision making and the implementation of effective forest management and conservation strategies under a multidisciplinary approach that combines technology, data science, and collaboration with governmental and non- governmental entities.

# OFFER DESCRIPTION

* 1. OBJECTIVES
     1. General Objective

To develop and optimize an integrated and coordinated approach for the monitoring and management of forest resources in the Amazon region, through the application of advanced technologies and collaborative strategies, in order to improve monitoring, early warning and response to forest fires, contributing to reduce forest degradation, and to strengthen the capacities of decision makers and local populations.

* + 1. Specific Objectives
* Conduct a comprehensive and coordinated review with the Joint Research Center (JRC) on the state of the art and potential improvement of current approaches for forest monitoring in the Amazon region, based on mapping and monitoring of forest cover disturbances using satellite imagery. This review will include the precise differentiation between the main disturbance factors, such as selective logging and forest fires.
* Prioritize and establish effective strategies for the development and optimization of tools and applications to improve the collection and analysis of data for early warning and monitoring services for forest fires and forest degradation, which will contribute to improve the rapid and efficient response to these threats.
* Develop data-driven recommendations resulting from this international collaboration, ensuring consistency and complementarity of existing efforts in early warning and monitoring of wild land fire and forest degradation These recommendations will be directed to decision-makers to improve forest management and fire response strategies.
* Generate a proposal for training strategies for government officials, emergency personnel, local communities and other relevant stakeholders on the use of the new tools and systems.
  1. MAIN ACTIVITIES

The consultancy will contribute to:

***PROFILE 1:***

**The assessment of forest fires and the development of tools and applications in GWIS by developing the following activities:**

- Review of Methods and Data Sources for wildfire early warning and monitoring

* It will conduct a comprehensive review of methods and potential data sources relevant to early warning and monitoring of forest fires in the Amazon countries. It will include the analysis of early warning and monitoring systems, defining the scope and type of data needed to improve these systems in the Amazon context and facilitate data modeling, ensuring the integrity and availability of the data.

- Data Analysis and Modeling

* It will include the processing of structured and unstructured data from a variety of data sources, including remote sensing and ground collected data, in the Amazon countries.
* It will analyze large volumes of data to identify relevant trends and patterns in the Amazon countries
* It will contribute to the development of remote sensing technics for the Near-Real Time (NRT) mapping of wildfires in the Amazon. Furthermore, it will complement this first assessment through the classification of high-spatial resolution imagery for detailed analysis of burnt areas.
* It will make use of AI predictive models and machine learning algorithms to improve the accuracy of early warning and monitoring of forest fires.
* It will include the implementation of AI modeling techniques as well as the combination of diverse spatial resolution remotely sensed data to enhance the accuracy of the mapping of burnt areas in the Amazon countries.

- Preparation of Analytical Reports

* It will prepare analytical situation reports on the impact of wildfires in the Amazon countries, also in relation to forest degradation, and prospective scenarios for preventive measures.
* It will contribute to elaboration of scientific publications on the basis of the analytical reports above.
* It may contribute to writing JRC’s policy briefs tailored to different target audiences in the Amazon and LAC regions, including policy makers, operational agencies, academia and civil society organizations, making sure that reports are clear, concise and relevant to decision making.
* Contribute to JRC’s dissemination and communication strategies, as needed, to generate capitalization products of the results of the analytical reports in an agile and effective manner.

These activities are aimed at strengthening forest fire early warning and monitoring systems through the use of advanced data and analysis techniques, as well as improving the communication and understanding of results to support informed decision making.

***Profile 2***

**The development of tools for the assessment of forest degradation through the following activities:**

- Evaluation and Integration of Existing Methods

* It will comprehensively review the current methods used by the Joint Research Center (JRC) for monitoring forest degradation.
* It will test the integration of additional data sets in order to improve the performance of these specific methods.

-Environmental Consequences Assessment

Collaborate with JRC scientists to assess the consequences of forest degradation in the Amazon, especially in terms of carbon emissions and biodiversity loss.

-Testing and Evaluation of Pattern Recognition Approaches

* It will conduct extensive testing of pattern recognition approaches to separate drivers of forest degradation
* It will evaluate the effectiveness of these approaches in differentiating the causes of forest degradation, such as selective logging and forest fires. This will be accomplished by validating the approaches against reference observations.

- Work-flow Implementation and Production

* Implement successful research work flows in a production environment seeking to optimize processes and ensure the scalability and sustainability of solutions developed in the context of Amazonian countries

- Dissemination exchanges and training in institutions and public- private organizations in Amazonian countries

* Propose and develop communication and exchange strategies to multiply and share the knowledge generated with multi-sector organizations and multilevel actors.

- Design seminars and workshops on the results achieved, promoting the adoption of new methodologies and techniques among institutions and public- private organizations in Amazonian countries

These activities are designed to improve the capacity to monitor forest degradation through the integration of advanced data and innovative techniques, as well as to assess and mitigate environmental impacts, disseminating the knowledge acquired at the institutional and regional levels.

* 1. EXPECTED PRODUCTS

***Profile 1:***

Product 0: Detailed work plan with schedule of activities and budget execution plan.

Product 1: A detailed report identifying potential sources of data relevant to early warning, forest fire monitoring and forest degradation monitoring systems in the Amazon region that contains, in addition to the list of data sources (satellites, sensors, public and private databases), an assessment of the quality and availability of the sources, as well as recommendations for improving existing systems.

Product 2: A procedures manual that includes case studies in the Amazon region and details the methods and algorithms used for early warning, forest fire monitoring and identifies perceived best practices from the exchange of experiences with JRC forest fire early warning and monitoring that could be used as training material in the interpretation of the results.

Product 3: Contribution to policy briefs on the status of regional cooperation in forest fire prevention and management in Latin America and the Caribbean (LAC) in the context of the Expert Group on Forest Fires in LAC. The aim of these briefs would be contextualizing GWIS initiatives within the regional framework with emphasis on the Amazon and analyzing the development of practices and recommendations to improve national capacities for forest fire prevention and management, including innovative approaches and emerging technologies to strengthen resilience to forest fires.

Product 4: Virtual exchange plan to disseminate JRC methodologies allowing feedback from remote sensing and GIS experts to further develop the early warning and monitoring components of the Global Wild land Fire Information System (GWIS) in synergy and cooperation with forest fire management services of Amazonian countries and to disseminate JRC methodologies allowing feedback from experts in the use of high optical remote sensing imagery, in particular Landsat and Sentinels satellites more specifically in the mapping and monitoring of forest cover disturbances in the Amazon region.

Product 5: Regular (quarterly) reports on the progress of the process.

All products must be delivered in digital media

***Profile 2:***

Product 0: Detailed work plan with schedule of activities and budget execution plan.

Product 1: A detailed report identifying potential sources of data relevant to forest degradation monitoring systems in the Amazon region that contains, in addition to the list of data sources (satellites, sensors, public and private databases), an assessment of the quality and availability of the sources, as well as recommendations for improving existing systems.

Product 2: A procedures manual that includes case studies in the Amazon region and details the methods and algorithms used for forest data modeling and identifies perceived best practices from the exchange of experiences with JRC for forest degradation monitoring and that can be used as training material in the use of the data visualization platform and in the interpretation of the results of the predictive models.

Product 3: Virtual exchange plan to disseminate JRC methodologies allowing feedback from experts in the use of optical remote sensing imagery, in particular Landsat and Sentinel satellites, specifically in the mapping and monitoring of forest cover disturbances in the Amazon region.

Product 4: participation in technical reports or scientific publications as main or co-authors.

Product 5: Regular (quarterly) reports on the progress of the process.

All products must be delivered in digital media

* 1. PRODUCT COORDINATION AND APPROVAL

To carry out the mission, the service provider will work under the supervision of Expertise France and in close collaboration with JRC teams.

The Joint Research Center will make its technical and operational capabilities available to the consultancy to carry out the activities and it is expected that part of the consultancy team will spend between 10 and 12 months at its premises in Ispra (Italy).

Within the framework of this consultancy, a governance system will be established to ensure transparency, efficiency and effectiveness in the selection, implementation and follow-up of the proposed activities. To this end, a monitoring committee will be formed to supervise the development and implementation of the consultancy's products. Its objective is to ensure that the results meet technical and quality standards, and that they are delivered according to the agreed deadlines and specifications.

* 1. PRODUCT COORDINATION AND APPROVAL

The ownership of the results, as well as the intellectual and industrial property rights associated with them, including the technical solutions and any related information, are fully and irrevocably transferred to Expertise France. Within the framework of the commitments established under the MPCA NDICI LA/2022/441-281 agreement with the EU, the information derived from the products of this consultancy may be shared with the Joint Research Center as part of the Amazon+ program.

# PROFILE REQUIRED

* 1. SUPPLIER QUALIFICATIONS AND EXPERIENCE

The supplier shall have the following general experience:

* Minimum 5 years of experience in data collection, analysis and dissemination in order to improve the understanding of human and natural impacts in the Amazon.
* Minimum 5 years of experience in networking among Amazonian organizations to promote cooperation among researchers, NGOs, indigenous peoples and Amazonian communities and key stakeholders to promote sustainability and conservation of the Amazon biome.
* A minimum of 5 years of experience addressing critical issues such as deforestation, forest degradation and biodiversity loss in the Amazon.
  1. SPECIFIC PROFESSIONAL EXPERIENCE

The team must have at least two (2) researchers. The ideal candidates have a scientific background and experience in computer science, data processing, modeling and remote sensing, with the following profiles:

Profile 1 (two researchers):

The following competencies are essential:

* + Experience in the processing of meteorological GIS and remote sensing data.
  + Experience in big data processing, data analysis and image processing, and visualization.
  + Experience in geospatial information processing, e.g. spatial databases (PostgreSQL and Oracle), Netcdf, Grib2.
  + Understanding machine learning and operations research.
  + Good knowledge of code reading and programming, bash script, Python, R, Java C++ and repository usage.
  + Experience working with Linux environments, AWS, Kubernetes and remote servers.
  + Use of virtual environments and docker containers.
  + Ability to provide hands-on analytical support and participate in day-to-day team activities.
  + Good communication skills (written and oral) in English and Spanish.

The following competencies are desirable:

* + - Experience in forest fire risk analysis.
    - Experience in fire spread modeling.
    - Experience in forest fire risk assessment.
    - Ability to translate data into policy messages.
    - Experience with multidisciplinary teams.
    - The candidate must have a proven track record of peer-reviewed scientific publications.

Profile 2 (two researchers):

The following competencies are essential:

* Experience in the processing of GIS and remote sensing data.
* Experience in big data processing, data analysis and image processing and data visualization.
* Experience in the treatment of geospatial information.
* Understanding machine learning methods
* Good knowledge of code reading and programming, JavaScript, Python, R and use of repositories.
* Ability to participate in the day-to-day activities of the team.
* Good communication skills (written and oral) in English and very good knowledge of Portuguese.
* The ideal candidate has a background in environmental science and experience in remote sensing, geo-information systems, programming, cloud computing, image processing and data processing.

The following competencies are desirable:

* Expertise in monitoring tropical deforestation, forest degradation and forest regrowth.
* Experience with the dynamics of forest cover change in the Amazon region.
* Understanding image pattern recognition.
* Experience working in multidisciplinary teams.
* Proven track record of peer-reviewed scientific Publications.

# BUDGET AND PAYMENTS

The maximum budget for the consultancy must NOT exceed **400,000 euros, VAT included.**

This budget should cover all costs related to the consultancy, including the fees of the work team and the costs of airfare, lodging, per diems, transportation to meetings.

We expect the consulting organization to include in their financial proposal a competitive salary range proportional to the time staff are expected to spend in Milan, as well as to the expected actions and deliverables.

1. **PROCEDURE FOR THE SUBMISSION OF BIDS**

The language of the solicitation is English. Suppliers interested in submitting a bid should prepare:

A letter of interest describing the following:

* The financial offer.
* The technical proposal to comply with the ToR: description of the consultant's understanding of the ToR, the methodology to be used and a clear and elaborated work plan (maximum 8 pages).
* Updated CV of the team members (maximum 3 pages) and clear distribution of functions among each consultant.
* Contact information for three job-related references.

The technical bid will be evaluated mainly on the basis of the following criteria:

* + Understanding of the project and the scope of the mission.
  + Understanding of the actors involved and inclusion of the trainers in the proposed methodology.
  + Clear methodology with added value from the ToR.
  + Detailed and realistic work plan respecting project deadlines.
  + Clear proposals to take into account the multinational approach in the methodology.
  + The proposed methodology takes into account the gender perspective.
  + The format is respected (no more than 8 pages).

The financial offer must be global, detailing the technical equipment, the realization of missions (if considered) and logistical expenses.

The other selection criteria will relate to the experience of the consultant(s) (see "Experience and profile required" above). Consulting firms are welcome, as are teams of independent consultants.

Bids must be submitted through the following platform: PLACE

The deadline for submission of bids (By mail/via THE PLACE platform) is **March 3rd, 2025 at 12 P.M. (BOGOTA TIME)** - 18:00 (PARIS TIME). To be eligible all bids must have all the supporting documents listed above.

## Bids submitted by any other means will not be considered.

The pages of the technical bid must be numbered.