



TERMS OF REFERENCE

PRODUCT-BASED CONSULTING SERVICES FOR THE DEVELOPMENT OF A SPATIAL DATA INFRASTRUCTURE FOR THE MAP REGION (MADRE DE DIOS, ACRE, PANDO)

1. ABOUT THE ORGANIZATION

[Amazon Conservation](#) is a 501(c)(3) nonprofit organization that has been protecting the Amazon basin for 25 years using a holistic approach that unites people, science, and technology. Amazon Conservation works on the ground in Peru and Bolivia and is scaling our efforts across the Amazon. To date, we have protected over 3.3 million hectares of forests, established Peru's first conservation concession, and empowered thousands of local and indigenous peoples to develop forest-friendly livelihoods.

2. BACKGROUND

The Amazon, the planet's largest contiguous tropical forest and the primary climate regulator of the American continent, faces unprecedented anthropogenic pressure due to the rapid expansion of agricultural frontiers, unsustainable resource extraction, illegal logging, and disturbances associated with global climate change. In this environmentally critical and highly dynamic scenario, land-use planning, socio-environmental risk management, and informed decision-making can no longer rely on isolated assessments, outdated data, or disjointed mapping efforts at the local level. Spatial monitoring, remote sensing, and modern geomatics are establishing themselves as critical and indispensable infrastructures for sustainable development. These technologies make it possible to transform volumes of satellite data, remote sensor data, and field records into structured, accessible, and interoperable scientific evidence. Thanks to thematic mapping and Spatial Data Infrastructures (SDI), it is possible to map changes in land use in near real time, monitor biomass degradation, anticipate forest fire emergencies, and assess the loss of connectivity in ecosystems.

The MAP region (Madre de Dios in Peru, the state of Acre in Brazil, and the department of Pando in Bolivia) represents one of the most complex, dynamic, and strategic cross-border hubs in the entire southwestern Amazon. From a socio-ecological perspective, this territory is home to megadiverse tropical forests, vast wetlands, and iconic species such as the Amazonian Brazil nut, among other non-timber forest products (NTFPs), which provide the direct livelihood of various local communities, extractivist populations, and small-scale rural producers. Culturally and historically, the MAP region shares identities, customs, and milestones of territorial occupation closely linked to the traditional use of NTFPs. However, this natural and sociocultural wealth coexists with intense dynamics of physical and commercial integration, exacerbated by the construction of major transportation corridors such as the Interoceanic Highway and the increase in cross-border trade. This increased connectivity has accelerated the flow of goods and human mobility, but it has also triggered shared pressures that transcend national political boundaries, such as the dramatic rise in forest fires, illegal deforestation, the expansion of gold mining, and conflicts over land tenure.

In this context, it is important to develop and strengthen technical and scientific capacities that help understand and analyze the relationship between the forest and the climate. Based on the above, Amazon Conservation seeks a specialized consulting service for the design, compilation, and technical standardization of a high-value geospatial database to power a regional MAP geoportal. **It should be noted that the regional MAP geoportal is currently in the design phase and is not yet an operational platform.** Its development will be based on the architecture and experience of the geoportal of the [Amazonian Fruits and Climate Change Observatory \(OFACC\)](#), currently managed by our Bolivian sister organization, Conservación Amazónica-ACEAA, and currently operational for the department of Pando,



which will serve as the Bolivian node and technical reference for the future regional geoportal, rather than as a substitute platform. The methodological proposal uses the P-E-R-B (Pressure, State, Response, Benefit) to structure the territorial reality and closely integrates it with a BSB (Business-to-Business, Business-to-Society, Business-to-Business-to-Consumer) commercial approach, ensuring that cartographic products are not merely static visualizations but functional, interoperable, and economically sustainable digital assets in the long term.

3. OBJECTIVE OF THE CONTRACT

3.1 MAIN OBJECTIVE

The main objective of the consulting service is to design, structure, and implement a high-value, interoperable geospatial database intended to feed the MAP regional geoportal (Madre de Dios, Acre, Pando) using the Pressure-State-Response-Benefit (P-S-R-B) analytical framework and a BSB business approach, thereby transforming territorial information into functional digital assets that are economically sustainable in the long term.

3.2 SPECIFIC OBJECTIVES

- ❖ To develop protocols for the design, collection, and cleansing of spatial data to ensure high standards of interoperability and technical functionality within the geoportal.
- ❖ Apply the P-S-R-B methodology to characterize and diagnose the territorial reality, structuring the key indicators of pressure, state, response, and benefit within the database architecture.
- ❖ To integrate the offering of cartography and digital assets with the Business-to-Business, Business-to-Society, and Business-to-Business-to-Consumer (BSB) segments, ensuring value creation and the long-term financial sustainability of the project.

4. TARGET AUDIENCE AND INTENDED USE OF THE INFORMATION

The geospatial database and cartographic products are not ends in themselves; they are developed for specific users and decisions. Conservación Amazónica-ACEAA has identified the following target audiences and intended uses, which the consultant must use as guiding criteria when designing the data structure, working scales, and output formats:

❖ Primary users

Conservación Amazónica-ACEAA and partner institutions in Madre de Dios (Peru) and Acre (Brazil), as well as subnational and sectoral public entities (the Autonomous Departmental Government of Pando, ABT, SERNAP, SERFOR, SERNANP, ICMBio, and municipal governments), for territorial planning, protected area management, fire prevention and response, and land-use control.

❖ Secondary users

Community organizations, associations of gatherers and small-scale producers of Brazil nuts and other non-timber forest products (NTFPs), along with the organizations that support them, to assist in the management of their concessions and territories, document the origin of their production, and improve their access to differentiated markets.



❖ Tertiary users.

Financial institutions, buyers, exporters, and certification bodies, which may use the published layers as input for their own risk analysis and environmental due diligence processes, as well as academia and civil society for research and transparency purposes.

The concept of a “territorial intelligence operations center” refers to an institutional function, not a new unit; it will be operated by Conservación Amazónica-ACEAA through its Science and Technology Program, in coordination with partner institutions in the MAP region, and will serve the aforementioned users. This consulting project delivers the architecture and database that enable this function; subsequent tasks related to dissemination, training, and adoption by the target audiences are not part of this service and will be addressed in a specific phase with its own budget.

5. SCOPE OF THE SERVICE

The consultant is expected to develop three main products designed for geomatics professionals and GIS engineers.

1. **Product 1:** an Anthropogenic Pressure Layers System (Pressure/B2B-B2G) that consolidates data on deforestation, mining, and hotspots from official platforms to serve as input for third parties (financial institutions, buyers, and certifiers) to conduct their own risk analyses and environmental due diligence processes; the consulting firm standardizes and publishes the data but does not perform or deliver these analyses nor issue risk assessments regarding specific production units.
2. **Product 2:** the development of a Cartographic Catalog of Biophysical Status (Status / B2S-B2A) that harmonizes land-use, biomass, and water data series from sources such as MapBiomass and OTCA under OGC standards and, if possible, under the ISO 19115 standard for public and scientific use.
3. **Product 3:** a Governance and Ecosystem Benefits Map (Response-Benefit/B2B2C) that corrects topological errors in the boundaries of protected areas, concessions, and indigenous territories, linking these vectors to the traceability of the origin of Brazil nuts and other NTFPs (e.g., açai/huasi or royal palm/aguaje/buriti) to connect local communities with potential markets.

Taken together, this scope provides the data architecture necessary to implement a MAP geoportal as an operational hub for territorial intelligence and strategic decision-making.

Conservación Amazónica-ACEAA will provide geographic information linked to the geoportal of the [Amazonian Fruits and Climate Change Observatory \(OFACC\)](#), which contains information for the department of Pando, Bolivia, and will collaborate on information management with partner institutions located in the Madre de Dios region (Peru) and Acre (Brazil).

Hierarchy among the products. Product 3 constitutes the central component of the service, as it is the only one that generates new information: the consolidation of production geographies and their linkage to production and traceability data. Products 1 and 2 are conceived as context layers subordinate to that component, aimed at interpreting the regional bioeconomy and situating it within the framework of land-use designation, conservation values, and other ecosystem services; their development essentially consists of compiling, cropping to the MAP region, and standardizing existing information, so they

should not require the bulk of the service's effort. The consultant is expected to allocate at least 50% of the effort and budget to Product 3 and to explicitly reflect this in their technical and financial proposal.

Interconnection among the products. The three products must be integrated into a single database, rather than maintained as three separate collections. The integrating element is a common spatial unit—the production or management unit (concession, community, indigenous territory, protected area, or municipality)—identified by a unique key to which, through related tables, the indicators of pressure (Product 1), biophysical condition (Product 2), and governance, production, and benefits (Product 3) are linked. The consultant must deliver the corresponding entity-relationship model and, as a demonstration of the integration, at least three sample queries or views that answer specific decision-making questions (for example: deforestation pressure and hotspots on the Brazil nut concessions of a municipality during the last harvest season).

6. DELIVERABLES.

The deliverables for this service will be as follows:

- ◆ **Deliverable 1: Anthropogenic Pressure Layers System**, including: a) compiling and standardizing data from official platforms to monitor territorial threats in the MAP region, b) integrating deforestation alerts from GeoBosques, TerraBrasilis, and SIMB-ABT, c) extracting hotspots and fires from BDQueimadas, FIRMS, and Global Forest Watch, among others, d) consolidating information on road infrastructure and mining from Amazon Mining Watch and RAISG viewers, e) standardizing all data to SIRGAS 2000, f) harmonizing attributes in Spanish and Portuguese; and, g) generating GeoPackages, Cloud-Optimized GeoTIFFs, and SLD styles ready for a geoportal, and h) define the database update mechanism: since several of these sources publish very frequently, priority will be given to integrating them via APIs or web services (WMS/WFS/STAC, Google Earth Engine, or other available options) rather than one-time downloads, providing automated update scripts, documentation on each source's publication frequency, and an update protocol specifying the frequency, the responsible institution, and the quality control procedure.
- ◆ **Deliverable 2: Biophysical State Cartographic Catalog**. Includes: a) Harmonizing information on vegetation cover, carbon, and water using consolidated continental sources; b) rescaling the historical series from MapBiomass Amazonia and RAISG to a unified IPCC-level legend; c) downloading biomass layers from NASA, ORNL, DAAC, and the ACTO Amazon Observatory; d) incorporating water dynamics from Global Surface Water and CIFOR; e) aligning the geometry with the tri-national boundary; f) organizing metadata according to ISO 19115 (where applicable); and g) documenting the update frequency for each series and linking it—when the source permits—to the automated update protocol defined in Product 1.
- ◆ **Product 3: Governance and Ecosystem Benefits Map**. Includes: a) systematizing official maps on land-use rights, conservation, and socio-environmental benefits; b) downloading and systematizing the boundaries of Protected Areas and Indigenous Territories from SERNANP, ICMBio, SERNAP, and RAISG; c) obtaining and/or systematizing information on Brazil nut, açaí, and forest concessions from SERFOR, ZEE Acre, and ABT; d) adjusting overlaps using topological rules in PostGIS; e) linking the available production statistics (volumes of cashew and açaí collected, processed, and exported, sourced from INE, ABT, SERFOR, IBGE/CONAB, customs, and records from producer associations and processing companies), documenting for each source its level of aggregation, temporal coverage, and limitations, and explicitly noting gaps where information is missing or cannot be disaggregated to the spatial unit; f) define the data model for traceability of origin, specifying the minimum required fields (production unit code, geometry, responsible organization, harvest season, volume, collection point, and destination) and



the unique identifier that allows for linking the traceability records already managed by organizations and companies to the consolidated mapping; g) validate this model through a proof of concept involving at least one value chain (Brazil nuts) and a set of real-world data provided by Conservación Amazónica-ACEAA and its partners, establishing the procedure for updating this link; and h) deliver Vector Tiles (MVT) optimized for fast queries in a web viewer.

7. SERVICE DURATION

The service will last 80 calendar days, starting from the signing of the contract, with delivery of deliverables 40 days (1st and 2nd deliverables) and 70 days (3rd deliverable) after the service begins, reserving the final 10 days for the technical and administrative closure of the service.

8. AMOUNT AND PAYMENT SCHEDULE FOR THE SERVICE

The total amount for the service is **USD 10,000.00** (ten thousand 00/100 U.S. dollars). Two payments will be made as follows:

- ❖ **First payment:** Equivalent to **USD 5,000.00** (five thousand 00/100 U.S. dollars), upon delivery of Products 1 and 2 40 days after the service begins, corresponding to 50% of the total amount.
- ❖ **Second payment:** Equivalent to **USD 5,000.00** (five thousand 00/100 U.S. dollars) upon delivery of Product 3, 70 days after the service begins, corresponding to 50% of the total amount.

9. ELIGIBILITY

Consultant may be an individual or organization, including a non-profit, private sector, or university. Applicants must indicate their legal form and structure. The applicant must state their commitment to zero tolerance for corruption and financial irregularities, with clearly stated financial management practices to prevent this from occurring. In addition, applicants must affirm that none of the following situations apply:

- they are bankrupt or being wound up, are having their affairs administered by the courts, have entered into an arrangement with creditors, have suspended business activities, are subject to proceedings concerning those matters, or are in any analogous situation arising from a similar procedure provided for in national legislation or regulations.
- they or persons having powers of representation, decision-making, or control over them have been convicted of an offense concerning their professional conduct by a final judgment;
- they have been guilty of grave professional misconduct;
- they have not fulfilled obligations relating to the payment of social security contributions or taxes in accordance with the legal provisions of the country in which they are established, or with those of the country where the contract is to be performed;
- they or persons having powers of representation, decision-making, or control over them have been convicted for fraud, corruption, involvement in a criminal organization, or money laundering by a final judgment;
- they make use of child labor or forced labor and/or practice discrimination, and/or do not respect the right to freedom of association and the right to organize and engage in collective bargaining pursuant to the core conventions of the International Labor Organization (ILO).

Please be advised that offers will be rejected if illegal or corrupt practices have taken place in connection with this award. Additionally, the contract resulting from this award may be terminated in the event of illegal or corrupt practices in connection with the contract award or execution.



10. ABOUT THE CONSULTANT

A professional with a Ph.D. in Geographic Engineering or a related field is required. The consultant must have excellent knowledge of the design, collection, and technical standardization of high-value geospatial databases for geoportals. The candidate must have extensive experience in GIS, satellite data processing (Landsat, Sentinel-2/3, ALOS PALSAR), and Google Earth Engine (GEE) for the development of algorithms to monitor forest species and land resources. Knowledge or experience in data structuring within the P-E-R-B (Pressure, State, Response, Benefit) analytical framework, integration of dashboards (Power BI, Excel), programming in Python (if required), and a focus on the development of interoperable and economically sustainable digital assets (BSB approach). Verifiable experience in automating data update workflows using APIs and web services (WMS/WFS/STAC), in modeling relational-spatial databases (PostGIS), and in working with traceability information for non-timber forest product value chains will be highly valued.

11. REQUEST FOR TECHNICAL AND FINANCIAL PROPOSAL

Submit a technical-economic proposal for a consulting contract for a period of 80 days and an itemized budget of **USD 10,000.00** (ten thousand 00/100 U.S. dollars) detailing the budget allocation based on the deliverables required for the service. The technical proposal must include a general description, the tools to be used, and a schedule of activities. The total amount must cover both fees and operating expenses, as well as the development of the deliverables. The technical and financial proposal must be **no longer than 8 pages**. Applicants must also submit their curriculum vitae (CV) as a part of this application, this will not be counted toward the technical and financial proposal page limit.

Applicants must also include written responses to each point in the “Eligibility” section of this call as a part of their proposal. These written responses will not be counted toward the technical and financial proposal page limit.

12. APPLICATION DEADLINE

Applicants must submit their applications by **Tuesday, October 20, 2026**, to the email address contrataciones@conservacionamazonica.org.bo. For the selection process, the curriculum vitae and the technical and financial proposal will be evaluated. Payments for the consulting services will be made upon delivery and approval of deliverables.

If you have any questions regarding this call for proposals, please contact Dr. Daniel Larrea, Director of the Science and Technology Program at Conservación Amazónica-ACEAA, at the following email address: dlarrea@conservacionamazonica.org.bo

13. COORDINATION AND SUPERVISION

Amazon Conservation and Conservación Amazónica-ACEAA will be responsible for supervising and coordinating the activities under this contract. All materials produced for the consultancy, as well as the respective copyright and distribution rights, belong to Amazon Conservation.

14. PLACE OF SERVICE

The consultant may be based in the city of La Paz, Bolivia, or remotely from within or outside Bolivia, with in-person and/or virtual coordination meetings between the consultant and Conservación Amazónica-ACEAA's technical staff.