![United Nations Convention to Combat Desertification logo] **United Nations**
Convention to Combat
Desertification

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# TERMS OF REFERENCE

## Data Scientists to analyse data and information contained in UNCCD national reports (two positions)

### Consultancy reference number: CCD/22/STI/C/80

### Background

Desertification, land degradation and drought, along with climate change and the loss of biodiversity, were identified as the greatest challenges to sustainable development during the 1992 Rio Earth Summit. Established in 1994, the United Nations Convention to Combat Desertification (UNCCD) is the sole legally binding international agreement linking environment and development to sustainable land management. The UNCCD provides the foundation for its 196 country Parties and the European Union to work together to combat desertification, land degradation and mitigate the effects of drought; maintain and restore land and soil productivity, and improve the living conditions for people in drylands. Parties are required under the Convention to communicate, through the UNCCD secretariat, reports on measures undertaken to implement the Convention. The process of national reporting is an indispensable tool to bring forward effective planning and implementation of the Convention and the achievement of the strategic objectives at global and national levels. Due to advances in data and technology and in response to the political process undertaken by Parties designed to enhance the capacity of countries to collectively address desertification, land degradation and drought (DLDD), the Convention's approach to reporting continues to evolve. The UNCCD is also the indicator custodian for Sustainable Development Goal (SDG) Indicator 15.3.1, the proportion of land that is degraded over total land area.

The UNCCD national reporting platform - the Performance Review and Assessment of Implementation System (PRAIS) - used for 2018 reporting has been upgraded for 2022 reporting. The new platform (PRAIS 4) makes access to reporting data easier for country Parties, centralizes all reporting data in one place and offer new geospatial reporting features to enable spatially explicit reporting of key features of relevance to national reporting.

PRAIS 4 has been pre-filled with default data to enhance country Parties ability to report, derived from global data sources and mostly pre-processed by Conservation International using their TrendsEarth plugin for QGIS. Country Parties have the option to accept, modify or completely replace the default data provided to them. Parties have until the reporting deadline to complete and submit their national reports through PRAIS 4 where they will undergo a technical quality assurance (QA) process before final submission.

Post reporting deadline, the reporting data will be migrated to a relational database management system (PostgreSQL) so that it can be queried and analyzed for synthesis reporting to the Committee for the Review of the Implementation of the Convention (CRIC) at its 21st session (CRIC 21).

The consultants will be expected to take ownership of the entire data analysis process and delivery of the synthesis reports to CRIC-21 as well as contribute to data preparation for reporting SDG Indicator 15.3.1 to the United Nations Statistics Division (UNSD). They will write and document the code to produce the various data graphics, charts and maps for the CRIC 21 synthesis reports in a centralized repository, such as GitHub, using Jupyter notebooks or similar, so that the graphics can be reproduced and audited for accuracy and transparency. The responsibility for writing the code, annotation and documentation will be with the consultants while Git Hub repository management will be managed separately. UNCCD will provide oversight and supervision of the work.

### Objective of consultancy

The complexity of the reporting data will be reduced to simple, concise, informative, and eye-catching graphics and accompanying narrative text to draw out the key messages to be presented to CRIC-21.

The CRIC synthesis documents will be written according to a scientific target audience while appealing to UNCCD National Focal Points.

Additionally, the 2023 SDG 15.3.1 estimates will have been submitted to UNSD on time with quality control, ensuring minimal distortion, bias or error in submitted statistics while being validated by National Statistical Offices at the national level.

### Duties and Responsibilities:

Under the supervision of an assigned Programme Officer in the Science, Technology and Implementation (STI) Unit, the two consultants will conduct the analysis of data and information on strategic objective 1-4 submitted by Parties through their national reports, support the preparation of documents for CRIC 21 and prepare the regional and global aggregates for reporting SDG indicator 15.3.1 to the UNSD. The consultants' tasks will include, but not be limited to:

**CRIC 21 synthesis reporting:**
 (i)   Analyzing and reviewing the current PRAIS 4 database model including scripts written by an IT developer to create the database model and the documentation on how to access the database through the Django SQL Explorer tool (read-only access will be granted);
 (ii)  Reviewing the conceptual framework for the synthesis analysis prepared by previous consultancy which describes the quantity and type of graphics to be produced and the data analysis to be conducted.
 (iii) Agreeing on the work plan and workload distribution for the two involved consultants, including the preferred code development and production workflow.
 (iv)  Using Structure Query Language (SQL) to query and retrieve the data from the PRAIS reporting database and, depending on workflow decided in (iii), export it to a local working environment or work directly in an online code notebook. This may involve creating temporary tables in the database environment where appropriate to store and process intermediate results.
 (v)   Conduct Quality Assurance (QA) on the reported data to identify outliers that would produce erroneous statistics and propose changes to the reported values to correct for such outliers with full justification.
 (vi)  Document all the proposed changes to the reported data in a centralized platform, e.g. GitHub, so that changes are preserved and reproducible in PRAIS 4 by the system developers and the QA process is transparent;
 (vii) Following consultation between the secretariat and the countries on the proposed changes to the reported data, and with their explicit permission, alter the local copy of the reporting database as required in line with (v) and (vi)
 (viii) Use a suitable language (Python, R etc.) for automated scripting and programming tasks for aggregation and disaggregation of the data, data analysis and production of high-quality data visualization graphics from extracts of the database.
 (ix)  Submitting drafts of the data visualization graphics to the STI Unit for review and approval and implementing changes as requested.
 (x)   Inferring trends and drawing key messages from the data analysis.
 (xi)  Drafting the narrative text for the CRIC 21 reports, one synthesis report per Strategic Objective, writing in a suitable style for the target audience - country Party National Focal Points. CRIC 17 synthesis reports can be used for guidance.[1] Convention and styling guidelines for formal documentation must be respected.

**SDG Indicator 15.3.1 reporting**

In addition, the consultants will study the reporting requirements for the SDG indicator 15.3.1 "Proportion of land that is degraded over total land area" of the SDG process and conduct data preparation tasks for submission of the reported SDG estimates to the UNSD. Specifically, the consultants will be expected to:
 i.    Compile country estimates submitted through the national reports.

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[1] Available at: https://www.unccd.int/official-documents/cric-17-georgetown-guyana-2019

ii. Identify data gaps, i.e., countries that either did not submit a national report or submitted reports without SDG 15.3.1 estimates.

iii. Compile default estimates to fill the gaps for countries who did not report or did not submit an SDG 15.3.1 estimate. The secretariat, as the indicator custodian agency, will send these default estimate to countries for validation.[2]

iv. Work with the database administrator to agree on a rational structure in the PRAIS 4 reporting database to store the UNCCD's and the countries' indicator estimates.

v. Calculate the regional and global aggregates from these estimates according to the "SDG regional groupings" and "other groupings" (e.g. Small island developing States, Least developed countries, Landlocked developing countries) as defined by the UNSD from the PRAIS 4 database.

vi. Populate the template Excel sheet provided by UNSD with the SDG Indicator 15.3.1 national, regional and global estimates which will be used for the Secretary General's Sustainable Development Goals Progress Report statistical annex.[3]

vii. Based on the analysis of the data, draft a short summary narrative for SDG indicator 15.3.1 for use in the Secretary General's report and in the glossy SDG report. This should include options for accompanying data visualization graphics.

The above-mentioned tasks will be shared among the 2 consultants in line with a work plan to be agreed upon at the beginning of the consultancy.

## Deliverables

Key deliverables:

✓ Beginning of February to end of June 2023: Four documents for CRIC 21 (i.e., one per strategic objective), including compilation of national data, regional and global aggregates for UNCCD reporting.

✓ Beginning of February to end of March 2023: Compilation of national data, regional and global aggregates for SDG 15.3.1 reporting to UNSD with short summary description and supporting data visualisation graphics.

✓ Code used for CRIC-21 data analysis and data visualization fully documented and shared in an online code repository.

## Contractual terms

The consultancy will ideally start by 1 February 2023 and conclude by 30th June 2023. This contract is based on deliverables and payment is defined by outputs. The consultancy is home based. The team of 2 consultants would be expected to work full time during this period.

## Requirements

- Advanced university degree (Master's degree or equivalent) in data science, computer science, information management, statistics or a related field. A first-level university degree in combination with qualifying experience may be accepted in lieu of the advanced university degree.

- A minimum of five years of progressively responsible experience in geospatial information management, applied spatial analytics, earth observations, mapping, data visualization, or related area is required.

- Experience in data science, data analytics, applied mathematics, information management or related area is required.

- Experience of data Science tools such as Jupyter, Matlab, Knime, SPSS, SAS, or similar Statistical Programming Languages such as R, Python, Javascript or related is desirable.

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[2] The validation can result in five outputs: 1) replacement of custodian agencies' estimates by country data, 2) validation of custodian agencies' estimates as country data, 3) approval of publishing the data as custodian agencies' estimates, 4) rejection of publishing the custodian agencies' estimates or 5) no reply. In the case of no reply, the data are reported as custodian agencies' estimates. Custodian agencies' estimates (i.e., 3 and 5), but will be used to calculate regional and global aggregates.
[3] See the 2019 submission of SDG Indicator 15.3.1 to UNSD for the expected format, p.111: https://unstats.un.org/sdgs/files/report/2019/secretary-general-sdg-report-2019--Statistical-Annex.pdf

- Experience in scripting in order to automate processes that support this analysis

- Familiarity or basic understanding of the UNCCD reporting process
- Proven experience translating user requirements into data queries and working closely with IT developers and database programmers
- Communicating technical concepts and data-related issues to non-technical audiences especially through written outputs such as synthesis reports
- Experience in the drafting of UN official documents desirable.
- For this consultancy fluency in English language (both oral and written) is required

**Special notice**

Only individuals who can act as independent, individual economical operators are qualified to apply. Individuals who can provide their services only on account of an institution or enterprise not in their individual capacity are not eligible under this procedure.

Individuals engaged under a consultancy or individual contract will not be considered "staff members" under the Staff Regulations and Rules of the United Nations Secretariat and will not be entitled to benefits provided therein (such as leave entitlements and medical insurance coverage). Their conditions of service will be governed by their contract and the General Conditions of Contracts for the Services of Consultants and Individual Contractors. Consultant and individual contractor is responsible for determining tax liabilities and for the payment of any taxes and/or duties, in accordance with local or other applicable laws.

**Submission of application**

The following documents should be sent to **staffing@unccd.int** as **one document**: UNCCD Personal History Form[4] /CV and cover letter, specifying the following reference number in the email subject line: **CCD/22/STI/C/80.**

The deadline for applications is **15 January 2023**. Only applications submitted by the deadline and with complete documentation will be taken into consideration.

Due to the volume of applications received, receipt of applications cannot be acknowledged individually. Please address your application as indicated above and please do not address or copy your application to an individual at the Secretariat or Global Mechanism. Candidates who do not receive any feedback within three months of the deadline should consider their application as unsuccessful.

Date of issuance: 16 December 2022

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[4] UNCCD P-11 form in electronic fill-in .pdf OR .docx format available: https://www.unccd.int/about-us/secretariat/vacancies/applying-unccd