# FAO_black_20

# Food and Agriculture organization of the United Nations

### **Terms of Reference for Consultant Category B \***

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| **Name:** |  |
| **Job Title\*\*:** | Senior Data Scientist  |
| **Division/Department:** | Statistics Division, ESS/ES Department |
| **Programme/Project Number:** |  |
| **Duty Station:** | HQ (Rome, Italy) |
| **Expected Start Date of Assignment:** |  | **Duration:** |  |
| **Reports to:** | ***Name:*** |  | **Title:** | Research and Innovation Team |
| \* Please note: If this TOR is for Consultant / PSA.SBS contract, the minimum relevant experience required **for the assignment** is as follows:

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| 1 year for a category C | 5 years for a category B | 12 years for a category A |

\*\* Please enter a short title (max 25 chars) for this assignment. |
| General Description of task(s) and objectives to be achieved |
| Statistics is a core function of FAO and represents a highly visible area of the Organization’s work. The goal of FAO’s Statistics Division (ESS) is to provide timely and reliable data on hunger, food and agriculture to facilitate the design and monitoring of evidence based policy decisions by member countries, as well as serve as the foremost authoritative source of statistical standards and state-of-the-art methods in agricultural and food statistics. Within the Statistics Division, the Research and Innovation team is responsible for the development of methods, standards, tools and norms used mainly within the organization with the objective to improve the efficiency of FAO’s statistical system and the quality of its output. Rapid technological development requires ESS to innovate in a variety of areas to modernize the statistical business process and meet the increasingly demanding needs for fast, accurate, easy and cost-effective data. Therefore, it is part of FAO’s strategy to engage with non-official, Big Data sources and to rely on data science methods to solve the current data gaps problems. The final objective is to increase the quantity, quality and timeliness of the statistics that the Organization produces. Within the Research and Innovation team, a Data Lab for Statistical Innovation has recently been established to lead the Division’s work related to data science applications (machine learning, webscrapping, crowdsourcing, geospatial analysis) and the use of big data to solve real data problems in agriculture statistics (e.g. crop acreage and yields, and agricultural prices). The data scientist will join this new Data Lab.Under the overall supervision of the Director, ESS, the direct supervision of the Senior Statistician and in collaboration with the IT division (CIO), the Senior Data Scientist has in-depth proficiency in the acquisition, transformation, quality assurance, visualization, and analysis of a wide variety of data for the communication, analysis, and problem solving of development challenges. The specific roles and responsibilities require to support, advice and lead efforts on, but not limited to, the following:* Identification and use of information technology solutions that support data quality assurance, analysis, dissemination, and user engagement.
* Identification suitable big data sources including social networks that could inform and improve FAO agriculture statistics;
* Identification appropriate solutions using big data (e.g. machine learning and statistical techniques) to improve current estimates of agricultural prices as well as crop yields in terms of their coverage, timeliness and accuracy;
* Support to the development of improved and operationally-relevant data visualization and analysis ranging from text mining, to webscrapping, machine learning, crowdsourcing, around structure and unstructured data sources; develop and apply new and existing models and algorithms; and publish well documented, reproducible work;
* Guidance in the development of forecasting and nowcasting models using data from social networks, on-line databases, administrative data, satellite imagery or transaction records;
* Guidance and contribution to improving the ESS data dissemination and data visualization products;
* Any other duty as required.

Education and experience: * Advanced University Degree in Statistics, Data Science, Computer Science and related topics with strong computational elements and 7 years of relevant experience or a PhD with five years of relevant experience in developing big data solutions and big data technology using different techniques and tools, across multiple projects.

Core skills and competencies:* Proven experience in advanced statistical methods and models, Big Data processing and analysis techniques,
* Strong understanding of more than one statistical programming language (e.g. R, Python), of web based interactive visualisations (Shiny app, Tableau) and geospatial visualization tools (ESRI ArcGIS, or QGIS), strong understanding of modern concepts, tools and collaborative coding practices; Strong understanding of information and data mining tools and approaches (structured and unstructured information); strong understanding of statistical Cloud computing with focus on machine learning;
* Good writing and editing skills, with a strong command of English and an ability to convey complex ideas in a clear, direct, and lively format.
* Lead and Innovate. Develops innovative solutions with others.
* Focus on delivery and on meeting tight deadlines. Achieves results and identifies mission-driven solutions for the client.
* Create, Apply and Share Knowledge. Creates, applies and shares knowledge from across and outside WBG to strengthen internal and/or external client solutions.
* Make Smart Decisions. Ability to advise decision-makers on highly technical issues and take action.
* Highly collaborative and able to work with individuals from many different teams
 |
| key performance indicators |
| Expected Outputs: | Required Completion Date: |
| * Full production solutions developed employing big data and data science techniques in areas of agricultural statistics with its set of tested automatic processing routines
* Documents and manuals on the solutions properly published
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