Consultancy: Development of Food Security Index

TERMS OF REFERENCE

Consultancy: Agricultural Economist, Data Analyst, Data Scientist, Agricultural Statistician, Food Security Expert/Analyst

Contract Type: Consultancy

Reports to: Programmes and Projects Office of the IOFS Secretariat

Duration: Initially for 3 months

Duty Station: Homebased, online

BACKGROUND AND RATIONALE

The Global Food Security Index (GFSI) is the scoring model that measures food security drivers across 113 countries globally. The model is designed by the Economist Intelligence Unit (EUI) and sponsored by Corteva Agriscience. The ranking is produced since 2012 and serves to inform the food security situation in the world. The data includes statistical information from World Bank, FAO, WFP, the World Trade Organization and other sources, as well as EIU calculations and final scoring that been determined by an expert panel from the academic, non-profit and public sectors.

The GFSI measures the underlying drivers of food security in 113 countries, based on the factors of affordability, availability, quality and safety, and natural resources and resilience. It considers 58 food security indicators including income and economic inequality, gender inequality, and environmental and natural resources inequality, calling attention to systemic gaps and actions needed to accelerate progress toward United Nations Sustainable Development Goal (SDG) #2 - Zero Hunger by 2030.

The GFSI is well-known ranking model that helps governments to identify gaps and challenges of food security related areas in their countries for applying proper actions to address them. At the same, the GFSI started evaluating the fourth pillar in its ranking "*Natural Resources and Resilience*" since 2017. Only in 2020, this category was formally included for measurement and made a significant shift in the ranking. Particularly, the countries with unfavourable climate conditions, less agricultural resources (such as arable land) have been undermined within the ranking despite the efforts in addressing the food insecurity problems and promoting the agro-innovations.

In addition, one of the key indicators of ranking could be to examine how governments respond to food insecurity issues, particularly what strategies they implement; how well these strategies are developed and implemented; whether governments have the right and optimal level of coordination among intra-government agencies, as well as if governments involve other stakeholders in the decision-making process, and other aspects.

Considering the above-mentioned, the IOFS, as per its Statutory goal "*to assess and monitor the state of food security in member states to be able to identify emergencies, provide social safety nets and humanitarian assistance through food security reserves*" plans to review the possibility of establishing a new index to better understand the state of food security in OIC region, and provide the right recommendations and ways of solution for the sustainable food systems by member countries. The activity on establishing this new Food Security Index is in line with the IOFS's strategic programmes "Food Security Governance" and "IOFS Food Balance Database" that were approved by member states within the Third General Assembly meeting held on 2-3 December 2020 in Ankara, Turkey and Fourth General Assembly meeting held on 8-9 September 2021 in Nur-Sultan, Kazakhstan.

OBJECTIVE

In connection with the above, the IOFS aims to develop quantitative and qualitative indicators necessary to monitor and assess the state of food security and agriculture in OIC member states, as well as to compare countries within these indicators. The IOFS also plans to engage into this activity other international and regional organizations, as well as statistical agencies of OIC member states.

The selected candidate will work in the development of these indicators by identifying the data sources from which the data will be retrieved, such as the World Bank Group, the International Monetary Fund (IMF), the UN Food and Agriculture Organisation (FAO), the UN Development Programme (UNDP), the World Health Organisation (WHO), the World Trade Organisation (WTO), the World Food Programme (WFP), Agricultural Science and Technology Indicators (ASTI) and national statistical offices.

Most indicators could come from the data used by the Global Food Security Index, such as the level of Food Consumption as a share of household expenditure; Proportion of population under global poverty line; Presence of food safety-net programmes; Access to financing for farmers; Sufficiency of supply; Public expenditure on agricultural research& development; Volatility of agricultural production; Food loss; Diet diversification; and Presence of Nutritional standards.

Mainly, the indicators will be divided into Quantitative and Qualitative. Quantitative indicators from national and international statistical organizations. The possibility of creating estimates methodology will be used. Qualitative indicators created by the IOFs and approved by governments of member states, based on the information from surveys, open-source information, data coming from other sources, and defined by the expert group identified by member states.

An effective qualitative indicator for food security should include the following properties:

- Easy to understand (all audiences understand the indicator in the same way)
- Relevance (suitable, reasonable and applicable to all OIC countries)
- Utilize a scientific approach
- Easy to access by different users (open data)
- Measurable (could be calculated or estimated using known equation or methodology) including metadata for each indicator
- Transparency (fair, take into consideration the natural condition of each country), avoid unman made condition in the indicators like precipitation. The natural condition should be avoided; so countries are not ranked by precipitations as an example. On the other hand, conditions such as pollution and air emission from energy consumption in the country should be considered.

The IOFS prioritizes ranking countries by their capabilities to address the food security issues; depending on how much governments encourage and support food security; as well as depending on their efforts toward addressing climate change. Also, the areas of improvement include:

- To develop a framework and road map for the index which includes the preparation and implementation stages
- To develop a year on year growth rate measure for food security through measuring agricultural production,
- quality of food, availability of food…etc. to assess the country's improvement towards increasing food security
- and the impact of food security strategies instead of measuring the current situation
- To assign scores that weighs manmade impacts on food security rather than natural and geographical
- conditions only
- To expand the coverage of sources consulted to develop the methodology and not limit it to the existing ones
- To consider the country's international efforts in supporting other countries to overcome food security challenges
- To exclude food consumption as its out of the food security definition or scope.

DESCRIPTION OF TASKS

The Consultant will be tasked to develop the indicators by using the specific methodology that ensure the creation of a model that allows ranking countries as per these indicators. The Consultant shall take into consideration of the requirements and priorities identified in the "Objective" section above. The following aspects shall be incorporated for the development of indicators and, eventually, establishment of an index. The created indicators shall be based on the four pillars of Food Security, Availability, Accessibility, Utilization and Stability.

- Constructing Composite Indicators.
- Scoring rule and model.
- Correlation analysis and correlation structure.
- Principal component analysis.
- Statistical coherence within a pillar.
- Importance and weight of indicators
- Aggregation method
- Incorporation of other indexes, Global Hunger Index, Prevalence of Undernourishment and the Food Insecurity Experience Scale

The final deliverables will be:

1) Developed indicators;

2) Methodology that allows ranking countries as per indicators;

3) Explanation for each indicator and data source used;

QUALIFICATIONS

- An advanced university Master's Degree or higher in agricultural economics, statistics, data sciences, data modeling, mathematics, database management, data analytics, statistical analysis, food security, agriculture, agricultural science or related field experience. PhD degree is preferred.
- Minimum of seven to ten years of progressively responsible professional work experience in monitoring and data analysis in agriculture and food security, creating different data models. The experience in academia and international organizations/institutions are highly preferred.
- Proven experience in data analysis and report writing to disseminate key data and findings to non-technical audiences.
- Data Analyst expert

- Experience with database management
- Experience with SQL Server
- Experience with Excel advanced procedures
- Capability for modelling service data and reference models
- Good knowledge of mathematical / statistical concepts
- Good knowledge of modelling tools for analyzing food security situation
- Fluency in oral and written communication in English

SPECIAL NOTE

Applicants should be citizens of one of 56 member states of the Organization of Islamic Cooperation (https://www.oic-oci.org/states/?lan=en).

HOW TO APPLY

Interested candidates should submit the following document to (*Kamruzzaman@iofs.org.kz)* – *(b.arystanbek@iofs.org.kz*)

- Cover Letter describing previous experience in this area and how to ensure they will meet the required deadlines and assigned tasks.
- A CV and Personal history form
- Please indicate your availability and daily/monthly rate (in USD) to undertake the terms of reference above. Also, please mention the earliest date you can start. Please mention "Index and indicators development" in the subject of your email.

Deadline to apply: 25 December 2021