Somalia National Bureau of Statistics

SOMALI INTEGRATED STATISTICS AND ECONOMIC PLANNING CAPACITY BUILDING PROJECT

TERMS OF REFERENCE AND SCOPE OF SERVICES

FOR

ICT NEEDS ASSESSMENT

ABBREVIATIONS AND ACRONYMS

API	Application Prgramming Interface
CAPI	Computer-Assisted Personal Interviewing
DBMS	Database Management System
EPAU	Economic Policy Analysis Unit
FGS	Federal Government of Somalia
FMS	Federal Member States
GIS	Geographic Information System
HW/SW	Hardware/Software
ICT	Information and Communications Technology
IDA	International Development Association, World Bank
IT	Information Technology
LAN	Local Area Network
MDAs	Ministries, Departments, and Agencies of Government
MED	Monitoring and Evaluation Directorate
M&E	Monitoring & Evaluation
MoF	Ministry of Finance – Fiscal, Economic and Planning Department
MoPIED	Ministry of Planning, Investment and Economic Development
NA	National Accounts
NBS	National Bureau of Statistics
NEA	National Economic Advisory Group
NEC	National Economic Council
NSS	National Statistical System
PDO	Project Development Objective
PMU	Project Management Unit
PPA	Project Preparation Advance
SAN	Storage Area Network
SIBES	Somalia Integrated Business Enterprise Survey
SIHBS	Somalia Integrated Household Budget Survey
SISEPCB	Somalia Integrated Statistics and Economic Planning & Capacity Building
SISEPCBP	Somalia Integrated Statistics and Economic Planning & Capacity Building Project
SNA	System of National Accounts
SNBS	Somalia National Bureau of Statistics
ToR	Terms of Reference
UPS	Un-interruptible Power Supply

1. Background and Context

1.1. The Federal Government of Somalia (FGS), through the National Bureau of Statistics (NBS), has received a grant from the International Development Association (IDA) to prepare the Somali Integrated Statistics and Economic Capacity Building (SISECB) Project. The project aims at strengthening the country's national statistics system, the monitoring and evaluation (M&E) system, and improving programing and analytical capacity of the government's macroeconomics and fiscal programming agencies to enable them to regularly assess, analyze and improve their public policies and programs performance and results. Specifically, the project aims at: (1) Strengthening the national statistics system; (2) Strengthening monitoring and evaluation capacity; and (3) Building economic policy analysis and economic planning capacity. The project will be funded jointly by the World Bank and other development partners.

1.2 The Project Development Objective (PDO) is to strengthen the capacity of producers of *official statistics* in Somaiia to produce and disseminate these statistics. The PDO will be achieved through implementation of a package of legal and institutional reforms, investments in skills development and training, Information, Communications and Technology (ICT), equipment, development of statistical infrastructure, and improvement of a range of statistical products and services.

1.3 The current status of Information and Communications Technology (ICT) infrastructure in the Somali National Bureau of Statistics (SNBS), line Ministries, Departments and Agencies (MDAs) in the FGS has been ugraded during the implementaiton of the parent project. SNBS has physical server which hosting the national surveys and a web-based software for statistical management including sharing with MDAs and API for those MDAs with existing system, however, the statistical departments in the Federal Member States (FMS) is beset by lack of adequate hardware (servers, desktops, laptops, tablets, etc.), software licenses for basic productivity tools (Microsoft Office), and for statistical software packages. Aside from this, the adequacy at the office premises of a physical space (server room or data center) with facilities to house its servers, such as air-conditioning, electric cabling and uninterruptible power supply (UPS), as well as the hardware/software for network connectivity, data storage and security, needs to be evaluated. Also, the use of private email services by FMS staff needs to be discouraged and the use of the FMS' email services should be explored and any impediments to its use need to be determined, and evenually remedied.

2. Objective of the Consultancy

2.1 The objective of the Consultancy is to: (i) Review the current ICT situation in: SNBS and Statistics Departments at the Federal Member States; (ii) Conduct an assessment of ICT adequacy in terms of hardware, software, networks, systems, data and network security, related policies and skill-adequacy of IT staff; (iii) Conduct an assessment of ICT capacity for data collection & processing, data exchange and data dissemination, including underlying networks and IT platforms (e.g. DBMS, existing data processing software, etc.) for statistical data management; (iv) Review software currently in use, existing hardware and networking structure of the SNBS and FMS in order to improve and widen ICT to reach other producers and users of *official statistics* producers in the country; and, (v) Document these requirements, prioritize them in consultation with NBS and propose a strategy to implement them. The 'Scope of Work', 'Deliverables & Timelines', and 'Qualifications and Experience' are given in the sections below. Some of the main project activities that are relevant to the use of ICT are:

(a) Somali Integrated Household Budget Survey (SIHBS)
(b) Agriculture Census
(c) Implementation of National Consumber Price Index (CPI)
(d) Implementation of the National Producer Price Index (PPI)

To achieve the objectives above, SNBS is seeking to hire a consultancy firm to conduct the above-mentioned ICT needs assessment

3. Scope of Work

3.1 The objectives of the ICT Needs Assessment consultancy will be to compile ICT requirements for FMS benefiting from SISEPCB project. The primary focus would be on the activities outlined in Section 2 above. It is expected that ICT needs assessment will help promote modernization of: Hardware/Software (HW/SW) tools for staff, which includes requirements for customized software for data processing and dissemination; Training on HW/SW tools for data processing and data presentation; Computational processing (for example, indicator preparation and data aggregation, etc.; and, the underlying statistical business processes. Statistical data collection, their processing and dissemination in a transparent manner, as well as defining and specifying linkages through data exchange protocols and software (APIs or other applications) with other producers and consumers of official statistics are also included in the Scope of Work.

Requirements under this consultancy should be explored taking into account the needs for (a) field surveys/censuses and administrative data collection and Compilation; (b) HW/SW for staff, HW/SW for data processing and dissemination, Network HW/SW systems including for data & network security; and (c) Training for IT staff, and for Statisticians/Economists that use statistical software tools .

3.2 ***Field surveys/censuses and administrative Data Collection and Compilation.*** The consultant(s) are expected to determine the ICT requirements in the various statistical data categories and the specific data surveys (see below) that are to be undertaken in the SISEPCB project. These would include: use of specific hardware and software; special purpose statistical software; data visualization/GIS tools, as well as any other custom software that needs to be developed for data exchange, data processing and data dissemination.

(i) Social and economic data (health, education, energy, agriculture, etc.) from administrative records of various FMS needed by SNBS. This would include data collected for monitoring and measurement of povertylevels, and and compilation of National Accounts aggregates.
(ii) Financial sector data from Ministry of Finance and Central Bank;
(iii) Other data sources, within and outside FMS, as determined in consultation with SNBS;
(iv) Somali Integrated Household Budget Survey (SIHBS)
(v) Agriculture Census
(vi) Data Anonymization methods for the statistical information collected above-mentioned two surveys.

In all of the above, the consultant should determine the protocol for data exchange between SNBS and specific FMS providing or receiving data (from SNBS). Such a protocol would include: a Memorandum of Understanding (MoU), where necessary, between SNBS and its counterpart FMS and any non-governmental entities. The protocol should include frequency and timeliness of data exchange, data formats, API or other software needs for a secure and automated transfer, internet protocols for hi-speed data transfer and connectivity requirements.

For the two surveys (SIHBS and Agriculture) mentioned above, *compile ICT requirements* for data collection using CAPI, for developing sampling frames and questionnaires, data transmittal from field offices (where appropriate) to the SNBS HQ, and for data processing.

3.3 ***Hardware/Software, and Systems.*** The consultatnt(s) should determine the ICT *requirements* as given below. The ICT needs assessed should indicate for each item, their characteristics that would help specify them. For example, for the Desktop Computers indicate the processor type, processor speed (clock frequency), RAM, disk or solid state storage capacity, etc. For the Data Processing Center, a horizon of 4-5 years should be considered while assessing the growth in volume and variety of data in future including user traffic to SNBS' data website, and the concomitant data processing power and data dissemination needs. This should guide some of the requirements on the networking, storage and processing requirements below.

(i) Desktop Computers, Laptop Computers, Tablets, Color Printers with scan/fax/email facility (color) – both big volume hi-speed printers, which will be shared printers, and printers for individual use, Video-conferencing hardware/software. This should be done for SNBS staff including for the SNBS field offices in FMSs.

(ii) Primary Data Processing Center at the FMS – network hardware and software for the data center with routers, switches, firewalls security appliances, cables, servers, strorage network, DBMS, data backup/archiving and security, and fail-over requirements. In addition, ascertain needs for the physical server room such as, generator during extended power failures, UPS, air-conditioning, etc.. Requirements for a Secondary Data center with adequate HW/SW and networking capability as a fail-over center for the Primary Data Center in the event of a planned or unplanned outage of service at the Primary Data Center. The configuration of the HW/SW in the Primary and Secondary Data Centers should be prepared and that should be the basis for the HW/SW requirements.

An integral part of this requirement are the specifications for the servers, storage disks, network management servers, DBMS, routers, switches, firewalls, security appliances and any other hardware and software. These specifications would form the basis for procurement of the HW/SW. Please note :*procurement of HW/SW is not part of these ToRs*.

Identify Software's Database Application's requirements and capabilities (hosting at SNBS vs. cloud-based hosting, software cost, maintenance cost and upgrades, cloud storage space)

(iii) Storage, access, anonymization and dissemination of microdata (survey data) and their metadata. This includes ***requirements*** for the software architecture in managing and accessing microdata & metadata.

(iv) DBMS requirements for aggregated and/or processed data, and data acquired from other sources outside SNBS. This includes, inter alia, details on data content, data format, data volume (current and projected) for SNBS produced data, as well as that obtained from other MDAs, or international and private sources.

(v) Local Area Network, secure connectivity within SNBS HQ, and data pre-processing requirements (servers, software, etc.) for the field offices in FMSs, secure network connectivity between SNBS and the field offices (Statistics offices) in the FMSs, as advised by SNBS.

(vi) Office productivity software (Microsoft Word, Excel, Powerpoint, Outlook (Email), Anti-virus software, web-conferencing software, for SNBS staff and for other MDAs (as advised by SNBS).

(vii) Statistical software (SPSS, STATA, other packages or ***open source software (e.g. R)*** tools as required) for data processing and data reporting.

(viii) GIS and geo-spatial software for data collection, data analysis & reporting.

(ix) Email – secure messaging system under Microsoft Outlook or under the FGS' email system.

3.4 ***Training***. The consultant should assess the training needs – both basic and advanced training within the Microsft Office productivity software suite and in statistical software (including use of open source software tools, where available) and network hardware/software categories given below for FMS staff in ICT, based on the functions they perform, such as the use of:

(i) Microsoft Excel, Word and Powerpoint, Outlook, etc.;

(ii) Statistical software – SPSS, Stata, R etc.;

(iii) GIS software for data collection, data analysis and presentation in maps;

(iv) For IT staff – data center management; network administration; data and network security; FMS website administration; database design, etc.

(v) CAPI software for surveys;

(vi) Other ICT specific training as determined in consultation with SNBS and the main beneficiaries of the project.

4. Working and Reporting Requirements

4.1 The selected consultant(s) will work under the overall supervision of the Project Coordinator in the Project Implementationt Unit (PIU). However, on a day-to-day basis, they will work closely under the direction of the SNBS Director-General or his/her designee assigned to this consultancy. The SNBS will coordinate with Heads of statistics units in the relevant MDAs to arrange for counterpart officials with whom the consultant(s) will work during this engagement. SNBS will also arrange for the appropriate offficials to be made available for discussions/meetings and related written inputs/documentation.

4.2 Consultant(s) will be expected to bring their own laptops for their work. Consultant(s) are expected to have their own licenses for Microsoft Office and any other productivity/presentation software tools they may use.

4.3 The project language is English. All documents produced by the consultant will be in English. Project activities, such as, meetings, discussions and interviews with officials will be conducted in English.

5. Deliverables and Timelines

The consultant(s), in consultation with SNBS and the PIU, should develop a work-plan with a timeline and milestones. The consultants also should provide a status report of their work periodically (periodicity to be determined by the PIU). These reports should also indicate any slippages, bottlenecks, reasons thereof and remedial actions necessary to mitigate the slippages to keep the engagement on track.

The following reports should be delivered to SNBS by the consultant(s) that cover the 'Scope of Work' discussed in section 3 above. The reports should be detailed enough to be useable 'As is' in the design and implementation of these requirements.

The deliverables are split into two phases:

5.1. Phase 1: A report – Based on the scope of work described in Section 3 above, the following basic ICT needs assessment and prioritization report are required.

i) Basic ICT needs assessment of the HW/SW currently used and newly assessed needs including HW/SW specifications where appropriate, for staff in FMS statistics departments as advised by SNBS. This should also include the numbers of staff categorized as Professional and Administrative for each of the organizational units above. The basic IT equipment should identify Desktop Computers, Laptop Computers, Tablets, Color Printers with scan/fax/email facility (color) – both big volume hi-speed printers, which will be shared printers, and printers for individual use, Video-conferencing hardware/software. This should be done for FMSs only.

ii) The Primary and Secondary Data Center needs assessment report should include the network configuration diagrams that includes the HW/SW, the auxiliary equipment, such as, wiring – electrical and data cables, Un-interruptible Power Supply (UPS), diesel or gasoline generators (if required), air-conditioning equipment for server rooms, and other storage disks/security appliances' requirements, as well as, technical and physical specifications in sufficient detail to enable the PIU/SNBS in procuring these HW/SW. The above configuration , the DBMS recommendation, server and storage size, must be backed by a technical analysis/rationale based on the data volume & data type, processing needs assessment.

iii) A **report** on the data needs (current and projected) should include the data and their sources (MDAs or non-government/international sources), data categories (e.g. administrative data, M&E data, microdata, etc.), the data processing needs (data indicator preparation, data aggregation, data visulaization and dissemination), including requirements for a revamped and "open"data website), and separately the data exchange requirements (protocols including frequency and formats, API specifications, etc.).

iv) Training – an assessment of ICT related training needs for FMS including a separate sub-section for IT staff. Also include training categorization as 'Basic' or 'Advanced'.

5.2. Phase 2: **Report** –Based on the Scope of Work described in Section 2 and 3 above the following identification and strategy report are required

i) This phase involves AI and big data infrastructure needs assessment for the the FMS and SNBS including identifiction of Software's Database Application's requirements and capabilities (hosting physical vs. cloud-based hosting, software cost, maintenance cost and upgrades, cloud storage space).

ii) ICT requirements in the various statistical data categories and the specific data surveys (see section 2.1 and 3.2 above) that are to be undertaken in the SISEPCB project. These would include: field monitoring dashboard for the surveys; use of specific hardware and software; special purpose statistical software; data visualization/GIS tools, as well as any other custom software that needs to be developed for data exchange, data security, data processing and data dissemination.

5.3 Communications Strategy and Results Presentation

This is an important part of this project. The communications strategy and the presentations should be prepared in close consultation with SNBS. The consultant(s) would prepare a strategy paper on how the findings of the ICT needs assessment are to be communicated to the various audiences including SNBS and FMS staff. The results of this consulting engagement would be presented through: Executive Summaries and/or Powerpoint presentations for Ministers/Senior officials in the MDAs benefitng from the project; Workshops for staff; Detailed reports; and, Blogs on the SNBS and FMS website.

6. Qualifications and Experience/Expertise Requirements

The ICT Needs Assessment consultancy requires experience in two major expertise areas – Statistical Data Systems (Official Statistics, Data collecion & Processing, Surveys), and Systems Analysis (IT Network, system and software integration; statistical software). These cross-disciplinary skills have to be brought into the project.

6.1 Statistical Systems Analyst(s)

- At least Bachelor's degree in Computer Science or Information Systems and/or Statistics/Economics or Business Administration
- At least 7 years' experience in computer data systems, of which a significant duration in Statistics (preferred) or Economics/Finance/Banking domains
- Knowledge of statistical data operations and processes and system support for them, which may include survey and other data collection and preparation operations, data reporting, data anonymization, database design, data and documents archiving software; disaster recovery planning, etc.
- Fluency in spoken and written English
- Good writing and oral skills for communication of analyses, recommendations and plans
- Good diplomatic skills and sensitivity to cultural differences

6.2 Network and Communications Specialist

- At least Bachelor's degree in Computer Science or Information Systems and/or certifications in network engineering and network management/planning
- At least 5 years' experience in LAN and data center configuration planning, specification and/or management, including familiarity with data and network security, intrusion detection systems/software, backup, archiving and recovery of data and software, secure data exchange e.g. VPN protocols etc.
- Fluency in spoken and written English
- Good writing and oral skills for communication of analyses, recommendations and plans
- Good diplomatic skills and sensitivity to cultural differences

7. Duration

The consultancy will consist of 60 working days, spread over a period of three months from the date of commencement of the assignment.

8. Payment Schedule

(i) Tweenty percent (20%) of the contract amount shall be paid to the Consultancy upon receipt of the inception report;
(ii) Forty percent (40%) of the contract amount shall be paid to the Consultancy upon receipt of the final ICT assessment report as per Phase 1 deliverables that is satisfactorily accepted by SNBS;
(iii) Forty percent (40%) of the contract amount will be paid to the Consultancy upon the receipt of the final ICT assessment report, in accordance with the Phase 2 deliverables and ICT Strategy. This payment is contingent on all deliverables outlined in the Terms of Reference (TOR) being satisfactorily accepted by SNBS.