


TERMS OF REFERENCE
Consultancy to develop and evaluate socio-economic indicators exploring "Big Data" sources and methodologies available in the Maldives
 (MDV-ToR/2017/08 Dated: 20 July 2017)

TERMS OF REFERENCE (to be completed by Hiring Office)	
Hiring Office:	UNFPA Maldives Country Office
Purpose of consultancy:	<p>With the aim of reducing data collection costs, National Bureau of Statistics is seeking to increase the role of data through Big Data approach. The overall objective of this assignment will be to develop and evaluate socio-economic indicators exploring relevant "Big Data" sources and methodologies available in the Maldives.</p> <p>The assignment is focused on developing a methodological framework for data acquisition/collection and processing network-based mobile phone data that can cost-effectively provide accurate and detailed maps of population distribution over national scale and any time period while preserving the anonymity of mobile phone users.</p> <p>In particular, in this assignment the movements of population in the capital city Male' and the greater Male' area will be quantified using anonymized mobile phone data. Movement patterns through the mobile phone records among population groups will be mined and visualized to provide a series of mobility profiles from different areas of Male' city and greater Male' area.</p>
Scope of work: <i>(Description of services, activities, or outputs)</i>	<p>Scope and diversity of assignment:</p> <ol style="list-style-type: none"> 1. Conduct awareness and introductory programs to key stakeholders on the use and methods/sources of Big data 2. Guide and Assist the National Bureau of Statistics/Communication Authority of the Maldives on the Big Data Management process which involves; <ul style="list-style-type: none"> • Assist the dialogue between the Telecom Operators, CAM and NBS on call record data acquirement • Acquisition and recording of data from the telecom companies • Develop methodology and assist the sample selection • Extraction and Cleaning of data through call records • Data Aggregation, Anonymization and Representation as a Database 3. Conduct the Analysis of the dataset, support and provide training on analysis using a simplified model/tool <ul style="list-style-type: none"> • Analyse daily dynamics by dividing the Mobile phone data into calls performed during the day and the night and call performed during weekdays and call performed during

	<p>weekends.</p> <ul style="list-style-type: none"> ● Analyse seasonal dynamics by dividing Mobile phone data into calls performed during the holiday period and call performed during working period. ● Predict population densities for each unit and for both time periods. ● Demonstrate how maps of population changes over multiple timescales while preserving the anonymity. <p>4. Train a team of NBS staffs to deal with big data sources such as mobile phone data for further analysis.</p> <p>Output:</p> <p>The consultant will be required to:</p> <ol style="list-style-type: none"> 1. Assessment on the call records of Telecom data providers 2. A methodological framework for data acquisition/collection and processing network-based mobile phone data 3. A detailed analysis of the mobility patterns of population depending on their livelihoods. 4. Provide population estimation at island level to compare with census 2014 data to assess the migration and use for updating population projections. 5. Training on big data sources (mobile phone data) and analysis. 6. Awareness and introductory program conducted to key stakeholders on the use and methods/sources of Big data 7. Present the key findings to stakeholders
Duration and working schedule:	4 months
Place where services are to be delivered:	National Bureau of Statistics/Communication Authority of the Maldives
Delivery dates and how work will be delivered (e.g. electronic, hard copy etc.):	<ol style="list-style-type: none"> 1. Detailed work plan on the conduct of the consultancy covering the contract period after the first week since recruitment. The work plan should cover the scope of work outlined above and specify the due dates and schedule of meetings and forums with stakeholders in consultation with NBS <u>before 30 August 2017.</u> 2. Awareness and introductory program conducted to key stakeholders on the use and methods/sources of Big data within the first 2 weeks; no later than <u>10th September 2017.</u> 3. The assessment report: A methodological framework for data acquisition/collection and processing network-based mobile phone data during <u>3rd week of September,</u> before <u>20th September 2017.</u> 4. Training on big data sources (mobile phone data) and analysis <u>3rd week of October.</u> 5. Draft Analytical Report <u>2nd week of November 2017</u> 6. Final Analytical Report submission no later than <u>25 November 2017</u>

	7. Presentation on the key findings to stakeholders before 30 November 2017.
Monitoring and progress control, including reporting requirements, periodicity format and deadline:	The Consultant will be briefed and debriefed by NBS and UNFPA and is expected to keep in close contact via email, Skype, etc.
Supervisory arrangements:	The consultancy will be managed by NBS.
Expected travel:	None
Required expertise, qualifications and competencies, including language requirements:	<p>Primary expertise required:</p> <ul style="list-style-type: none"> • Expertise and experience in applied data science particularly in the areas of big data and more generally different approaches to business/data analytics. <p>Functional Competencies</p> <ul style="list-style-type: none"> • Excellent expertise and proven track record in developing computational models based on mobile phone data for the mobility patterns of population depending on their livelihoods. • Excellent expertise and proven track record in data science and big data analytics. • Experience of working with large scale data sets <p>Behavioural Competencies</p> <ul style="list-style-type: none"> • Ability to work effectively toward tight deadlines and to deliver all deliverables in English. • Demonstrated excellent understanding of the assignment. • Direct availability to work on the assignment.
Inputs / services to be provided by UNFPA or implementing partner (e.g support services, office space, equipment), if applicable:	<p>Consultant:</p> <ul style="list-style-type: none"> • Fulfil the specified in the contract and the ToR through review of documents, email communications, Skype calls and meetings • Maintain close contact by email with UNFPA and NBS • Communicate any complications regarding the assignment as soon as possible <p>National Bureau of Statistics:</p> <ul style="list-style-type: none"> • Assign a focal point to work with the Consultant • Provide the relevant documents as required • Provide logistic support including organizing meetings • Monitor and facilitate the progress of the assignment • Facilitate necessary contacts • Organize the policy-level meeting for presentation of findings • Review and provide comments to the deliverables in a timely manner

	<p>UNFPA Maldives:</p> <ul style="list-style-type: none"> ● Make monthly payments upon acceptance of "Certification of Payment of services" by NBS
<p>Other relevant information or special conditions, if any:</p>	<p>The other conditions that may apply in the undertaking of the assignment include:</p> <p>Basis of payment: Monthly Payments</p> <p>Format of outputs: Editable electronic form</p> <p>Language of reports/publications and other documentation and working language in country of assignment: English</p> <p>Ownership of output: UNFPA/NBS</p>
<p>Signature of Requesting Officer in Hiring Office: Ritsu Nacken, Country Director, UNFPA Maldives Date:  31/7/17</p>	