

**Terms of Reference for  
Development of a mobile digital data collection and analytical platform for the project  
“Improving Dietary and Health Data for Decision-Making in Agriculture and Nutrition Actions  
in Africa”**

**1. Background**

The Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) and the International Livestock Research Institute (ILRI) are implementing the project “Improving Dietary and Health Data for Decision-Making in Agriculture and Nutrition Actions in Africa” with funding from the International Development Research Centre (IDRC). The project will be implemented in Kenya and two other countries in East Africa over a four-year period from 2018 to 2022. The overall objective of the project is to develop, evaluate and introduce cost-efficient and scalable solutions for improving the measurement of dietary intake and health indicators to track nutrition and health outcomes and their progress at community and national levels. The overall objective will be achieved through three research objectives:

- i) Develop and test cost effective, scalable technologies to improve the collection of high resolution (individual-level) dietary, nutrition and health data.
- ii) Strengthen country-, regional- and household-level capacity to use tools and data, to make agriculture, nutrition and health policy and practice decisions.
- iii) Create awareness through communication and policy advocacy of the resulting insights in the technology and methodology to policy makers and related stakeholders.

Malnutrition has direct consequences on child health and long term cognitive and physical development. The Global Nutrition Report of 2017 states that, globally, 155 million children under five are stunted and 52 million are wasted, while 2 million people lack important micronutrients such as iron and Vitamin A. More than one third of stunted children live in Africa, and Sub-Saharan Africa (SSA) is the only region in the world to have experienced an increase in child stunting rates over the last two decades.

While nutrition has become a primary objective of many development organizations and governments in response to Sustainable Development Goal Target 2.2, accurate and reliable information to track progress on nutrition and health targets is severely lacking. There are few public databases available, and standard forms of primary data collection are extremely costly, especially in remote regions of SSA where it is most needed and lacking. In addition, the common methods for collecting nutrition data are inadequate for tracking impacts in the face of heterogeneous and fast-moving confounding factors. Low-frequency data can seriously misrepresent the nature of shocks, coping strategies, and the nutrition security status of households—with implications for how practitioners and policy makers judge the impact of interventions aimed at improving household welfare. Furthermore, commonly collected nutrition data are often of little direct use to households themselves.

This project will address this information gap by helping to build and develop capacity around an information and communications technology based (ICT-based) platform for collecting and disseminating high-frequency, high-resolution consumption and young child health data directly



from and to households. The key innovation of this platform is combining the accuracy and frequency of recording events in near-real time with the low-cost, ease, and support of ICT. Through the proposed system, households will collect and submit their own consumption and child health data directly, avoiding the scheduling, delays and costs related to third party enumerators, through a mobile-phone platform that does not require literacy and offers innovative reporting processes that can capture types of data that were previously very difficult or impractical to collect. Furthermore, children’s clinical signs and symptoms will be collected to assess morbidity levels—incidences of diarrhea and fever will be recorded by the mother/caregiver to give indications of a potential or actual disease—that can have implications for nutritional status. Analytic tools, including image capture and classification software, cross validation through repeated and neighbouring observations, and simplified data collection protocols that focus on critical food types, such as animal sourced food, will be used to ensure that the data collected by households are accurate.

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These processes will reduce the burden that comparative surveys (e.g. paper-based consumption journals, socio-economic profiling) place on the household, while improving the data available for tracking and improving interventions. Furthermore, the application will provide households with dashboards of information on their children’s nutrition status, improving their own capacity to make responsible nutrition decisions. This is expected to motivate them to improve on their health and nutrition-related behaviours.

FANRPAN and ILRI would like to secure the services of a firm or expert to develop a mobile digital data (photos, interactive voice responses and games) collection and analytical platform that would enable rural households to collect and enter nutrition and health data via mobile phones.

## **2. Scope of the Assignment**

To develop a data collection and disseminating platform according to the specifications provided by hiring organizations. These include the followings.

- i. A smartphone application that can collect data while offline and then sync when mobile services are available.
  - a. The application must be able to use audio and icons since the target contributor is illiterate.
  - b. The application must be able to collect GPS point and time stamp.
  - c. The application must be able to collect images taken by the phone’s camera. Further, when prompting the contributor to take a photo, the application should provide a ghost image to help the contributor frame the image.
- ii. Support setting up and training on how to access a server that will receive the data collected by the mobile application.
- iii. An information dissemination portal by which households can track the progress of the data that they have collected in the past.



- a. This requirement means that the dissemination portal is able to access historic submissions by the household, even when offline.
- b. The types of information that we are interested in disseminating are consumption, dietary diversity, and MUAC. Ideally this would be a small set of figures showing recommended progress and the household's own progress.

The information to be disseminated should either be displayed as part of the data collection application or the data collection application should call this information upon completion of a survey so that the progress/feedback is immediate.

**Phase 1:** The main development phase will take place in early- and mid-2019. We will then use the application to collect and disseminate information for approximately one year.

**Phase 2:** We will revise the tool in late 2020 in response to the data and feedback from the initial data collection. Phase 2 will then implement in three additional locations.

While the majority of the developer's work will be in the initial months of each phase, the project will likely require some additional support throughout the data collection phases.

### 3. Expected Outputs

- i. A smartphone application.
- ii. Server set up to receive data collected by the mobile application.
- iii. An information dissemination portal.

### 4. Timeframe

|                                | 2019 |    |    |    | 2020 |    |    |    | 2021 |    |    |    | 2022 |    |    |
|--------------------------------|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|
|                                | Q1   | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 |
| Visioning workshop             | x    |    |    |    |      |    |    |    |      |    |    |    |      |    |    |
| Tool development               | x    |    |    |    |      |    |    |    |      |    |    |    |      |    |    |
| Piloting                       |      | x  |    |    |      |    |    |    |      |    |    |    |      |    |    |
| Support during data collection |      |    | x  | x  | x    | x  |    |    |      |    |    |    |      |    |    |
| Tool revisions                 |      |    |    |    |      |    | x  | x  | x    |    |    |    |      |    |    |
| Support during data collection |      |    |    |    |      |    |    |    |      | x  | x  | x  | x    |    |    |
| Tool revisions and finalizing  |      |    |    |    |      |    |    |    |      |    |    |    |      | x  |    |

### 5. Tool Development Milestones (months 0-24)

| Deliverable | Timeline (month number) | Funds released |
|-------------|-------------------------|----------------|
|-------------|-------------------------|----------------|



|   |    |     |
|---|----|-----|
| Contract signed   | 0  | 20% |
| Visioning workshop  | 1  | 0%  |
| Inception report and wireframes   | 2  | 0%  |
| Version 0 of data collection and dissemination tool   | 5  | 20% |
| Version 1 of data collection and dissemination tool   | 6  | 20% |
| Completion of 6-month (7-12) service and continued tool updating during data collection             | 12 | 15% |
| Completion of 6-month (13-18) service and continued tool updating during data collection            | 18 | 10% |
| Version 2 of data collection and dissemination tool reflecting lessons learned from data collection | 22 | 15% |

## 6. Qualifications and Experience

The firm should have experience using and customizing existing survey software or developing new survey software. In addition, the firm should have experience developing programs for disseminating information to individuals via mobile phones.

## 7. Duration of Assignment

45 months: January 2019 – September 2022. The bidding firms or experts should indicate the actual level of effort during this period in their technical and financial proposals.

## 8. Proposal Submission

Interested firms or individuals should submit their financial and technical proposals separately to FANRPAN at: [policy@fanrpan.org](mailto:policy@fanrpan.org) by close of business on December 15, 2018. The proposals should be marked:

Smartphone application – Technical

Smartphone application - Financial

## 9. References

At least three contactable references with details of previous similar work will be required.

