



# Improving Dietary and Health Data for Decision-Making in Agriculture and Nutrition Actions in Africa

## POLICY BRIEF

February 2023

### KEY MESSAGES

- i) Smartphones are a functional and viable tool for households to collect and receive feedback on health and nutrition information and can be applied to scale.
- ii) Self-reporting through digital tools may be an accurate and low-cost approach to data collection compared to using enumerator-based systems.
- iii) Smartphones can be used as a tracking and monitoring tool for the health and nutritional status of populations.
- iv) Smartphones can be used to effectively monitor adherence to treatment in people living with HIV/AIDS and behaviors related to food consumption.

### LESSONS LEARNED

- i) Caregivers are willing and able to record and submit information on themselves and their children.
- ii) The customized “real-time” messaging provided through a smartphone application can reinforce and support standard health and nutrition training.
- iii) Technical support is important at the start and subsequent use of the smartphone application.
- iv) Data should be cross-checked during surveys with smartphones to ensure accuracy of data collected.
- v) Incentives are needed to compensate for participants time when using smartphones in data collection.
- vi) Feedback is key in improving health and nutrition outcomes in the community.
- vii) Sustainability should be considered in the use of smartphones for data collection.



## INTRODUCTION

The Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) and the International Livestock Research Institute (ILRI), Samburu, Marsabit and Kilifi County Governments, National Aids and STI Control Programme (NASCO), and the World Food Programme (WFP), jointly implemented the project ***Improving Dietary and Health Data for Decision-Making in Agriculture and Nutrition Actions in Africa***. The project was funded by the International Development Research Centre (IDRC), started in September 2018 and ended in February 2023.

Traditional methods used to collect health and nutrition data depend on enumerators or use of health facilities. These approaches suffer from accessibility bias, are costly, and the infrequent data collection intervals under heterogeneous and fast-moving conditions may not accurately track changes in nutritional status and household coping mechanisms that occur over short periods of time. These can have serious implications on how practitioners and policy makers judge the impacts of shocks and of interventions aimed at improving household welfare. Furthermore, such data are often of little direct use to households themselves as they do not receive feedback on their own status or trajectories. This data inadequacy will continue to negatively impact the efforts of governments and development practitioners to effectively programme and monitor the performance of nutrition and health interventions, and ultimately, achievement of national and global nutrition and health targets.

Africa suffers from data challenges, whereby despite African countries signing up to the seven Malabo commitments towards transformed agriculture and food systems, including mutual accountability through the biennial reporting system on performance across these commitments, only one country is on track to achieving these commitments by 2025. One of the major reasons is lack of relevant data to assess performance. Therefore, there is a role for technologies such as the use of smartphones to address this data gap through collection and self-reporting of nutrition and health data by household members.

It is against this backdrop that the project developed, tested and built capacity around a smartphone-based application for collecting and disseminating high-frequency, high-resolution food consumption and health data directly from and to individuals and households in hard to reach places of Kenya.





## APPROACH

This project aimed to develop, test and build capacity around a smartphone-based application for collecting and disseminating high-frequency, high-resolution food consumption and health data directly from and to individuals and households. To test this, the project was implemented in Samburu, Marsabit, and Kilifi Counties, Kenya.

### Samburu Implementation (Tool development and piloting)

The first two years of the project focused on tool development, testing and piloting. This was implemented among caregivers and Community Health Volunteers (CHVs) in Samburu County, Kenya. This activity closed in December 2020. Following the closing of the pilot data collection, the smartphone application was further updated to reflect lessons learned. These were the key findings from the pilot:

- i) Self-reporting through digital tools is a viable approach to collecting information from remote locations or from populations that are otherwise difficult to monitor.
- ii) Self-reported data can be as accurate as those collected through other processes commonly used for these populations.
- iii) Data collection using the smartphone application is done at a much lower cost than with conventional data collection approaches for high-frequency longitudinal data.
- iv) Participants value and respond to the tailored feedback that they receive through the application.

### Marsabit Implementation (Scaling and validating for drought surveillance)

To test the applicability of the tool outside of the pilot context, this tool was tested in Marsabit County, Kenya. In August 2021, one version of the tool was launched, in collaboration with the Foreign, Commonwealth & Development Office (FCDO)-funded DIRISHA programme, which aimed to establish a network of sentinel sites across the rangelands of the IGAD region. This implementation included additional modules on rangeland conditions and livestock productivity to monitor for the impacts of drought along the drought-household income-human nutrition relationships. These were the key findings:

- i) Smartphones can be used to track and monitor the transmission of drought impacts on forage conditions to livestock losses and production to human welfare at high spatial and temporal resolution.
- ii) Smartphones can be used to assess the relevance and accuracy of forage-index products to improve their value.
- iii) Smartphones can be used to track the dynamics of morbidity, consumption, and nutritional status in difficult-to-reach populations and subgroups at high resolution.

### Kilifi Implementation (Scaling and validating for outpatient tracking)

In June 2022, another version of the tool was launched in Kilifi County, in collaboration with the World Food Programme (WFP) and the National AIDS and STIs Control Programme (NASCOP). This implementation had additional modules related to adherence to antiretroviral treatment (ART) regimens and exercise to better understand the role that these two factors can play in nutritional outcomes. These were the key findings:

- i) Clients are able to use the smartphone application to collect and submit their own health and nutrition data and get feedback.
- ii) Technical issues eased off as clients continued interacting with the application.
- iii) Dietary diversity of clients improved after they started receiving feedback on their performance.
- iv) Clients learnt the importance of physical activity on their health as they received feedback.



## POLICY IMPLICATIONS

There are diverse policy opportunities in leveraging smartphone technology to improve dietary and health data for decision making in agriculture and nutrition actions in Africa. The smartphone application provides a win-win opportunity in that it can improve nutrition and health outcomes of the community, while helping clients to gain digital literacy. This brief recommends that policymakers support the use of smartphone technology as one of a range of complementary approaches to improving the health and nutrition status of hard-to-reach areas. This will involve:

- i) Seizing the opportunities presented by digital transformation to improve health care access and outcomes.
- ii) Ensuring connectivity especially in the rural areas and hard to reach areas.
- iii) Increasing digital literacy of communities so that they can use digital technology.
- iv) Ensuring inclusive dialogue, decision-making and action by identifying and bringing to scale digital transformation that works for people.
- v) Forging genuine public-private partnerships to generate win-win approaches that enable the public sector to fulfill its responsibility for protecting the health of people and securing equitable access to public health goods.
- vi) Mobilizing resources so the potential of digital technologies to improve health is realized and ensuring that they are sufficient and sustainable.
- vii) Capacity building among various stakeholders in the use of self-reporting approaches such as the smartphone application.

## BIBLIOGRAPHY

1. Sachs, J., et al., *Sustainable development report 2022*. 2022: Cambridge University Press.
2. Levels, W., *trends in child malnutrition. UNICEF/WHO/World Bank Group Joint Child Malnutrition Estimates. Key findings of the 2019 edition*. New York: UNICEF, WHO, World Bank Group, 2015.
3. Bommer, C., N. Mittal, and S. Vollmer, *The impact of nutritional interventions on child health and cognitive development. Annual Review of Resource Economics*, 2020. 12: p. 345-366.
4. Darnton-Hill, I. and M. Chopra, *International nutrition, in Public Health Nutrition*. 2020, Routledge. p. 223-246.
5. Jensen, N., Alulu, V., Lepariyo, W., Madzivhandila, T., Mkandawire-Munthali, B. and Sibanda, S. 2020. *Improving nutrition and health data to and from remote regions. United Nations System Standing Committee on Nutrition (UNSCN)--Nutrition*, 45, 96-102. Open access.
6. Jensen, N., V. Alulu, Lepariyo, W., Sibanda, S. and Kiage, B. N. 2023. Assessing Mbiotisho: A smartphone application used to collect high-frequency health and nutrition data from difficult to reach populations. *Maternal and Child Nutrition*. <https://doi.org/10.1111/mcn.13496>

## ACKNOWLEDGEMENTS

This work was carried out with the aid of a grant from the International Development Research Centre, Ottawa, Canada. The views expressed herein do not necessarily represent those of IDRC or its Board of Governors.



Canada

We acknowledge the support provided by the CGIAR Research Program (CRP) on Livestock and all donors and organizations which globally support CGIAR research work through their contributions to the CGIAR Trust Fund. The work continued as part of the CGIAR Initiative on Sustainable Animal Productivity.



### About FANRPAN

The Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) is an autonomous regional stakeholder driven policy research, analysis and implementation network that was formally established by Ministers of Agriculture from Eastern and Southern Africa in 1997. FANRPAN was borne out of the need for comprehensive policies and strategies required to resuscitate agriculture. FANRPAN is mandated to work in all African countries and currently has activities in 17 countries namely Angola, Benin, Botswana, Democratic Republic of Congo, Kenya, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe. © FANRPAN Regional Secretariat: 141 Cresswell Road, Weavind Park 0184, Private Bag X2087, Silverton 0127, Pretoria, South Africa. Telephone: +27 12 804 2966. Facsimile: +27 12 804 0600. Email: [policy@fanrpan.org](mailto:policy@fanrpan.org), Website: [www.fanrpan.org](http://www.fanrpan.org)

