Project funded by the GSMA Mobile for Humanitarian Innovation Fund

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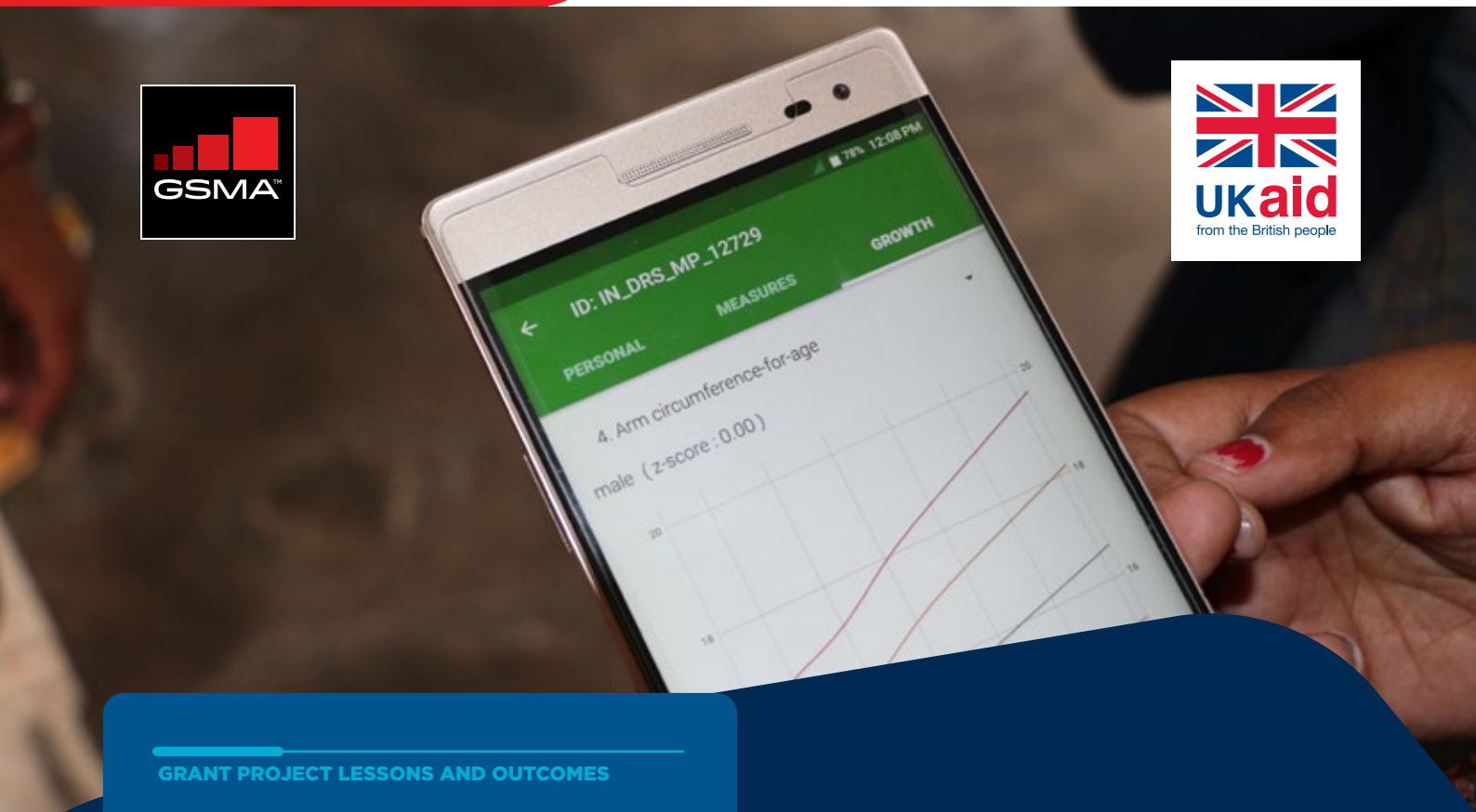

GRANT PROJECT LESSONS AND OUTCOMES

Welthungerhilfe's Child Growth Monitor

GRANT PROJECT DATES

June 2019 – September 2020

Welthungerhilfe is one of the largest private aid organisations in Germany focusing its work on the Sustainable Development Goal 2: "Zero Hunger by 2030" in more than 30 countries. Welthungerhilfe works on the principle of help to self-help: from fast disaster relief to reconstruction and long-term development cooperation projects with national and international partner organisations.

BRIEF DESCRIPTION:

The GSMA M4H Innovation Fund awarded a grant to Welthungerhilfe in 2019 to support the development of the Child Growth Monitor (CGM) tool. CGM is a mobile app based tool for the measurement and detection of malnutrition in children. Instead of using a physical scale, height board or mid-upper arm circumference (MUAC) tape, CGM uses image data taken with an off-the-shelf smartphone, processed using artificial intelligence (AI). With the data collected, the app builds a virtual 3D-model of the child's data, which is analysed using Deep Learning algorithms to calculate height, weight and arm circumference. The intention is that CGM replaces the need for the manual measurements of weight and height (and later MUAC), which are costly, slow and often inaccurate. Welthungerhilfe partnered with Fight Hunger Foundation (FHF) India to collect the data required to train the algorithm, taking measurements of children in multiple locations in India, using both the CGM tool and traditional methods, as part of FHF's ongoing work to address malnutrition.

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55,000 CHILDREN

WERE MEASURED USING THE CGM TOOL DURING DEVELOPMENT

RESULTING IN THEM RECEIVING A MORE ACCURATE MEASUREMENT THAN THEY OTHERWISE WOULD HAVE, ENSURING THAT A VALID MALNUTRITION MEASUREMENT WAS PRODUCED

THOSE 55,000 MEASUREMENTS WERE USED AS LABELLED DATA TO TRAIN CGM'S ALGORITHMS

36

36 HEALTHCARE WORKERS USED CGM IN THE FIELD DURING TRIALS, TO EVALUATE IT'S USER-CENTRIC DESIGN

ACCURACY: (STATUS SEPTEMBER 2020)

LESS THAN 12MM ABSOLUTE ERROR MARGIN FOR HEIGHT PREDICTION FOR MORE THAN 51% (TARGET 50%) OF SCANS AND LESS THAN 210 GRAMS ERROR MARGIN FOR WEIGHT PREDICTION WITH MORE THAN 61% (30% TARGET) OF SCANS.

4 MAJOR NEW PARTNERS ACQUIRED

HAPPEL FOUNDATION

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

SONY

CLIFFORD CHANCE

DATA SOURCES

- *GSMA Mobile for Humanitarian Innovation Fund - Final Grantee Report, Welthungerhilfe (November 2020)*
- *Child Growth Monitor - Routes to Scale, Welthungerhilfe (November 2020)*

CASE STUDY

In the Indian state of Rajasthan, Welthungerhilfe is testing the Child Growth Monitor. The manual devices normally used, such as scales, are often outdated and the results inaccurate.

Workers at Anganwadi Centres (rural childcare centres) look after many children in the state kindergartens and also provide support and education for mothers. Anganwadi workers, among others, are normally responsible for collecting measurements used to calculate and report malnutrition. Welthungerhilfe and its partner NGO Action Against Hunger (Fight Hunger Foundation India) support the women and show them how the app works.

Using three different body scans taken using the CGM, a child can be classified into a state of health (with relation to malnutrition) to which appropriate action can be taken. Through the additional use of manual measurements to collect additional data, Welthungerhilfe have continued to test and improve the artificial intelligence algorithm. In the future the CGM tool will work as a standalone, without the need for additional tools or equipment.

"Using the app is very easy in comparison to the manual measurements. I used to have to carry the heavy instruments on my shoulders and walk from house to house. I think scans are much easier to do."

Anganwadi worker (from Haripura village, Kinshanganj)

TESTIMONIALS

“We should push this up all the way to the government. This has huge potential for real-time and reliable data.”

Commissioner Integrated Child Development Services, Madya Pradesh

“We have been testing the Child Growth Monitor for nearly a year for data collection purposes. I have been measuring children for malnutrition for more than 6 years and measured more than 10,000 children - and I have to say that it would be a huge help to have a solution like CGM.”

Programme Manager: Health and Nutrition, ACF India

“With the Child Growth Monitor measuring children would be much easier and quicker, which in return means that more children could be measured, diagnosed and treated for malnutrition. For ACF India and our 125 community mobiliser this would be a huge work facilitation and a big step forward.”

Programme manager MEAL, Action Contre la Faim (ACF) India

PARTNERSHIPS

The partnership between Welthungerhilfe and the GSMA allowed Welthungerhilfe to hire most of the positions that were needed to build out the solution in line with Welthungerhilfe’s aim establish CGM as a self-sustainable Social Business, and to contribute to the development the CGM product allowing a release of the first full app version in January 2020[1]. In addition, the collaboration with the GSMA allowed the CGM team to acquire new partners to make further development and improvements possible.

Those partners include:

Welthungerhilfe highlighted how GSMA support for CGM helped to further build interest and trust for other potential funding partners, including BMZ, Happel Stiftung and Clifford Chance. Leveraging the networks of the GSMA and the Mobile for Humanitarian Innovation Fund, CGM was able to benefit from access to possible partners. During the course of the grant, partnerships with organisations including were expanded, and new ones were created. Welthungerhilfe viewed these partners as crucial for an innovative venture such as CGM, which requires multiple partners to bring a range skills, expertise and funding to the project. Successful progress throughout the course of the grant also allowed CGM to build internal support within Welthungerhilfe, securing Board-Level backing and a commitment to support growth of CGM in the coming the steps of development.

Scaling-up and business model

CGM is working towards the UN's Sustainable Development goal "Zero Hunger". The CGM vision is that every child can grow up free from hunger. Welthungerhilfe hopes that eventually the CGM will be used across the 48 countries with the highest prevalence of hunger and malnutrition, and that CGM can become a tool for health workers across these countries.

MAJOR STEPS TO CREATE IMPACT ARE:

- **Developing the product – done**
- **Test the product in the field – done**
- **Conduct scientific validation study – underway**
- **Register app as medical device – underway**
- **Undertake further trials in additional countries – planned.**

Welthungerhilfe: The Future

Welthungerhilfe hope that in the future the CGM could save millions of children from permanent damage to their health due to malnutrition, and recognise the key role that detecting malnutrition has in the fight against hunger.