



FOOD  
FOR  
US

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FEEDBACK REPORT  
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# Food For Us – a mobile app designed to reduce food waste

Food for Us is a mobile app that has been developed to reduce the amount of on-farm food waste generated in South Africa.

## Introduction

Research indicates that almost one third of all food produced in South Africa is going to waste. In part due to distribution issues where roughly 50 percent of food wastage occurs before the food leaves the farm gate. The losses are estimated to be staggering 2.7 million tonnes each year<sup>1</sup>. At the same time, more than one in four South African households do not have enough to eat. The app was designed to redirect food waste to human consumption, reduce waste and associated greenhouse gas emissions, improve e-literacy, connect communities and provide nutritious food to children and community's that previously may not have had access to such foods.

The app was developed by a team at Rhodes University's Environmental Learning Research Centre (ELRC). The project has the support of the United Nations Environment Programme's 10 Year Framework of Programmes on Sustainable Lifestyles and Education.

During the app's initial trial phase developers have focused on small scale farmers (sellers) and buyers in the following trial areas:

Region 1: Worcester and Stanford in the Western Cape

Region 2: Hogsback, Alice, Middledrift and the greater Raymond Mhlaba Local Municipality in the Eastern Cape

## Challenges

One of the main challenges has been to educate users on mobile technology - from setting up emails to downloading apps. This has taken many hours by field workers during the trial phase. Linked to these technical challenges, is the financial challenge of the lack of funds to purchase data.

The second major challenge has been the slow uptake of the app. To date, only two products have been purchased with the use of the app i.e. only two transactions have been completed. The main reason for the slow uptake is that the majority of the project timeline has been focused on stabilising the app. The next step is to market the app to users outside of those involved in the first trial and in this way, increase the uptake.

<sup>1</sup> Sourced from the 'Food loss and waste: facts and futures' report, compiled by the WWF-SA, 2017.



A third challenge has been that, apart from Stanford, the majority of the current trial areas are rural small scale and low-income households, who use basic farming practices – little to no fertilisers, manual harvesting, no machinery. To date, our research has shown that there appears to be very little food waste in the initial trial group as any produce that is not sold is either used within the household, passed to friends and family or donated to surrounding children's homes, education facilities and soup kitchens. Food that is not used for human consumption is generally composted. This has resulted in very limited data from which to calculate savings.

A further challenge has been to establish whether the food sold on the app would have been wasted in the absence of the app, or if the app is simply being used as an alternative market place.

### Positive outcomes

Despite the limited savings relating to food waste, the app appears to have a variety of secondary positive outcomes. At workshops during the app design phase, many of the attendees were looking for alternative markets in which to sell their produce. The app may provide an alternative “market place” for users to sell their produce. In this way, there may be economic benefits to the communities, with increased income for the farmers/sellers, scope for increased production, which in turn may result in increased employment opportunities in the immediate communities. A secondary benefit of the app to the community is lower-priced, healthy food which is easily accessible. There is also an expected growth in entrepreneurship for those with transport who may enable links between buyers and sellers where difficulties in transporting goods exist. The app also encourages users to engage with their communities, bringing people together and making fresh, nutritious food available without the need to travel to shopping centres and large markets. This may reduce emissions related to travel as food would be available within the communities in which they work or live.

### Quantification

To date, there has only been two complete transactions that have taken place using the app. The majority of data has been sourced from surveys completed by field workers as farmer (seller), buyer and intermediary buyer/seller's surveys. Among other things, these detailed surveys provide information on what crops are farmed and sold, the percentage of unsold crops, what happens to unsold food and the farming techniques practiced.

Due to the current limited uptake of the app, research and calculations have been nominal to date. Changes and upgrades have been made to the app following the initial trial phase, with the goal of upscaling and rolling out the app nationwide. The quantitative analysis is currently high-level, with a number of assumptions. Produce scenarios may be required to indicate the potential impact of the app.



One of the main challenges with quantification of savings achieved is that the app is currently inconsistent in the units in which it calculates produce sold. The system captures the produce in kilograms, however the small-scale farmers usually sell their produce by bunch, bag or unit. For example, the transaction sheet captures one onion sold, however the data analysers are unsure if this is one kilogram, one bag or one onion. The assumption is that it is one kilogram as the app users are trained and requested to capture the produce by kilogram, but this rarely translates into practice. The users may include a written description of the produce including the units to be sold as a bag/bunch/unit and this is then captured and typed manually into the transactions spreadsheet. Once more data is generated, a table of assumed weight per produce type will be compiled e.g. a bunch of carrots is assumed to be 2kg.

### Savings to date

Due to the delay in scaling the app and recruiting users, to date only two transactions have taken place via the app - one lettuce and one bag of onions that was sold. From the fourteen farmer surveys all but three crops, reported under 10% of their produce is not sold. Of the produce not sold, the majority still goes to human consumption through families, friends, churches and donations to schools. Food that is unfit for human consumption is generally composted onsite and not sent to landfill. In South Africa, the emission factor for waste to landfill is high, partly due to the long distances that the waste needs to be transported to landfill sites. If one tonne of waste were to be composted rather than sent to landfill, this may result in a saving of at least one tonne of CO<sub>2</sub>e per tonne of wet waste under South African conditions. Further savings could be quantified through the replacement of food products. For example, if the buyer was unable to purchase their lettuce and onions through the app from food that may have gone to waste, they would have had to purchase their lettuce and onions from an alternative supplier.

According to the life cycle analysis (LCA) of vegetables in the UK, it has been estimated that 1 kg of lettuce has a carbon footprint of 1 kgCO<sub>2</sub>e and 1 kilogram of onions has a carbon footprint of 0.4kg CO<sub>2</sub>e. Thus, the lettuce and onion purchase, may have saved close to 1.4 kg CO<sub>2</sub>e. According to this article, the average footprint per kilogram of fruit and vegetable is approximately 0.75 kgCO<sub>2</sub>e per kg<sup>2</sup>. Therefore, for every tonne of fruit and vegetables that would have been wasted but was redirected to human consumption – 750 kgCO<sub>2</sub>e may have been saved as the buyer would have sourced replacement food.

<sup>2</sup> Jones, Craig. 2018. Wonky Fruit and veg: The Carbon Footprint of Food. LCA is from cradle to point of sale. <http://www.circularecology.com/news/wonky-fruit-and-veg-the-carbon-footprint-of-food#.WrwC25e-m1h>





The water footprint of a product is the volume of freshwater used to produce the product, measured at the place where the product was produced. For example, the global water footprint of lettuce is 130 litres to produce 1 kg of lettuce compared to 900 litres of water required to produce 1 kg of maize<sup>3</sup>.

Considering South Africa is a water scarce country, savings related to water will be researched in detail for this project. To date, relevant emission factors for on-farm produce and waste have been difficult to source, on a local and global-scale indicating a gap in research.

### Next steps

Currently uptake of the app is increasing through marketing campaigns during field work, workshops, matchmaking events, hosting stalls at markets and connecting through intermediaries, who will sell on behalf of farmers who do not have digital technology or time. Additional functionality has been added to the app to enable it to be more user friendly in the hope uptake will be encouraged through ease of use.

With an increase in uptake, there will be more transactions to process and calculations can then be focused on what savings the app has achieved. The team are currently researching more ways to quantify these savings, be it water, the emissions relating to growing the vegetable, nutrients and waste to landfill emissions.

The team are in discussions with various groups to decide whether there is an opportunity to upscale the app to large scale farmers, as more waste is expected to be generated on larger farms. Should uptake of the app not be sufficient by the end of the project time line, it is likely that savings will be quantified through scenario analysis.

### Conclusion

In summary, the savings to date have been minimal due to limited uptake of the app with the trial user group, predominately due to the majority of project focus time to date being on app stability and user group training. The current project findings indicate that within the small-scale farmer app trial group, the app is more likely to be used as a tool to access new markets rather than a means to redirect surplus food to human consumption. Waste appears to be minimal and any surplus is diverted to family, friends, feeding schemes or donated. Where surplus is no longer able to be consumed by humans, the food waste is generally composted.

<sup>3</sup> Hoekstra-2008-WaterfootprintFood.pdf