

The cumulating effects of population growth and the impact of climate change on food systems and agriculture have resulted in a food security and nutrition crisis, the world over. This crisis is reducing the availability and increasing the cost of food, making it prohibitively expensive for people living in poverty and in turn driving malnutrition and the proliferation of disease. This is the experience of 2 billion people living today.¹

A nutritious diet is the foundation for a healthy life and unless drastic measures are taken to remedy the crisis we will see further deterioration of health and broad economic impacts as a result. Hunger affects women more than men at a rate of 60:40² and thus has ramifications on the health of new born babies extending from cognitive impairments to stunted growth.

The experience of food scarcity in low income countries is 20% higher than middle income countries and is directly correlated to economic downturns, conflict and climate shocks.³

The extremely fragile state of the world economy and current geopolitical tensions could easily turn into a food war where produce becomes our most valuable commodity, unless food security for individual communities is provided through localised production.

Technological innovation in food production has disenfranchised traditional agricultural practices but the benefits achieved have not been extended to those who are suffering. Feeding the rich has rendered the poor even hungrier.

For every country the experience of the food security and nutrition crisis is nuanced but devastating.

In Australia it is our Indigenous population who feel its effect most acutely. The 2019 Closing the Gap report states that first nation people are dying on average 10-17 years earlier than non-indigenous Australians.⁴ Nutrition has been cited as the key contributor in preventable health challenges and yet 22% of indigenous people report not having enough food to eat. Colonialization has meant that in remote indigenous communities there is no choice but to procure fruit and vegetables from stores where food has been freighted thousands of kilometres, reducing quality and driving up cost.

In Africa 20% of the continent's population were reported undernourished in 2018 and despite most African countries adopting the Sustainable Development Goals, political agenda is not translating into nourishment for African people. This is compounded by a reliance on foreign aid which is monopolised and could become jeopardised in the case of a global downturn, throwing those now on the brink into grave peril. Right now, more than 2 million

¹ Food and Agriculture Organization of the United Nations, 2019. 'State of food security and nutrition in the world, safe guarding against economic slowdowns and downturns' <http://www.fao.org/3/ca5162en/ca5162en.pdf>

² World Food Program 2019: <https://wfpusa.org/women-are-hungrier-infographic>

³ Food and Agriculture Organization of the United Nations, 2019. 'State of food security and nutrition in the world, safe guarding against economic slowdowns and downturns'

⁴ Australian Government, Department of the Prime Minister and Cabinet. 'Closing the Gap Report 2019. (<https://ctgreport.pmc.gov.au/sites/default/files/ctg-report-2019.pdf?a=1>)

people are on the brink of starvation in Somalia however, it receives limited coverage in the media.⁵

Despite progress in China, the relative size of the population means the number of individuals impacted amounts to an astounding 150 million suffering from malnutrition.

Last year I submitted my response to this same question for the Dean's Prize. I spoke of my work addressing this challenge in my capacity as CEO of NFP organisation Food Ladder. Our approach has been to roll out a model of locally-owned social enterprises leveraging solar powered, hydroponic technology to create local micro-economic outcomes and a sustainable supply of nutrient dense food for the most vulnerable. Over the past 10 years Food Ladder systems have fed thousands across the Northern Territory of Australia, India and most recently Bhutan. Since my last submission 12 months ago the number of people who did not have enough food to eat has increased by 20 million, totalling 280 million people the world over.⁶

There simply are not enough resources or capacity within any one not-for-profit, Government or institution to fix this endemic issue. It is clear that solutions to remedy the issue have to be more aggressive to be effective.

I believe the next step is to empower the billions of individual people facing the food security and nutrition crisis to take control of their own future through a free mobile app, built for both android and iOS. The app would cater for people living in the rural and remote communities of emerging economies where mobile phones are often the first and only communication technology and are often more accessible than fresh water.⁷

The app would deliver localised, icon-based tools to educate communities in how to grow their own food, connecting them in a global virtual network of like-minded people and horticulture, aquaponic, hydroponic experts to support their food growing social enterprise needs.

Real time data and predictive analytics would be utilised to advise users on weather patterns and upcoming environmental threats - information which is vitally important to the marginalised and those most at risk of the climate impacts of drought and monsoon. Seasonal harvest rotations integrating indigenous dietary needs could be developed in collaboration with neighbouring communities to ensure complimentary crops are planted in regional areas to reduce the likelihood of an over-supply and wastage of any particular vegetable.

To support individuals develop their social enterprises and manage profit and loss the app could predict yields and expected financial return, in local currency, when the produce is sold at market.

⁵ Rebecca Ratcliffe 2019, The Guardian. 'Two million people at risk of starvation as drought returns to Somalia – Agencies sound the alarm over 'climate crisis' after devastation of crops and livestock' (<https://www.theguardian.com/global-development/2019/jun/06/two-million-people-at-risk-of-starvation-as-drought-returns-to-somalia>)

⁶ World Health Organization, United Nations. 2016, 15 July. 'World hunger is still not going down after three years and obesity is still growing – UN Report', Press Release, Paul Garwood. (<https://www.who.int/news-room/detail/15-07-2019-world-hunger-is-still-not-going-down-after-three-years-and-obesity-is-still-growing-un-report>)

⁷ Mutiga, Murithi and Flood, Zoe, 2016. 'Africa calling: mobile phone revolution to transform democracies' The Guardian. (<https://www.theguardian.com/world/2016/aug/08/africa-calling-mobile-phone-broadband-revolution-transform-democracies>)

Dean's Prize 2019

This custom designed tool would deliver sustainable solutions to support local ecosystems, drive micro-economic development, encourage indigenous food propagation and nutrition in a self-moderating online society. By enabling communities to connect directly, they can learn from one another instead of being reliant on a parent body or service provider.

Built into the mobile app could also be a microfinancing capability which would enable potential donors to connect with communities that are making progress and provide small loans to support social entrepreneurs scale their enterprises with technology such as Food Ladder's systems.

We must utilise technology for the benefit of those who most need it. The app converts the predicament of the marginalised population from one of desperation and reliance on aid to a state of agency, opportunity and optimism. This app would provide poor communities with the capability to tackle the most compelling issue facing society today – food security – and to respond according to their own unique and varied circumstances.