

Background: Severe acute malnutrition (SAM) puts children at high risk of dying. SAM is still a serious public health problem in Sierra Leone. Over the last twenty years, ready-to-use-therapeutic food (RUTF) has been a success in treating SAM, but in Sierra Leone as in many low-income countries, it has to be imported. Sierra Leone has a diverse agroecological system potentially enabling the cultivation of **various food crops that could be used as ingredients in RUTF**. We investigated the feasibility of developing RUTF from local ingredients and by local enterprises from 1) nutrition, 2) food safety and 3) business perspectives.



Fish is an important commodity in Sierra Leone

Source: Tomlins, K. 2019

Methods:

- Desk review** - in consultation with local partners in Sierra Leone - to identify the possible local food ingredients for RUTF, assess potential food safety risks, and existing business cases for RUTF.
- Qualitative field approach; in-person interviews** (Freetown, Feb. 2020) of various stakeholders (n=18) from the private sector (e.g. Bennimix, Peanut Butter Project), NGOs (e.g. UNICEF, WFP), and public sectors (e.g. Ministry of Agriculture, Health), **phone interviews** with international experts in the RUTF sector (n=8)
- Linear Programming** to identify suitable combinations of local ingredients that would meet international RUTF product specifications for nutritional and food safety (aflatoxin) requirements at minimum cost (using market or wholesaler prices and international nutritional food composition tables).



Some of the possible local ingredients

Source: Tomlins, K. 2019

Results:

- Existing commercial formulations** such as the standard peanut-powdered milk based formulation (Plumpy'nut) or the milk-free soybean-based formulation with crystalline amino acids (allowing 50% or 95% substitution with local ingredients, respectively, or **novel formulation(s)** based on key nutritious local ingredients such as egg or fish powder are possible, but will require different levels of local investment.
- Food testing capacity** in Sierra Leone will **require significant investment** alongside the adoption of Codex Alimentarius food safety standards by food business operators across the RUTF food chain. This includes laboratory accreditation (ISO standards) for conducting analytical testings. Most of the technology and equipment for producing RUTF is likely to be imported.
- Government tax can have a large impact on viability and investment decisions since **total demand for RUTF is not large** (estimate is maximum 500 tonnes of product per year). A business based on this scale may struggle with viability. The more complex the final product (i.e. RUTF), the greater the investment needs to achieve domestic production. Furthermore, the policy landscape was found to be complex with vested interests, mostly associated with scale economies of RUTF manufacture and donor/government agendas.

Business model	Level of local ingredient inclusion	Recommendation
(a) Ready-made and packed RUTF on the international market = model currently in use (e.g. the status quo)	0%	(1) Minimum risk taken and may be financially viable
(b) Local production of RUTF based on imported ingredients = (e.g. Project Peanut Butter model currently in use)	0%	Not recommended because does not bring any advantage compared to option (a)
(c) Local production of RUTF based on local ingredients (with/without phased approach): - Creating a new factory - Upgrading an existing value-added food production business. - Upgrading an existing commercial food business.	50 -95% depending on the choice of the ingredients in the RUTF formulation	Recommended. There are 2 possibilities: (1) Either develop RUTF via intermediate products (product diversification) or; (2) Go directly to the production of RUTF



Source: Bechoff, A. 2020

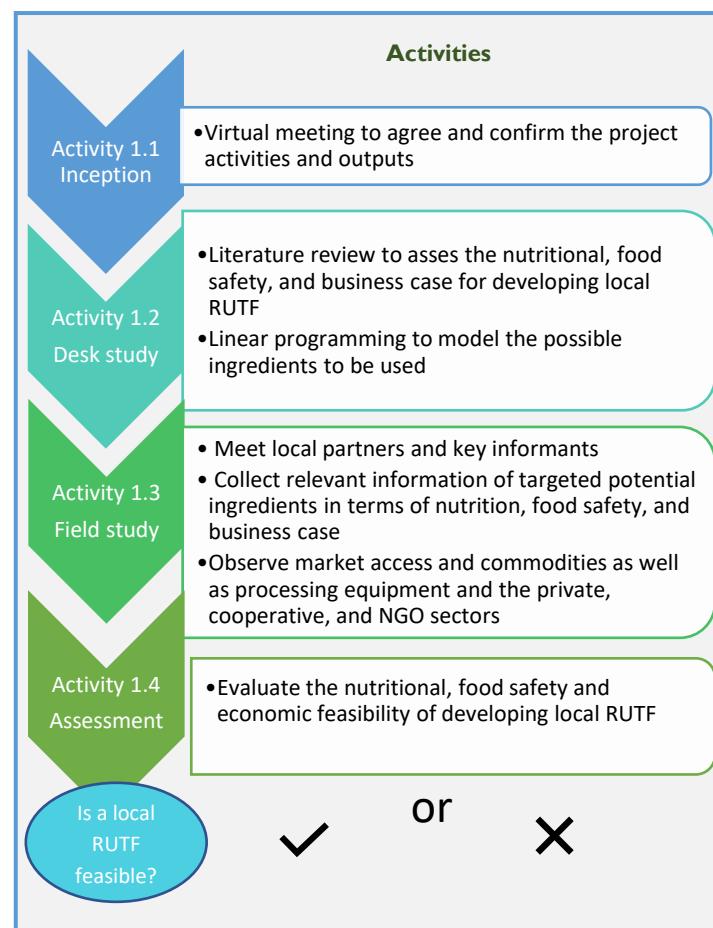


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Source: Bechoff, A. 2020



A mother and her child in Sierra Leone

Source: Buck, J., 2019. The Project Hope <https://www.projecthope.org/sierra-leone-challenges/07/2019/>

Conclusion:

- Our view is that Sierra Leone has the capacity in terms of domestic supply of ingredients to produce healthy nutritious processed foods to address domestic malnutrition challenges.
- Locally grown crops used as ingredients is possible as there is sufficient quantity and a range of ingredients available to make up a selection of nutritious foods including RUTF.
- However, there are significant challenges in terms of meeting food safety standards and regulations, size of businesses, establishing food chains, facilitation of domestic businesses to supply safe, healthy ingredients. These would need to be overcome with targeted investment/support.



Freetown's 'busy' market

Source: Bechoff, A. 2020