

Malnutrition Matters

FOOD TECHNOLOGY SOLUTIONS

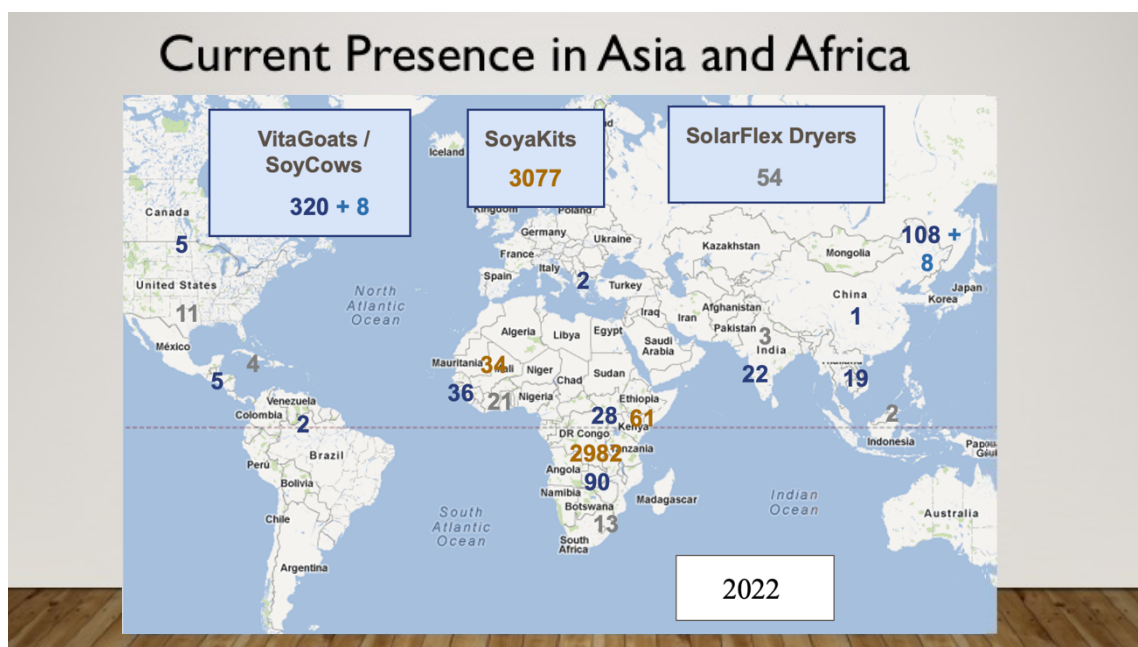
Capabilities Statement – Malnutrition Matters – January 2022

Background and Food Technology Solutions

Malnutrition Matters (MM), a Canadian social business (non-profit) founded in 2000, has designed, tested and broadly implemented a number of proprietary food technology solutions aimed at improving food security, facilitating women-led micro-enterprises and alleviating chronic malnutrition in developing countries. MM's goal is to enable the use of appropriate food-processing technologies to alleviate chronic malnutrition in a sustainable manner, to empower women and to increase local economic activity. The primary products that MM has designed, tested, fabricated and now deploys with its partners, are the **VitaGoat, SoyCow, SolarFlex Food Dryer and the SoyaKit**. There are currently over 600 VitaGoat, SoyCow, SolarFlex and SoyaKit installations around the globe (see map below), with 260,000 continuous beneficiaries. A list of MM's primary partners (including the World Bank, USAID, CRS, EU / CDN (Consortium of Dutch NGOs) and ASA/WISHH) is provided below. MM and its personnel have effected the full or partial transfer of technology to enable fabrication in 6 countries: Benin, Russia, Thailand, China, India, and Myanmar. MM's primary fabrication contractors currently are in India, China and Thailand.

MM's proprietary food technology solutions include:

- the SoyaKit (home-kitchen system - \$180 to \$250 landed cost, in volume)
- the VitaGoat (non-electric),
- the SoyCow M and E (hybrid / electric),
- the SC-30 (an 80L / hr system, all electric),
- the PedalPro (food grinder, water pump and electrical generator)
- the SolarFlex food dryers (including Small Farm model and larger Quad model)



The majority of the equipment listed above enables production of soyfoods, which can be readily and easily fortified at the local production site with an affordable **multi-micro-nutrient premix** (1/2 cent per dose), and which enable profitable delivery of whole protein to local communities at the retail price of 1 cent (US) per gram of protein which is 1/3 to 1/2 the cost of other low-cost animal proteins (e.g., eggs or dairy milk). Protein is a key element in the fight against chronic malnutrition, as described in [this recent study](#). Soybeans are grown in almost every country in sub-Saharan Africa, with affordable access in most local /small-town markets. More information here on [Health Benefits of Soy Foods](#).

MM's product lines receive continuous upgrades to make them safer, more durable and efficient and easier to operate.

The **VitaGoat** is a non-electric food-processing system that enables primarily women-led, rural micro-enterprises to produce 30 liters of protein-rich food per hour from locally available legumes, grains and nuts. The VitaGoat doesn't require running water. The **SoyCow** is an electric version of the VitaGoat that has a slightly higher production capacity.

The **SolarFlex Dryer** products are solar-only food dryers (no electricity or other fuel required) that can efficiently dehydrate fruits, vegetable, fish, meat etc. in one to two days in a hygienic manner using an enclosed cabinet. The drying capacity ranges from 5 sq m to 20 sq m (20 kg to 80 kg) of wet produce per day. The resulting dehydrated products, with no additives needed, preserved in simple plastic bags, have a shelf life of one year.

The **SoyaKit (Home Business in a Box)** is a low-cost (\$180 - \$250 landed in Africa/Asia) self-contained micro-enterprise platform that enables a woman entrepreneur to operate a flexible, hygienic, time- and fuel-efficient business out of her home kitchen. It enables production of numerous soyfoods (7 L / hr) affordable for the Base of the Pyramid consumer, using local soybeans, and yields substantial profit (\$4 to \$6 a day for part-time effort).

Core Competencies

With its food technology solutions as a base, MM infuses its small-business knowledge and its substantial project design, planning, implementation and M&E skills, together with key partner capabilities, to deliver programs with a lasting impact in the target communities, including:

- empowerment of women and youth,
- improved nutrition and health outcomes,
- alleviation of poverty through local economic benefit with no profit leakage,
- increased income to smallholder farmers who grow the soybeans locally,
- environmental sustainability through delivery of whole protein with decreased land, energy and water usage (compared to the animal-protein industry)

The deployment of MM's food technology solutions enables deep impact in communities where chronic malnutrition rates are highest. Chronic malnutrition rates in Africa and Asia have increased in the past several years, after decades of decline; these rates can only be lowered through the implementation of solutions that provide sustainable, affordable and accessible nutrient-dense foods. **The local processing and local economic benefits enabled by MM's solutions are among very few that are effective in these communities. Solutions that require central processing, and/or packaging and longer distance distribution (> 10km) or solutions that provide animal protein, are not affordable for Base-of-the-Pyramid consumers.** For example, MM's solutions enable unskilled rural women to produce and sell micro-nutrient fortified soymilk, each one-cup serving (or 250 ml) containing 8 g of

whole protein, for about \$0.07 a cup, which is about one-third of the cost of dairy milk and **half the cost of local eggs**: see [these sample testimonials](#). The SoyaKit is also enabling savings of over 100 tonnes of GHG emissions reductions **per month** (see Climate-Smart Approach... paper [here](#)). MM's food technology solutions and micro-enterprise planning and implementation expertise have been vital components of a number of multi-sectoral programs involving agriculture, nutrition, women empowerment and economic development; these include programs implemented by USAID Feed the Future, USDA programs and EU programs (see partner/program list in the micro-enterprise section below).

Personnel

MM's global technical expertise includes skills in:

- equipment design and testing,
- fabrication and technology transfer,
- training,
- business model development and entrepreneurship,
- project design and management and M&E,
- logistics and quality control.

MM has also developed a global network of professional associates and affiliated agencies in the USA, India, Kenya, Myanmar, Ghana and South Africa who provide installation and training services for food-processing technologies, technology assessment, equipment design and technical support for SoyaKit, VitaGoat and SoyCow installations.

Project Design, Planning, Implementation, M&E

MM has led the planning, implementing, commissioning, training and/or monitoring / evaluation for over 600 VitaGoat, SoyCow, and SoyaKit systems primarily in sub-Saharan Africa and Asia. MM has contract personnel certified in three countries to support its projects in Africa (Ghana, Kenya, South Africa), plus one in India and one for Myanmar / Thailand. MM's capabilities include:

- liaison with manufacturers that fabricate reliable MM-designed equipment, including shipping, special orders and spare parts
- operations training for the VitaGoat/SoyCow, SoyaKit and SolarFlex equipment including safety protocols, maintenance and repair procedures
- technology transfer management, specifically to developing economies including Russia, Benin, Thailand, Myanmar and India, including quality control
- technology assessment of equipment designed for value-added processing in rural environments, such as biomass-driven steam engines, extruders/expellers, electrical and mechanical grinders, threshers, washers, cookers etc.
- training for food processing, including techniques for food safety and hygiene, making soymilk, soy yoghurt, tofu (soy kebabs) and sour milk (including packaging and distribution / shelf-life limits for soymilk and derivative products)
- train-the-trainer courses and materials to enable a local team to install and train for the VitaGoat, SoyCow, PedalPro, SoyaKit and SolarFlex systems
- detailed operations manuals and videos describing operational and maintenance procedures for each food technology solution
- market assessments, impact assessment, Randomized Controlled Trials (RCTs), consumer studies: through its partnership with the University of Guelph, MM can offer extensive capabilities in designing and implementing various market assessments, and nutritional and economic-based impact assessments.

Micro-enterprise strategy, planning, training, appropriate business tools

MM's capabilities, in the context of the SoyaKit and VitaGoat/SoyCow systems, include:

- micro-enterprise strategic planning, partner selection and site selection;
- micro-enterprise planning and program design assistance,
- micro-enterprise tactical planning and business operations; materials and training seminars for same, including simple business operation spreadsheets which can be used in hard-copy form to support rural businesses with no IT capability
- incubation support for rural micro-enterprise with novice entrepreneurs
- procedures and consultation for product selection, packaging and distribution options, marketing approaches; materials and training seminars for same
- forms and spreadsheets for tracking production, inventory and business operations
- all above training has also been provided in 'train the trainer' mode to enable local partners to propagate the training in MM's absence

MM has provided micro-enterprise planning and development assistance and/or business operations training to a number of partners and implementers, including:

- Catholic Relief Services (NCBA-CLUSA project in DR Congo – 2020):
5 VitaGoats, 50 SoyaKits, training & bus. support, \$60,000 to date, see [Budikadidi](#)
- African Development Bank (REP III project in Ghana – 2016 to 2019):
10 SoyCow Ms, 10 SolarFlex Dryers, training & bus. support, \$270,000 to date
- USAID Feed the Future AgDiv project implemented by Palladium in Malawi (2018/2019):
5 SoyCows, 230 SoyaKits, training services, \$110,000 to date [Malawi Case Study](#)
- World Bank Development Marketplace and BISWA in [Odisha, India](#) (2007-2010),
15 VitaGoats, training/bus. support, project design/implementation, M&E, \$200,000
- Africare for various installations in western and southern Africa (2004-2012),
12 VitaGoats, training/support, \$220,000
- MEDA / IFDC in Ghana (2016/2017), 3 VitaGoats, 30 SoyaKits, training/bus support, \$50,000;
GROW report: (<https://www.meda.org/growlearning/724-nutrition-and-food-security/file> pp 18,19)
- DAPP in Malawi (2011 to 2016), 18 VitaGoats, training/bus support, \$170,000
- EU / CDN in Myanmar (2014-2016), 8 VitaGoats, training/bus support, tech transfer, \$110,000
- USDA / Soybean Innovation Lab [Soymilk Program](#) (Mozambique/Ghana- 2016/2017),
5 SoyCows, project design, training/bus support, \$80,000
- CGIAR/TSBF and Bill & Melinda Gates Foundation in Kenya (2010-2013), [Case Study](#)
5 VitaGoats, training/bus support, \$50,000
- IITA in southern Africa (2016/2017), 5 SoyCow Es, training, \$45,000
- First Steps in North Korea (2005-2019), see [First Steps Soymilk Program](#)
115 VitaGoats, SoyCows, SoyCow 30s training/support, **\$650,000**
- USAID Feed the Future: OICI in Liberia, [Women Entrepreneurs](#) (HANDS MYAP 2010-2015),
9 VitaGoats, 7 SolarFlex, project design/mgmt./implementation, M&E, training/bus support, **\$550,000**
- WISHH (American Soybean Association) for various installations in Africa (2007-2017).

Special Awards and Recognition

The Tech Award for Economic Development - Laureate (2005) <http://www.thetech.org>

World Bank Dev't Marketplace Winner (2007) - [Micro-Enterprise for Nutrition in Rural Orissa](#)

[GAIN Social Entrepreneur](#) (2010) - via GAIN/Ashoka Changemakers competition; Hart Jansson one of four global Social Entrepreneurs invited to GAIN's Global Business Summit

Nestle / Ashoka Changemakers *Creating Shared Value Prize* finalist in February 2018 [CSV Council Panel](#) - See 'Small-scale Soymilk Enterprises' entry

Graduate, GSBI Impact Accelerator, Miller Center – Santa Clara University, June 2019

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