

MORINGA BASED SMALL SCALE ENTERPRISE

From a nutritional problem to a business opportunity, lessons from a rural woman entrepreneur in Benin

From the African Community of Practice on Management for Development result at the African Capacity Building Foundation



Case Study
N° 19

SYNOPSIS

Malnutrition is a serious concern in Benin. 32 percent of children aged 6 to 59 months suffer from stunting and more than 67,000 children suffer from acute malnutrition. In Ze district in the department of Atlantique in Benin, where Hounsou Mathilde is native, malnutrition rate is among the highest of the country. Hounsou Mathilde took advantage from the situation and successfully transform it into business opportunity. This knowledge product intends to showcase the initiative. We used direct interviews and participative observation to collect data on Hounsou Mathilde and her activities. Findings revealed that Hounsou Mathilde partnered with local non-governmental organizations and acquired basic skills in entrepreneurship. She established a small scale enterprise specialized in the processing of moringa leaves into powder. With her leadership, six women are employed in the processing unit which provides her community as well as households of the city of Cotonou with moringa leaves powder. With her initiative, she introduced a new form of valorisation of moringa leaves in her community and successfully impacted thousands of pregnant women, breastfeeding women and their children. Important lessons and policies have been drawn from her experience including the linkage between social problems and business opportunities, the need for necessary skills, tools and resources to unleash the potential of rural women. As recommendations, the African Capacity Building Foundation should develop gender based capacity building strategies likely to empower women and boost their participation in the transformation of Africa. For instance, ACBF could engage African governments in developing special programmes to (i) improve the participation of women in strategic sectors, (ii) improve access of women to lands and funds, (iii) reward women that create change in societies, publish these initiatives and celebrate their efforts.

1. Introduction

The large majority of hungry people live in the developing world representing 11 million of

undernourished people (Rosen 2014; IFPRI 2015). The situation is acute in Sub-Saharan Africa (SSA) where 23.2 percent of people are affected (FAO 2015). Pregnant women, breastfeeding women and

old persons are also affected but children are the most vulnerable victims. 37 percent of the latter under five are stunted, one quarter of all overweight children under five live in Africa and 28 percent are wasting (UNICEF, WHO, World Bank Group 2015). Therefore malnutrition¹ becomes a major public health problem in SSA (Bain et al. 2014) where nearly half of all deaths of children under five are attributable to under-nutrition (Bain et al. 2013).

Despite the different efforts which permit to achieve some milestones, important actions should be undertaken to significantly drop the rate of malnutrition in SSA. Among other solutions in the fight against malnutrition, increasing the availability and consumption of highly nutritious food products is a recommended approach (Thompson and Amoroso 2014). In a poverty reduction context, this implies the valorization of local resources and getting them processed into different forms or integrated as a food supplements. In line with this option, indigenous wild food species with high nutritional value such as Moringa Oleifera (Oduro et al. 2008), *Adansonia digitata* (Chadare et al. 2008) etc. are increasingly promoted. However, for taking full advantages from these resources, there is a need to develop the associated value chain for improving the production, the processing, the packaging and the distribution of the products. These needs represent new investment opportunities and some entrepreneurship initiatives have already been developed.

The entrepreneurial initiative of Hounsou Mathilde, a rural woman, in Benin is one of them. With her Moringa based small scale enterprise, Hounsou Mathilde produces Moringa leaves powder and produces different local delicacies based on Moringa. She is employing six persons (four full and two part time jobs). The young enterprise supplies drug stores and shops in the city of Cotonou. With her leadership, she successfully introduced the

¹ Malnutrition refers to both undernutrition and overnutrition.

Moringa (in a different form) into the diet of her community.

Innovations powered by rural women in Africa are significantly addressing development problems, yet they are ignored and unknown. The exceptional experience of Hounsou Mathilde may undergo the same fate. That is why her case study is of particular interest and should be published. The aim is to (i) bring out the exceptional entrepreneurship experience of a rural woman who transforms a nutritional problem into a business opportunity; (ii) acknowledge efforts of rural women entrepreneurs, who are generally neglected and rarely get rewarded for their contribution to solving social problems and (iii) learn lessons from the experience of Hounsou Mathilde to further these innovations on the continent. The lessons learned could guide other women entrepreneurs and drive policy implications likely to celebrate and encourage the efforts of rural women involved in entrepreneurship.

2. Issue of malnutrition in Benin and importance of Moringa

Agriculture is the key economic sector in Benin, contributing to 33.2 percent of gross domestic product (GDP) and representing 2.7 percent out of the five percent increase in GDP in 2007 (WFP 2015). Structural problems, natural disasters and climate change are negatively affecting both food security and nutrition. A recent Comprehensive Food Security and Vulnerability Analysis (CFSVA) established that 11 percent of the population is moderately and severely food insecure and 34 percent are not able to have adequate food consumption (WFP 2013). The recent Integrated Modular Survey on Household Living Conditions results (INSAE 2011) estimated that 32 percent of children aged 6 to 59 months suffer from stunting and more than 67,000 children suffer from acute malnutrition.

The situation is most alarming in rural areas where poverty and sanitation issues contribute to the worsening of the malnutrition. Climate change

which affects the agricultural production, food crisis and volatility of food prices maintain the deleterious nutritional situation. In this context, national institutions, civil society and international partners are intensifying their efforts on two interventions axes (i) Integrate nutrition into the process of health system reinforcement and (ii) promote strategic partnership for nutrition and coordinate national efforts and capacities. Among actors of civil society strongly engaged in the fight against malnutrition, there is the national representative of Hunger Project, which is promoting Moringa Oleifera through their programme named “Three Moringa Tree days” which since 4 years sensitized, trained and provided key directives for people willing to invest along the value chain of Moringa.

Moringa (*Moringa Oleifera*) is a small plant species from the sub-Himalayan areas of India, Pakistan, Bangladesh, and Afghanistan but abundantly grown in the tropics. Its leaves are reported to impressively retain a lot of nutrients (Oduro and Owusu 2008). Different parts of this plant contain a profile of important minerals, and are a good source of protein, vitamins, β -carotene, amino acids and various phenolics (Anwar et al. 2007).

Because of its interesting nutritional profile (Figure 1) and its capacity to be easily and cheaply grown, Moringa is an important source of food used in India and Africa in feeding programs to fight malnutrition (Fuglie 2001, Moyo et al. 2013, Karuma and Nigam 2014).



Figure 1. Nutritional value of Moringa (Source: Gopalan, et al. 1989)

3. Transforming a nutritional problem into a business opportunity: Case study of Hounsou Mathilde, a rural woman entrepreneur in Benin

Brief biography of Hounsou Mathilde

Hounsou Mathilde is a resident of Wawata village, district of Ze in the department of Atlantique (50 km from Cotonou, the economic capital) in Benin. She has four children and lives in a polygamous household. She never attended classic schools. She has been a Hunger Project Benin (THP Benin) partner since 17 years ago and benefits from different programmes implemented including alphabetization, micro-financing and trainings. Due to her experience she was designated as teacher to assist other persons for alphabetization at Wawata Epicenter. After years of working with the Hunger Project Benin team, she became an entrepreneur and created her small enterprise specialized in moringa leaves processing. Later, Hounsou Mathilde got leadership roles in Wawata community, serving as the head for sensitization, training and culinary demonstration.

Overview of the small scale enterprise of Moringa leaves processing

The enterprise of Hounsou Mathilde is a small unit of moringa leaves processing. All the equipment used along the processing are local and electricity is not required at any step of the process. The processing is

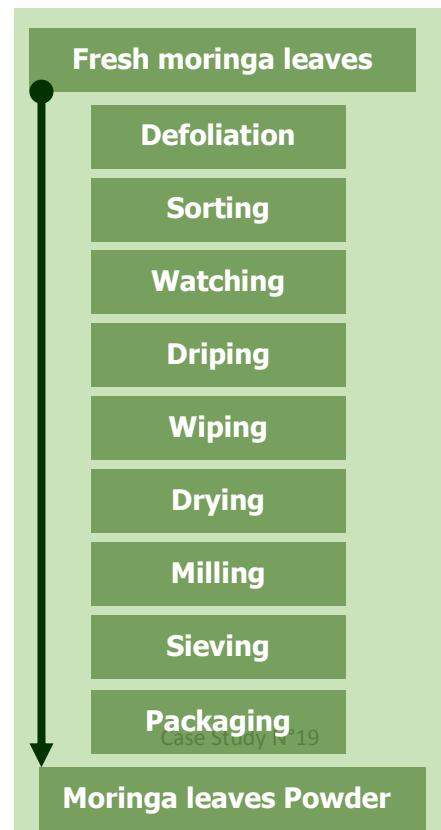


Figure 2. Processing of moringa leaves powder

composed of 10 key steps

Step 1. Harvesting fresh moringa leaves

Mature leaves are harvested preferably between 9 and 10 am. The Unit has its own plantation of moringa.

Step 2. Defoliation of fresh moringa leaves

The leaflets must be thoroughly detached from leaves.

Step 3. Sorting the leaflets

It consists of selecting green leaflets and eliminating yellow and/or perforated leaflets.

Step 4. Watching the sorted leaflets

Leaflets must be watched 3 to 4 times in rainy season but 5 to 7 times in dry season. The color of the final rinse water is an indicator of cleanliness

Step 5. Dripping the watched leaflets

Small quantities of watched leaflets are put in sieves for about 15 minutes.

Step 6. Wiping the leaflets

Leaflets are wiped in order to eliminate the rinse water and shorten the drying process.

Step 7. Drying the leaflets

For improved drying, the leaves are spread on shelves with good ventilation. Drying time varies between 2 to 3 days in dry season and 4 to 5 days in rainy season.

Step 8. Milling the leaflets

The leaflets are ground using mortar and pestle. The leaflets are ground until obtaining a powder.

Step 9. Sieving the powder

Using sieves of different meshes, the powder from previous step is cleared from rod fragments.

Step 10. Packaging and storing of the powder

The powder is packaged in clean, dry opaque and hermetically closed jar. The conservation is done away from heat, moisture and light. The Moringa leaves powder can be stored for 12 months.

Constraints-challenges and failures

Major constraints jeopardize the performance of the moringa leaves powder production. They include:

- The traditional milling of moringa leaves which limits productivity and yield;

- The color and taste of moringa leaves powder which change after few days of storage, resulting from the poor quality of the raw materials, a lack of standardized processing chain, poor packaging and conservation conditions;

- The high level of ambient humidity during raining season which complicates the drying;

- The shortage of fresh moringa leaves, due to reduced space for long-season plantations by tenant smallholders.

Because of these constraints, the processing unit failed to satisfy the growing demand on moringa leaves powder.

Opportunities and perspectives for improving the initiative

Many organizations in Benin are interested in using moringa in the fight against malnutrition. These organizations including THP Benin, Beninese Association of Moringa, Plan Benin and National Council of Food and Nutrition are engaging in actions such as sensitization, assisting efforts of plantations and valorization of moringa. These actions represent relevant opportunities for the unit of Mathilde.

For improving the ongoing initiative, the chain of moringa leaves powder production is to be developed. This includes:

- The improvement of moringa leaves production. The plantation of the processing unit does not produce enough leaves for scaling up purposes. This is an open opportunity for other persons to invest in moringa plantation.
- The standardization of the moringa leaves powder processing. The weakness points of the processing chain (milling, drying and storing) are to be improved to increase the performance of the processing unit.

4. Outcomes and overall assessment

After years of operation, some outcomes have been achieved by the woman entrepreneur in moringa leaves processing.

The business of moringa leaves processing created new employment in the community.

Processing moringa leaves requires labour especially during defoliation and milling steps. Therefore, Mathilde recruited 6 women for her unit. With the perspective to scale up the production, she is planning to recruit 4 other women in the course of 2016. This figure may appear to be small to some extent; but it is essential to mention that this is a good performance from a rural enterprise operated by a rural woman.

The business offered a new form of valorization of moringa to the community.

Before the business of Mathilde, people either in rural or in urban areas used moringa predominantly as fresh vegetable. With her initiative of moringa powder, she proposed another form of valorization, easy to use and to share. The powder is incorporated into food for children, used as tea at breakfast by adults, etc.

The business improved the consumption of moringa in rural and urban areas.

As for 2014 and 2015, the production of moringa leaves powder was respectively 433 kg and 510 kg. This production was sold locally at the epicenter of Wawata but also at different shops and drug stores in Cotonou.

The business and leadership of Mathilde contributes to reduce malnutrition and associated diseases in her community.

Indeed she successfully sensitized women of her community on the importance of moringa tree and on how to use the moringa leaves powder. More than 18.000 people have been impacted including pregnant women and breastfeeding women. "Many pregnant women, breastfeeding women and their children have recovered from malnutrition and anemia by using fresh moringa leaves and moringa leaves powder", she said during one of our interviews. Moringa leaves powder is used as food supplement and incorporated into porridge for

children. It is used to replace coffee and tea at breakfast, and incorporated to pastry products.

The business inspired other people of the community.

Thanks to the initiative of Mathilde, other people started to invest along the chain of moringa leaves powder production. For instance, young people start establishing plantations of moringa to supply the processing unit of Wawata. Others got specialized in moringa leaves powder distribution.

Mathilde has become an empowered businesswoman and community leader.

With her initiative, Mathilde becomes a successful businesswoman and a leader in her community. She is often invited to sensitize women or to train people on how to integrate moringa on daily diets.

5. Lessons learned

Hounsou Mathilde, a rural women entrepreneur has developed a business based on moringa leaves processing to tackle the acute malnutrition problem of her community. Her initiative led to a number of lessons.

Social problems and business opportunities are different sides of the same coin.

By attempting to contribute to the resolution of a social problem (malnutrition) for her community, Hounsou Mathilde launched a business and inspired other people to take advantages of the opportunities. At the end, the benefits for the community are twofold: the social problem will be solved and businesses will positively impact the livelihood of the community members.

Local resources can be used to solve local problems.

Though moringa tree is not native of Benin, the plant is well domesticated and found everywhere in Benin. The use of locally available resources to solve problems is important for rural communities as it is

often difficult for them to afford imported solutions.

Necessary skills and knowledge can unleash potential of people.

Hounsou Mathilde was trained and assisted by The Hunger Project and she developed a successful business. This is a proof that when women are given the resources, tools and necessary skills, they can thrive and become key agents of change in their communities.

Women in rural areas are greatly contributing to change in their community but their efforts are not celebrated.

The initiative of Hounsou Mathilde has never been documented and published. Without this support from the African Capacity Building Foundation (ACBF) through African Community of Practice on Managing for Development Results (AfCoP), the initiative of Mathilde will never be known as for many other women in rural areas who are actively involved in resolving social problems.

Moringa leaves powder represents an opportunity for food fortification.

Either in Benin or elsewhere, there is a need for food fortification for children under six. This case study showed that the moringa leaves powder is an interesting option.

6. Policy implications

The experience of Hounsou Mathilde as well as the lessons learned has the following policy implications:

A better implication of research-development institutions is required as to provide potential investors with good information and tools.

In the case of Hounsou Mathilde, the Hunger Project Benin played this role but further support is needed.

It is essential to create for entrepreneurs an enabling business environment to improve the performance of their entrepreneurial ventures.

The example of Mathilde showed that there is a need to provide support to such entrepreneurs. This support entails development of research-action programs to reduce the processing constraints and assistance in scaling up the innovation.

Government and other stakeholders should support the local and indigenous solutions that are being developed throughout the continent.

Therefore, the adoption of the innovations will be easier and the dependence of African countries on imported products will be reduced.

There is also a need to provide financing solutions for local initiatives in order to allow them to develop their activities and integrate larger markets.

Mathilde would like to move on to a medium enterprise with higher performance. Unfortunately, she lacks financial and technical assistance.

Globally, because of the gender gap in many aspects of the economic development in Africa, women need more attention and special capacity building programmes should be developed for their profits. In line with these needs, the African Capacity Building Foundation for the coming years should develop gender based capacity building strategies likely to boost the participation of women in the transformation of Africa. For instance, ACBF could engage African governments in developing special programmes to (i) improve the participation of women in strategic sectors, (ii) improve access of women to lands and funds, (iii) reward women that create change in societies, publish these initiatives and celebrate their efforts.

References

- Anwar, F., Latif, S., Ashraf, M., & Gilani, A. H. 2007. Moringa oleifera: a food plant with multiple medicinal uses. *Phytotherapy research*, 21(1), 17-25.
- Bain, L. E., Awah, P. K., Geraldine, N., Kindong, N. P., Sigal, Y., Bernard, N., & Tanjeko, A. T. (2013). Malnutrition in Sub – Saharan Africa: burden, causes and prospects. *The Pan African Medical Journal*, 15, 120. <http://doi.org/10.11604/pamj.2013.15.120.2535>
- Chadare, F. J., Linnemann, A. R., Hounhouigan, J. D., Nout, M. J. R., & Van Boekel, M. A. J. S. (2008). Baobab food products: a review on their composition and nutritional value. *Critical Reviews in Food Science and Nutrition*, 49(3), 254-274.
- Food and Agriculture Organization, International Fund for Agricultural Development, World Food Program. 2015. "The State of Food Insecurity in the World 2015. Meeting the 2015 international hunger targets: taking stock of uneven progress." Rome: FAO <http://www.fao.org/3/a-i4646e.pdf>
- Gopalan, C., Sastri, B. R., Balasubramanian, S. C., Rao, B. N., Deostale, Y. G., & Pant, K. C. (1989). Nutritional value of Indian foods. Hyderabad, National Institute of Nutrition, 47-73.
- INSAE 2011. Enquête Modulaire Intégrée sur les Conditions de Vie des ménages 2ème Edition. Ferreira, P. M. P., Farias, D. F., Oliveira, J. T. D. A., & Carvalho, A. D. F. U. (2008). Moringa oleifera: bioactive compounds and nutritional potential. *Revista de Nutrição*, 21(4), 431-437.
- International Food Policy Research Institute. 2015. 2015 Global Hunger Index <https://www.ifpri.org/publication/2015-global-hunger-index-armed-conflict-and-challenge-hunger>
- Karuna S. Verma and Rajni Nigam 2014. Nutritional Assessment of Different parts of Moringa oleifera Lamm collected from Central India
- Moyo, B., Masika, P.J., Hugo, A. and Muchenje, V., 2013. Nutritional characterization of Moringa (Moringa oleifera Lam.) leaves. *African Journal of Biotechnology*, 10(60), pp.12925-12933.
- Oduro, I., Ellis, W. O., & Owusu, D. 2008. Nutritional potential of two leafy vegetables: Moringa oleifera and Ipomoea batatas leaves. *Scientific research and essay*, 3(2), 57-60.
- Rosen, Stacey, Birgit Meade, Keith Fuglie, and Nicholas Rada. 2014. International Food Security Assessment, 2014-24. Economic Research Service, United States Department of Agriculture. http://www.ers.usda.gov/media/1499869/gfa25_final-0708.pdf
- Thompson, B. and L. Amoroso. 2014. Improving Diets and Nutrition: Food-based Approaches. CABI.
- UNICEF – WHO – World Bank Group 2015. Levels and trends in child malnutrition. Key findings of the 2015 edition http://data.unicef.org/corecode/uploads/document6/uploaded_pdfs/corecode/JME-2015-edition-Sept-2015_203.pdf
- WFP, 2013. Comprehensive Food Vulnerability Security Analysis: Republic of Benin. FAO, UNICEF, PAM. Report of situation <http://www.wfp.org/food-security>
- World Food Programme 2015. Benin Current issues and what the World Food Programme is doing. WFP Benin Brief. <http://documents.wfp.org/stellent/groups/public/documents/ep/wfp274662.pdf>
- Fuglie, L.J., 2001. Combating malnutrition with Moringa. The miracle tree: The multiple attributes of Moringa, p.117.



Acknowledgement

This knowledge series is intended to summarize good practices and key policy findings on managing for development results. The views expressed in the notes are those of the author. AfCOP Knowledge products are widely disseminated and are available on the website of the Africa for Results initiative (AfriK4R), at: www.afrik4r.org/page/resources.

This AfCOP-MfDR knowledge product is a joint work by the African Capacity Building Foundation (ACBF) and the African Development Bank (AfDB). This is part of the knowledge products produced by ACBF under the leadership of its Executive Secretary, Professor Emmanuel Nnadozie.

The product was prepared by a team led by the ACBF's Knowledge, Monitoring, and Evaluation Department (KME), under the overall supervision of its Director, Dr. Thomas Munthali. Within the KME Department, Ms. Aimtonga Makawia coordinated and managed the processes of producing the product while Dr Barassou Diawara, Mr. Kwabena Boakye Ms. Anne Francois, M. Frejus Thotoand other colleagues provided support with initial reviews of the manuscripts. Special thanks to colleagues from other departments of the Foundation who also supported and contributed to the production of this paper. The ACBF is grateful to the Africa Development Bank which supported production of this MfDR case study) under grant number 2100150023544.

ACBF is also immensely grateful to Ms Adome Nadjidath, as the main contributor, for sharing the research work which contributed to the development of this publication. We also thank Prof G. Nhamo, Dr Lyo and Dr A. Kirenga whose insightful external reviews enriched this knowledge product. The Foundation also wishes to express its appreciation to AfCoP members, ACBF partner institutions and all individuals that provided inputs critical to the completion of this product. The views and opinions expressed in this publication are the reflections of the author of this case study. They do not necessarily reflect the official position of the ACBF, its Board of Governors, its Executive Board, nor that of AfDB management board and the secretariats of the AfCOP- MfDR project