



Growing Inclusive Markets

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CASE STUDY

Sub-Saharan Africa • Nigeria

Pot-in-pot Enterprise: Fridge for the Poor

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Sector • Agriculture; Consumer Products
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Executive Summary

Mobah Rural Horizons, producer of the pot-in-pot products which is widely termed as the ‘fridge for the poor’ is based in Kano, Nigeria. The organization was founded in 2000 by Mr. Mallam Mohammed Bah Abba. However, its main production centres are in the rural areas of Kano, Jigawa, Borno, Yobe and Katsina States, all in the northern region of Nigeria. The enterprise also operates in some parts of the Niger Republic. The region lies in the desert scrubland and is inhabited mainly by poor subsistence farmers living under the influence of fundamental Islamic culture. The poverty of the region is further compounded by the fact that all the farmers produce similar farm products which stifles exchange. The region lacks basic infrastructure like roads and electricity which forces farmers to sell their farm produce at cheap prices with substantial parts of their produce spoiling before they get into the food distribution chain. Clearly, a way out of the problem is providing access roads to link them up with the urban markets or, providing electricity so that the farm products could be stored to prolong their shelf life.

The pot-in-pot preservation/cooling system was invented mainly to help rural farmers preserve their farm products. The product was persistently refined for two years between 1995 and 1997. Using personal savings, Abba tapped into the large, unemployed, local workforce, and produced the first set of pots numbering 12,000, which he distributed to farming households freely. This was done to promote the appreciation of the product as well as stimulate local demand for it. In 2000, he began full commercial production of the pots using local pot makers with each participant making between 15 and 20 pots a day. The pots sold for between US\$2 (₦300) for the smaller pot-in-pot and US\$4 (₦600) for the bigger version. As of 2005, the inventor had delivered over 90,000 pots and production has continued to increase.

The main challenges faced by the project include: educating the villagers about this simple technology; getting the initial funds to produce and distribute the product; the difficulties of getting transportation to distribute the pots, and educating the villagers to accept and purchase his new invention. The inventor received modest assistance from family members, UNDP, the Ministry of Women Affairs, and Jigawa State Polytechnic, and also received US\$75,000 from the Rolex Award for Enterprise. The pot-in-pot enterprise has impacted positively rural farming households by providing employment, increasing farm earnings and enabling girl children to attend school in the mornings instead of hawking perishable farm products.



Introduction

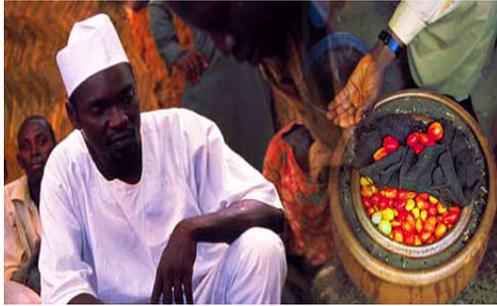
The pot-in-pot enterprise, designed to help improve the well-being of rural dwellers, was conceived for the arid region of northern Nigeria which lies mainly within the grassland of the Sudan and Sahel Savannah vegetation belts. These regions are characterized largely by desert features: hot days and high diurnal temperatures, low relative humidity and low rainfall that is concentrated within three months. The area covers approximately 397,170 km² (43% of Nigeria's total land area). The vegetation is mainly desert scrubland. In terms of natural resource occurrence, the region is the least endowed in Nigeria. Incidentally, the region is home to about 35.1% (49.1 million) of Nigeria's 140 million people.¹ Dominated by the Islamic religion and culture, the inhabitants of the region are also the least educated population in the country.

In terms of occupation, the people are mostly subsistence farmers and cattle rearers. The short cropping period of three months resulting from low rainfall duration, implies that for nine months, the people have to depend on the farm produce planted during those months and past savings (if any) to survive. Consequently, the capacity to store food products during harvest period becomes very critical for household food security. The poverty of the region is further compounded by the fact that all the farmers produce similar farm products, which stifles exchange and commerce. The region lacks good roads to link them up with the few urban centres where their crops are needed. Where the roads exist, they are in deplorable conditions. The rural areas in this region also lack access to modern electricity supply. Consequently, farmers sell their farm produce at cheap prices, otherwise the farm products will go rotten. When the crops rot, the stench and its implications also create serious health and environmental problems as flies invade the house and the compounds become unsightly.

Getting out of poverty is thus a major challenge whose solution was (and is still) far beyond the capacity of the rural dwellers. The simple solution to the problem of these rural folks lies in either providing access roads to link them up with the urban centres for them to sell their farm produce, as well as open up the local economy to outside investors to create non-farm employment, or, providing electricity that will allow for opportunities for refrigeration so that the farm products could be stored to prolong their shelf life. These two solutions lie in the purview of the State. Incidentally, in the last 49 years of independence, the size of the nation, the smallness² and dispersed nature of rural communities as well as dwindling resources have been major factors constraining the access of the region to the supply of social overheads, notably roads and electricity.

¹ NPC (2006)

² Rural areas in Nigeria are small villages comprising of few households with a population of less than 1,000 in most cases. This makes it costly and difficult to access them to roads, water and electric lines.



Mohammed Bah Abba with clients in a local market (Photo: from the collections of Mohammed Bah Abba)

In Nigeria as in most developing nations, the problems of the rural poor such as described above are widespread and often do not engage the attention of the ruling elite who concentrate efforts and resources in developing their capital and a few other cities. The rural poor thus continually battle the socio-economic and physical environment to survive. Yet, Mallam³ Mohammed Bah Abba, a Polytechnic Lecturer in Business Management, was able to think through the problem of the rural poor and adapt a traditional storage device to increase their quality of life; to get their farm products stored in a fridge that need no electricity,

and save the girl child the trauma of trading schooling for hawking perishable farm products. In the words of Mr. Mohammed Bah Abba:

“Although a well paid consultant with a permanent job as a Polytechnic lecturer, I saw the agony and helplessness of the people who produce what was not enough to sustain them yet, lose them as they spoil. I discovered that their major problem was their inability to store the crops (particularly the perishable ones) they have produced which made them to sell at give away prices to avoid their spoiling. I saw girls who ought to be in school hawk food and perishable farm products around communities. At times, when they have nobody to buy them, they spoil and still have to live with the odour and the health effects. After much agonizing, I thought of and found a way out to help these people. My vision of what I could do is the mission of Mobah Rural Horizons.”

Mohammed Bah Abba took on the challenge of accessing the rural poor in the desert region with a simple technology that changed the socio-economic landscape of the rural areas of the less endowed arid region of Nigeria, while creating an economically viable market for his invention. Clearly, Abba has demonstrated the role of the private sector in fostering economic development and how non-state actors can also contribute to achieving the Millennium Development Goals (MDGs) while seeking to make some modest profit, especially in developing nations.

When Abba finally came to terms with what to do to help the rural poor, he still had to think through a number of critical issues. How does he convince people deeply attached to tradition to accept his invention? Did he have to manufacture the product or use the existing channels? How does he get the product to the beneficiaries and at minimum cost? Who pays for his time and efforts? Alone, Abba had to provide answers to these hard questions.

³ Mallam is a title used for Islamic Scholars but which has been commonly adopted as “Mr.” in Northern Nigeria.



Market and Location Context

The administrative headquarters of Mobah Rural Horizons, producer of the pot-in-pot products which is widely termed as the ‘fridge for the poor’ or ‘desert refrigerators’ is based in Kano, a city that is favourably endowed with modern development dividends like electricity, potable water, non-farm employment opportunities and fairly good roads. However, its main production centres are in the rural areas of Kano, Jigawa, Borno, Yobe, Sokoto, Zamfara, Kebbi and Katsina States, all in the northern region of Nigeria. The enterprise also operates in some parts of Niger Republic. In terms of physical, environmental, development indices and cultural background, the region is literally homogenous.

PHYSICAL AND ENVIRONMENT CHARACTERISTICS OF THE REGION

The region originally lay in the Sudan Savannah belt, a vegetative belt where luscious grasses grew. The Sudan supports intensive farming and is home to the cultivation of cereals, yam, groundnut and beans. It also provides pasture for livestock farming. However, decades of human activities have degraded the environment and caused the Sahel Savannah, the vegetation belt between the Sahara Desert and the Sudan, to encroach on most parts of the Sudan Savannah. In fact, desert encroachment has affected most parts of the northern fringes of these States. An annual rainfall of between 100 to 300 mm which lasts for three months (mid-June to mid-September) occurs in the region, although in the Niger Republic, rainfall may be infrequent and drought is a constant phenomenon. Temperatures are also high (average of 35⁰C). These areas are thus very arid. The short rainy season supports subsistence agriculture especially the cultivation of cereals, vegetables and animal husbandry.

Development Indices of the Region

Northern Nigeria is a very large area. While this provides the space and land to use for the good of the people, the sheer size of the region has proved to be a major constraint to development. Development is thus concentrated mainly in the capital cities of the states in the region leaving the rural areas where most of the people reside with very little to no infrastructures. The deprivation of the northern region stems from colonial economic development policy, which concentrated development efforts on regions that produced exportable farm products. Almost all the states in northern Nigeria are categorized as the least developed of the 36 States in the country and therefore have the least access to the dividends of economic development.⁴

Most of the people live in rural areas. In Sokoto, Kebbi, Jigawa, Yobe and Bauchi States, more than 75% of the population is rural, while in Kano, Katsina and Borno States, up to 65% of the population is rural. These rural areas lack basic infrastructure like roads, electricity, schools and

⁴ Abumere (1998)



health facilities. In fact, nearly 81% of the rural households have no electricity.⁵ The literacy rate is also low compared to other parts of the country. While the national average is about 49%,⁶ literacy levels for female adults is 22% and less than 50% for adult males in the north.⁷

People in rural communities in the region eke out a living from subsistence farming. Rural areas and urban fringes have a slightly higher concentration of poor people. In 1985 for example, 49.9% of rural population was poor compared to 34.7% in urban centres. By 1996, 69.8% of the rural population in Nigeria was poor compared to 58.2% of the urban population.⁸ As of 2004, 62% of farmers who comprise mainly rural dwellers were poor.⁹

The challenges posed by lack of infrastructure; lack of marketing information and similarity of products from farmers working in the same marginal ecosystem, force farmers to sell their produce daily and very cheaply as agricultural products are not price elastic.

The People and their Culture

The inhabitants of the region are mainly Hausas, Fulanis and Kanuris. Socially, the region is under the influence of fundamental Islamic culture. Polygamy is a dominant feature of the large family structure, and women, living in purdah¹⁰, are confined to their homes and seriously disadvantaged in terms of healthcare, education and employment opportunities. Young girls are particularly forced to go out each day to hawk food products that would otherwise perish to enhance meagre family income, thus depriving them of the benefits associated with acquiring education.

Description of the Business Model

The idea of the pot-in-pot enterprise started in 1994. The inventor Mr. Mohammed Bah Abba, a lecturer in The Jigawa State Polytechnic who hailed from a pot making rural household, was consulting for the United Nations Development Programme (UNDP) and Jigawa State Ministry of Women Affairs and Social Mobilization on managing rural enterprises and mobilizing women to participate in small scale rural enterprises. These were parts of the efforts of government and development partners to confront the challenges of poverty in Jigawa State of Nigeria. Rendering these services made him relate very closely with rural communities where he observed the helplessness of the rural poor in their daily efforts to provide some measure of well-being following the failure of public goods and benefits to reach their communities. He observed that

⁵ Oluwasola (2000)

⁶ FOS (2000)

⁷ UNS (2001)

⁸ FOS (1999)

⁹ NBS (2005)

¹⁰ Purdah: In Islamic culture, women (wives) are kept in secluded sections of the compound where they are not allowed to receive or interact with male visitors. They are also not allowed to go out without a guardian.



subsistent farming households suffered greatly in producing crops in the harsh desert environment, which they ended losing to post-harvest losses or sold very cheaply, thereby exacerbating the problem of poverty associated with the farmers and the rural areas. It was this state of the rural communities that set Mohammed Abba thinking; in his words:

“It was saddening to see the fear and hopelessness on the faces of women who have to throw away decayed food products. They know soon, when they have nothing to serve their families, they will remember what they threw away. It was also bad watching small girls hawk around villages instead of going to school. It was bad to know that the two things keeping the people perpetually poor were lack of access roads to link them with the cities and lack of electricity. This passion for the poor was the reason I thought of this project.”

INNOVATING AN AGE-OLD TECHNOLOGY

The solution Mallam Abba found after much agonizing was rooted in his family background. Born in 1964 into a family of pot makers and raised in the rural north, Mohammed Bah Abba was familiar from an early age with the single unit clay pot as well as the various practical and symbolic uses of traditional clay pots. He also learned as a child the rudiments of pottery making. Armed with a University education in management sciences and the knowledge of the role traditional clay pots could play in the farming economy, he set out to scale-up the single -unit pots he grew up with in rural areas, into the double unit termed the ‘pot-in-pot preservation/cooling system.’¹¹



Typical Pot-in Pot Ready (Photo: from the collections of Muhammed Bah Abba)

The pot-in-pot technology consists of two earthenware pots of different diameters, one placed inside the other. The space between the two pots is filled with wet sand that is kept constantly moist, thereby keeping both pots damp. Fruit, vegetables and other items such as soft drinks are put in the smaller inner pot, which is covered with a damp cloth. The phenomenon that occurs is based on a simple principle of physics: the water contained in the sand between the two pots evaporates towards the outer surface of the larger pot where the drier outside air is circulating. By virtue of the laws of thermodynamics, the evaporation process automatically causes a drop in temperature of several degrees, cooling the inner container, destroying harmful micro-organisms and preserving the perishable foods inside.

¹¹ The pot making business has existed from time immemorial; however, the idea of putting a pot in a pot was a novel one. Mohammed Bah Abba holds no patent on this invention and has no control over what is done with his idea, at least among the other pot makers in Nigeria.



According to the Rolex Awards for Enterprise (2005), Abba's first trials of the pot-in-pot proved successful. Eggplants, for example, stayed fresh for 27 days instead of three, while guavas, tomatoes and peppers lasted for three weeks or more instead of two to three days. African spinach, which usually spoils after a day, remained edible after 12 days in the pot-in-pot. Between 1995 and 1997, the invention was persistently refined to get the best fit of the bigger outer pot and the smaller inner pot that would be stable and durable. Abba's pot in pot was markedly different from the traditional pots in that there were two pots in one. He also used farm wastes to burn the clay pots to make it glossy and stronger. Armed with the required specification, Abba tapped into the large unemployed local workforce and hired skilled pot makers to mass produce the first batch of 5,000 pot-in-pots. Manufacturing these devices at his own expense, he began distributing them for free to five villages in Jigawa State to create awareness of this new product. As well as creating a local demand for it after demonstrating its usefulness for food crop storage. In 1999, Abba supplied another dozen local villages with 7,000 pots, again at his own expense. For this initial phase of his project, he received modest financial backing from family sources and assistance in the form of transportation, fuel and labour from the UNDP, a local women's development group and the Jigawa State Polytechnic. When the rural communities in the Jigawa State had sufficiently understood the workings of the pot-in-pot technology, and the people began demanding the product, the inventor embarked on its commercial production and distribution at affordable costs.

PRODUCTION AND DISTRIBUTION SYSTEMS

The making and marketing of the pot-in-pot takes a most ingenious method. Mohammed Bah Abba has no factory or workshop where he makes the pot. The business is not registered with the Corporate Affairs Commission as it operates like a local informal outfit. In each community Abba tries to sell his products, he identifies the local pot makers and commissions them to make the pots to his own specification. He then pays them on the successful completion of the pots, and sells them in the market place. The procedure from production to marketing takes the following, simple process.



Typical Pot-in Pot Ready for sale (Photo: Mohamed Majzoub)

First, the inventor identifies a community where he feels he wants to introduce the pot. The criteria for selection were based first on demand and also on the availability of local resources in terms of clay and skilled hands in pottery making. The second step is visiting the community, and mobilizing the local pottery makers, who have their own sheds, typical of small scale informal enterprise, in and around the area; showing them the required specifications of the pots and commissioning them to produce the pots. When the pots have been produced, he has them burnt



using farm residue to increase their strength and durability. According to Abba:

“Fortunately, clay in Nigeria is ubiquitous and is a free resource. The identified pot makers are asked to make the pot according to specification. The pots are then burnt to make them stronger using hay and dried grass. The finished product is then taken to the market and sold directly to individual consumers or to retailers who sell to the people.”

Each pot maker could make between 15 and 20 pots in a day. The pots sell for between US\$2 (₦300) for the smaller pot-in-pot and US\$4 (₦600) for the bigger version. When the pots are sold to retailers who normally buy in bulk, the prices are reduced so they can sell at the market rate and make the necessary margin to stay in business. Abba has no scientific means of determining the level of demand in a particular market. Typical of informal sector operators, Abba’s market projections are based on intuition and knowledge of the people and their activities. Sometimes, the pots are cleared in the market while at other times, there will be leftovers. Pots that remain unsold in a particular market are transported by buses or ox-drawn carts to markets in other communities where they are then sold. Until such unsold wares are disposed, new production temporarily stops. Since Abba’s markets are small, it does not take much time before they are bought by new patrons or by old pot users who want to replace broken pots.

In addition to Abba’s ingenious marketing system, the sales of the pot-in-pot products also benefitted from poverty reduction programmes of state governments as the state’s Ministry of Women Affairs in the northern region bought into the project and purchased the pots for distribution to its women beneficiaries in the rural areas. Such women used the pot-in-pot to store prepared local food stuffs, soft drinks and water for domestic uses thereby promoting non-farm and women-targeted employment activities.

CONSTRAINTS AND SOLUTIONS

The invention, distribution and acceptance of the pot-in-pot faced a number of challenges, which the inventor carefully surmounted with his personal will-power and modest assistance from others. One such obstacle, and perhaps the most important, was educating the villagers about this simple technology and making them accept its usage. To overcome this challenge, Abba devised an educational campaign tailored to village life and the illiterate population, featuring a video-recorded play by local actors who dramatize the benefits of the desert refrigerator. While days are filled with work on the farms, night life in a rural community without electricity is usually dull and brief. After securing the very crucial support of the community leader(s) for his products, Abba hired local drummers to play around the villages to send signals to the people that something was going to happen at the village square shortly after the people return from their farms. In the evenings when the farmers will be most willing to watch an entertaining presentation, the video presentation prepared by Abba is shown using a makeshift cloth screen and a portable projector and generator. The success of the evening’s presentation determines the



quantity of products Abba will have to produce for this specific market. Since the wide acceptability of the pot-in-pot technology, the activities of such drummers form part of the communities' mobilization process. To the people who lack the basic essentials for living, the pot-in-pot is a sign of 'progress.'

Another challenge includes getting the initial funds to produce and distribute the product. Abba had to use his own personal savings and some financial assistance from family members to overcome this challenge. The last challenge was the difficulty of getting transportation to distribute the pots and educating the villagers to accept and purchase this new invention. The UNDP office in the state and the Ministry of Women Affairs also provided modest assistance in this regard. The poor beneficiaries of the invention also provided support. Abba said:

“The roads to the rural areas are very deplorable. Even the houses they live in have nothing to write home about. However, the rural dwellers provided very appreciable help. Sometimes, they transport us with their donkeys without charging a fee. They also give us free accommodation and food when we need to pass the night in the villages. This in itself is a major source of encouragement that lives are being touched.”

THE POT-IN-POT AND THE ENVIRONMENT

A major concern about the operations of the business was the sustainability of the environment. The mining of the clay is not planned and is carried out by illiterate informal operators who are not licensed by governmental authorities. The second area of concern has to do with the application of fire to the molded pot in order to stabilize it. However, Mohammed Bah Abba disagreed with any negative implications. According to him:

“Clay occurs everywhere and the way they are mined and the quantity extracted cannot cause any large scale damage to the environment. In any case, the people have been mining the resource long before I introduced my pot and long after I have stopped doing mine, they will still continue to mine it. Which is best? Leaving the clay as it is or solving the endemic poverty in the region? I think the people come first. We also do not deforest. What we use in burning the completed pots is the plant residue that is already dry. If they are not used, the farmers will later set fire on them when preparing their farms. So, it is a question of finding good use for a bad problem.”

The clay pot is however brittle and when handled roughly breaks easily. When they break, they are also useful in the household as they can be used in the fireplace as stands for cooking pots or they can be broken down and returned to soil.



The Business and its Relationships

The main inventor was Mr. Mohammed Bah Abba. The assistance he received was very modest, and the major actors who supported his initiative were members of his own family. His older brother provided modest financial assistance for him to make and distribute the pots. His grandmother also re-trained him in pottery making. The UNDP office in the state also provided a vehicle for him to distribute his wares to the rural areas. The vehicle was fuelled by the Ministry of Women's Affairs. According to Abba, this support lasted for only three months. The Jigawa State Polytechnic also provided support by keeping him on his job as a lecturer, while the inventor concentrated on making and refining the pots. The rural households who benefitted from the end product also provided assistance in terms of free transportation on donkeys in areas where the roads are bad and where vehicles could not ply, in addition to accommodation and feeding where Abba and his assistants could sleep as there are no hotels in the villages.

Mohammed Abba also hired assistants namely, Muhammed Farah, Adulahi Jamiu and five others who worked with him. These assistants were mainly male as the itinerant nature of the enterprise coupled with the cultural setting would not permit a woman to follow men who move from one village to the other and hike and sleep here and there. These assistants have been trained by Abba and they follow him to the villages in his attempt to sell the pot-in-pot to his clients. When demand for the products overlap villages, Abba assigns these assistants to different locations while he coordinates the activities. This also allows him to attend to his lectures in the Polytechnic. Abba pays his assistants from the profits made from the sale of the pots.

In 2001, UNDP Nigeria nominated Abba's project for the Rolex Award for Enterprise. The Rolex Award for Enterprise provided the highest financial assistance in 2001 through an award of US\$75,000. With the award from Rolex, Abba got the financial life-line he needed and was able to produce and distribute pot-in-pots in 11 northern Nigerian states, and further his plans for his products in other countries such as Cameroon, Niger, Chad and the Democratic Republic of Congo. In 2002, the Intermediate Technology Development Group (ITDG) and the University of Al Fashir carried out experiments in Sudan to assess the performances of the pot-in-pot in food conservation¹² after the Rolex Award was published. The excellent results led the Women's Association for Earthenware Manufacturing in Darfur to manufacture their own pot-in-pots, called *zeer* in Arabic.

The simplicity of the technology, availability of raw clay, and the fact that there exist skilful pottery makers in the region, cancels out the challenge of competition. However, this does not bother Abba. In his words:

¹² ITDG Report can be found in www.rolexawards.com/media/images/common/banner-green-repeater.jpg



“If the poor can use our technology to help themselves that will be fine. I am however sure that commercial interest from outside the rural areas is not feasible. It is not a business where you are assured of high returns. We are in the business to help the poor not milk them. What we charge is to be able to continue the work. If however there are businesses that will be prepared to sleep on the floor, ride donkeys and live with the poor, they are welcome!”

In the meantime, Abba moves around from one community to the other, a sole pioneer on the quest to help the poor live above the margins of existence.

Results Created by the Business

SIZE OF THE ENTERPRISE

The pot-in-pot enterprise has been a success in the rural areas of northern Nigeria. The project has demonstrated that the shelf life of farm products like eggplants, guava, tomatoes, pepper and spinach can be increased through the use of the pot-in-pot. In addition, the device can also be used to store sorghum and millet as the pot-in-pot effectively protects produce from humidity as well as stop the growth of fungi. The pot-in-pot device can also preserve meat when stored in it for up to two weeks instead of a few hours. The success led to the production of the 5,000 pots produced and distributed in 1997, and another 7,000 pots produced and distributed in 1999. As of 2005, the inventor had delivered a total of over 90,000 pots over the eight year period. At a unit cost of US\$4, this translates to US\$360,000 (about ₦54 million in the local currency) inclusive of the cost of production. Abba joked about this seemingly huge size of the enterprise in monetary terms.

“You see, if this figure holds as it is on paper from your calculations, the villages will be filled with investors who will be interested in making profit. But this is not so. The amount represents the worth of the aggregate pots made in the market. If we deduct the cost of production, transportation and incidentals, there is very little left. It is the reason close to a decade after the project, I am the only one involved in Nigeria.”

It is not difficult to agree with Abba’s conclusions. However, one information Abba does not share with people is the level of profit he is making. Production has increased steadily as more rural communities within and outside Nigeria has become familiar with the pot-in-pot’s uses and benefits. In spite of Abba’s level of education, Mobah Rural Horizons operates like a typical informal sector operator with very little record of activities. This makes it difficult to know the number of pots made till date, and the number of pot makers involved in the venture. Currently, Abba’s assistants are facilitating the production of and selling the pot-in-pots in the southern part of Niger Republic.



EFFECT ON RURAL LIFE



A woman fetching cool Kunu (local food delicacy) from a pot with a tap

(Photo: from the collection of Mallam Mohammed Bah Abba)

Although surveys by State government functionaries have not been carried out to ascertain the depth of impact the project has had on the people, there is ample evidence to believe that the project has impacted positively on rural life. One major social problem among rural farming households in northern Nigeria is the level of underemployment and unemployment. During the long dry season, most of the people remain unemployed. The arid lands of northern Nigeria are also prone to degradation and desert encroachment. As degradation destroys fertile lands, people lose their agricultural assets and

move to the cities. The project tapped into the skilful but largely unemployed labour market of pot makers in Jigawa and other states thereby providing employment and income. Mallam Abubakar Seidu, pot maker, said of the project:

“We are able to work and earn money during the period there is no farm work to do. This is good for the family as we are able to provide food for them. It also keeps our young men in the village instead of going to the city where they will get nothing to do since they have no education or skill to earn money there.”

The impact of the pot-in-pot on individuals’ lives is also overwhelming. Farm households are able to sell farm products on demand and at favourable market prices rather than remaining passive price takers. In fact, farmers can now afford to delay the sale of their products to the periodic market days and thus ask for higher prices on their products. According to the farmer Mallam Audu Dogo:

“Before the pot-in-pot came to the village, anytime we produced, we lost substantial part of the products as they spoil. You know, we all produce the same kind of food products so, except you carried yours to the markets or buyers come to you, you are most likely going to lose the product. The pot has not only solved this problem. It has removed the fear that attends that problem. Now we can store the products for some time till the next periodic market day before selling the products.”

This flexibility in the time of selling farm products has helped farmers to get better prices for their products and raise income levels in the rural farming communities where the pot-in-pot is in use. As evidence, several farmers are now changing the roofs of their houses from thatched to corrugated iron roofs. Married women, including those in purdah, also have an important stake in



the process, as they can sell food from their homes and overcome their age-old dependency on their husbands. In turn and, perhaps most significantly for the advancement of the female population, Abba's invention liberates girls from having to hawk food each day. Instead, they are now free to attend school and the number of girls' enrolment in village primary schools has risen according to reports from the village members. Hauwa Seinab, a twelve-year-old school pupil said:

“With the purchase of the pot-in-pot by my father, I do not have to sell vegetables and other farm products in the mornings. They can now wait till I return from school.”

The decay of food has also been reduced to the minimum, thereby increasing food security among rural farming households.

Growth Strategy and Future Outlook

Although a quiet and unassuming gentleman, Mohammed Bah Abba has plans that transcend his immediate environment. These plans are directly translated into the vision of the Mobah Rural Horizons. This is to scale-up a local technology without external energy supply in regions lacking modern technological and electrical facilities in order to:

- Enhance rural development in a cost-effective, participatory and sustainable way;
- Preserve fruit, vegetables and other perishables farm products in hot, arid climates;
- Act as a kind of desert refrigerator, help subsistence farmers by reducing food spoilage and waste and thus increasing their income and ensuring food security;
- Limit the health hazards of decaying foods; and
- Expand to other arid areas in Nigeria and abroad.

Using the same strategy, the inventor intends to reach the entire northern region of Nigeria by the year 2010. Having realized that the rural arid region is a contiguous region stretching from the Atlantic in the West to the Indian Ocean to the East, Abba plans to expand his output and explore the rural markets of other countries like Cameroon, Niger, Chad and the Democratic Republic of Congo.

Mallam Mohammed Bah Abba has also been asked to help introduce and adapt his cooling device in Eritrea, where it could preserve insulin vials for diabetic patients in remote rural areas, as well as in India, Haiti and Honduras. The inventor however, said these are invitations that have not been fully solidified.

However, Mallam Abba is thinking beyond the pot-in-pot which has been demonstrated to be efficient in helping rural communities that have no access to modern electrification. He thinks there is the need to expand the production frontier of rural farmers in the arid region to increase



household income as well as ensure their food security. Incidentally, the technology of small holder farmers which depends mainly on hoes, cutlass and fire is a major constraint to achieving this objective. Abba is thus currently working on developing appropriate farming technologies that will eliminate the laborious hoe and cutlass technology. This will help increase farm size and consequently, output. In the words of Abba:

“The rural poor are a forgotten species. No one really cares what happens to them. In fact, in our society, they are seen more as burdens rather than assets. It is thus very important that one keeps thinking and searching for ideas, techniques and methods that can help these people and make life easier in the areas of fetching water, farming and carrying the farm products from the farm to the homesteads.”

Coming from a man who is decidedly committed to uplifting the well-being of rural farm households, the idea of the pot-in-pot represents a great progress. In addition, greater efforts have had to be put in to access the rural poor to the dividends of development. The mobility of this enterprise serves the rural people who are effectively cut off by poor roads. The concern is that after Abba, except if there are people who take after him, what will happen to the future of the pot-in-pot and the rural folks? If Mobah Rural Horizons becomes sedentary, how will the pots, which are fragile, reach the rural people who need them with no risk of breakage or price increase? These are all questions that need to be answered for the future sustenance of the enterprise.



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ANNEX

ANNEX 1: STEPS IN MAKING THE POT-IN-POT

The steps to making the pot-in-pot fridge, as explained by the inventor and as documented in <http://www.wikihow.com/make-a-Pot-in-a-Pot-Refridgerator>, are as follows:

- Obtain two large clay or terracotta pots. One pot must be smaller (see picture 3) than the other pot. Check that the smaller pot fits inside the larger and that there is a space around it of at least one centimeter, up to three centimeters’.
- Fill in any holes at the base of the pots. Use clay, large pebbles, cork, a homemade paste - anything suitable to fill the hole. If you leave the holes open, the water will enter the inner pot and will also run out of the larger pot, making the fridge ineffective.
- Fill the base of the larger pot with sand. Only fill to a height that will ensure the smaller pot sits even in height with the larger pot.
- Place the small clay pot. Place it into the large pot on top of the lower layer of sand.
- Fill all around the small pot with sand. Fill it right to the top.
- Pour water into the sand. Do this until the sand is completely soaked and unable to take any more water.
- Take a cloth or towel and dip it into water. Place it over the top of the inner pot so that it covers it completely.
- Allow the inner pot to cool down. If you have a thermometer, you can use this, otherwise test with your hands.
- Keep the pot-in-pot refrigerator in a dry, ventilated space for the water to evaporate effectively towards the outside.
- Place your vegetables inside for storage. You will need to keep checking regularly for the dampness of the sand. Pour in more water as it becomes drier to keep it well moistened. Usually this will need to be done twice a day.



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The information presented in this case study has been reviewed by the company to ensure its accuracy. The views expressed in the case study are the ones of the author and do not necessarily reflect those of the UN, UNDP or their Member States.

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