

Subject: *Sustainable access to drinking water through the development of a social enterprise in Guinea*

Type: Short article (under 2,000 words)

Title: *Treatment and safe storage of water in the home with "Chlore'C". Case study of a social enterprise in Guinea*

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Abstract/Résumé

Tinkisso-Antenna was created in 2007 in Guinea as a social enterprise with the aim of developing local production of bottles of chlorine disinfectant, in order to offer every household a means of making their water safe to drink. The partnership with the Swiss Foundation, Antenna Technologies was reflected in the donation of the resources necessary for the creation of the social enterprise and of WATA electrochlorinators, a technology which enables the production of sodium hypochlorite through electrolysis of salt water.



Figure 1: Tinkisso-Antenna production team

Tinkisso-Antenna is now profitable. It is active in five regions and sold over 5.2 million bottles of chlorine in 2015, meeting the needs of 1.4 million consumers in the dry season and 4.7 million in the rainy season, when cholera is a major risk.

Introduction

Water is easily accessible in Guinea, but is often of very poor quality when it reaches the consumer. A situation analysis has shown that in 87% of cases drinking water was contaminated between the source and the place of consumption. Treatment and safe storage of water in the home therefore appear to be a very promising strategy for combating the scourge of water-borne diseases.

In this article, we present the success of Tinkisso-Antenna, a Guinean social enterprise, which, since 2009, has increased its local production of bottles of chlorine disinfectant (*Chlore'C*), together with its social and commercial marketing, in order to reach the poorest consumers, so contributing to the prevention of water-borne diseases, first on a local and subsequently at a national level. This paper offers a route map, describing each step in the process, from the introduction of profitable solutions for creating safe drinking water to their large scale roll-out. It is the story of an adventure, a rich experience with many lessons learned. The business model supports the local economy, by encouraging young social entrepreneurs to turn their ideas into a sustainable company. It has immense potential in Guinea, and can now be deployed in other countries. The commercial success achieved in Guinea is a source of pride for all concerned, offering the country a local solution capable of saving thousands of lives every year. It offers both a means of access to drinking water and a way of combating diseases such as cholera and Ebola.

Case Study Description

Between 2005 and 2007 Guinea suffered several severe cholera epidemics. 1,516 people were affected in 2004, 3,819 in 2005 and 3,230 in 2006. In 2007, there were 8,546 cases, including 304 deaths, with a fatality rate nationally of 3.6% (Bühlmann, Master's Thesis, 2014). At that time, the water and sanitation sector generally opted to import bottles of chlorine disinfectant, leading to lengthy delays between urgent needs and interventions to address them. The government were powerless, and the public angry about the lack of water treatment products.

Our project began in Dabola, a small town with 40,000 inhabitants. Aboubacar Camara, a dynamic and highly motivated young project manager working for an NGO, saw the potential of the Antenna technology. He started up a pilot project, opening kiosks which sold hygiene products while promoting health messages. *Chlore'C*, an active chlorine solution produced by using WATA, rapidly became his best-selling product. It was sold in small, 250 ml, bottles for 5,000 GNF (€0.60). As each bottle was sufficient to disinfect the drinking water of a family of seven for a month, this was by far the least expensive means of water treatment available at that time. However, Tinkisso-Antenna was a very new NGO, not yet in a position to win the development funding it needed from government or international agencies.



Figure 2: First kiosks financed by Antenna

Beginning of collaboration with the government with a view to large-scale roll-out

The Dabola pilot project was recognised as a success, demonstrated by the sharp fall in the number of cases of diarrhoea in the area of the intervention .

In 2007, there were 58 recorded cases of cholera in the Dabola area, with 5 deaths, while no cases were recorded in 2009. The public authorities recognised that cases of diarrhoeal disease were significantly less prevalent in Dabola. They concluded that this was a direct result of local production and distribution of chlorine by Tinkisso-Antenna. The general public also recognised that there was a direct causal relationship: 92.5% of households questioned stated that they had seen diarrhoeal disease reduce (52.4%) or even disappear (42.8%), as a result of the use of *Chlore'C* (Aydogan, Master's Thesis, 2010).

| Epidemiological data from the Farah region | |
|---|------|
| Source: Dr Ousmane Yattara / Dabola Préfectoral Directorate of Health (<i>Direction Préfectorale de la Santé de Dabola</i>) | |
| Cases of diarrhoea in children aged under 5 in Dabola | |
| 2007 | 3753 |
| 2008 | 3364 |
| 2009 | 1537 |

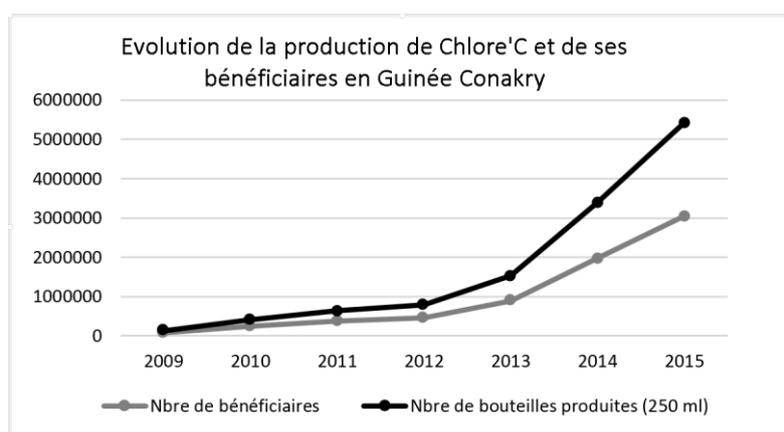
Local production therefore suddenly appeared attractive. The United Nations Office for the Coordination of Humanitarian Affairs (OCHA) then recommended the technology to the government and to UNICEF project managers. This opened the way to a first wave of expansion. UNICEF bought 14 Maxi-WATA devices, each capable of producing 150 litres of chlorine daily, enough to purify 600,000 litres of water. However, as UNICEF is obliged to work with government, the devices were allocated to regional public health centres, who had been given responsibility for chlorine production and distribution. Tinkisso-Antenna was relegated to a technical consultancy role. UNICEF subsidised production to a significant extent.

"UNICEF withdrew its subsidies at the end of 2009, when it became clear that most of the regional agencies were using the funds allocated for chlorine production for other purposes, and that production had ceased almost everywhere." (Bühlmann, 2014). This first attempt at expansion thus ended in a setback. Meanwhile, Tinkisso-Antenna had continued to produce and sell chlorine locally, without receiving subsidies. The Guinea public health authorities did not fail to notice this. They ordered that the 14 Maxi-WATA devices should be sent to a central production site in Conakry. Tinkisso-Antenna was once again, definitively, given exclusive responsibility for management of the site and distribution of its products.

The risk of over-rapid development and overstretch

After production was centralised in Conakry in 2010, new challenges began to emerge. The Minister responsible was subject to political pressures. In order to meet demands from the regional public health centres, he asked Tinkisso-Antenna to supply chlorine to all the regions which had lost their Maxi-WATA devices. However, in a country with poor roads and high transport costs, the targets to be achieved were much too high. In addition, support from the government was insufficient.

A rapidly growing enterprise with prospects of further growth



Non-editable image:

Evolution de la production de Chlore'C et de ses bénéficiaires en Guinée Conakry: Changes in Chlorine production and beneficiaries in Guinea

Nbre de bénéficiaires: No. of beneficiaries

Nbre de bouteilles produites (250 ml): No. of bottles produced (250 ml)

After renegotiating rates of coverage with the public authorities, Tinkisso-Antenna was able to achieve its objectives at its own pace, increasing its production by 122% between 2013 and 2014 and 59% between 2014 and 2015. Tinkisso-Antenna is now profitable. It sold over 5.2 million bottles of chlorine in 2015, meeting the needs of 1.4 million consumers in the dry season and 4.7 million in the rainy season. Tinkisso-Antenna directly employs 129 staff, including 27 women, which represents one of its social objectives. In addition it generates income for 40 female street sellers and several hundred community agents seconded from health centres. It reached its profitability threshold in 2014, with turnover of 1.6 million euros. Creative social marketing campaigns have enabled it to succeed in delivering a sustainable transformation in behaviour in relation to water and hygiene. In addition, it is continually testing new distribution channels, in order to serve every community, both urban and rural. Tinkisso-Antenna has become a point of reference, as a social enterprise helping government and UN agencies combat water-borne diseases using a local product made in Guinea.

Principal findings

| Epidemiological data from the Faranah region | | | | | |
|---|----------------------------|------------------|-----------------------|---------------|---------------|
| Source validated 30/08/16: Dr Pèpè Bilivogui / National Director for Public Hygiene, Guinea | | | | | |
| 2010 | | | | | |
| Towns | Intestinal schistosomiasis | Bloody diarrhoea | Diarrhoea no bleeding | Typhoid fever | Helminthiasis |
| Faranah | 1072 | 1542 | 6906 | 575 | 11968 |
| Dabola | 180 | 2243 | 5217 | 1625 | 10924 |
| Dinguiraye | 182 | 608 | 4004 | 652 | 10882 |
| Kissidougou | 3263 | 3564 | 17553 | 4931 | 19165 |
| 2011 | | | | | |
| Towns | Intestinal schistosomiasis | Bloody diarrhoea | Diarrhoea no bleeding | Typhoid fever | Helminthiasis |
| Faranah | 882 | 488 | 4288 | 625 | 8261 |
| Dabola | 209 | 932 | 3864 | 933 | 12339 |
| Dinguiraye | 423 | 549 | 4427 | 1077 | 12122 |
| Kissidougou | 476 | 857 | 12584 | 3409 | 16476 |
| 2012 | | | | | |
| Towns | Intestinal schistosomiasis | Bloody diarrhoea | Diarrhoea no bleeding | Typhoid fever | Helminthiasis |
| Faranah | 398 | 374 | 3086 | 41 | 5707 |
| Dabola | 211 | 662 | 2976 | 528 | 8731 |
| Dinguiraye | 18 | 252 | 2003 | 228 | 5987 |
| Kissidougou | 141 | 671 | 10153 | 2901 | 12078 |

Tinkisso-Antenna's growth prospects are also positive. It has expanded its range of essential products, including for combating Ebola, in particular by offering bottles of more concentrated chlorine, as well as other hygiene and disinfectant items.

Until recently, PSI (Population Services International) distributed bottles of chlorine in Guinea which were manufactured in Libya with foreign inputs and heavily subsidised. PSI is now having these chlorine bottles produced by Tinkisso-Antenna under its own brand name, so as to ensure an enduring local solution.

There are still many areas in which Tinkisso-Antenna has yet to market its products in order to achieve full national coverage. This will be a staged expansion. However, there are still significant challenges: the need to enlarge the production site, the potential entry onto the market of a competitor without a social dimension and high taxes. Tinkisso-Antenna is committed to the defence of the fundamental human right of access to safe drinking water. It intends to be part of the solution, and to offer drinking-water to everyone in Guinea.

Key lessons drawn from the experience

Complementary roles of government and the private sector in increasing production and distribution: The large scale commercial development of drinking-water requires a hybrid model enabling collaboration between the public and private sectors. While the public sector has the capacity to create a market for drinking water, by running major public education campaigns on health and hygiene, the private sector can provide the means to purify the water.

Supporting economic viability at grass-roots level and long-term support for social enterprises: Economic viability comprises three fundamental elements: effective but simple technology, a clear commercial model and a strong local presence. For a social enterprise to get off to a strong start, it needs to be able to access support quite early on, enabling it to strengthen its capacity and resources

Essential conditions for the large-scale supply of drinking water elsewhere in the world: The enterprise model approach can be reproduced in any country worldwide, subject to three conditions being fulfilled: **a)** water should be an easily accessible commodity; **b)** donor finance should be available (public - private partnership) so that major public awareness-raising campaigns can be run about drinking water and **c)** continuing demand should be ensured through powerful social marketing.

A start has already been made on replication, with adjustments, in Burkina Faso. Local representatives of Antenna and a technical partner are operational. An inventory has been drawn up of approaches taken to water treatment in the homes by the relevant Ministries. Key players in WASH, led by Antenna, have come together around the development of a document arguing the case for integration of water treatment in the home in the national programme for supply of drinking water and improvements to health (*Programme National d'Approvisionnement en Eau Potable et d'Assainissement - PN-AEPA*) post 2015. At the same time, the Ministry of Education has implemented programmes in schools so that students become advocates with their families for water treatment in the home, helping to create the future market for bottles of chlorine. Findings from market research are positive and a local business start-up centre has been mandated by Antenna to select an entrepreneur, support him or her in developing a business plan and assist in the search for investors. A bottle-manufacturing facility is to be created. If the arguments are successful, NGOs will take responsibility for social marketing for water treatment in the home on behalf of the Burkina Faso government, allowing Tinkisso-Antenna to concentrate its resources on commercial marketing, with a view to national coverage.

There are risks associated with high taxes. It is hoped that an exemption up to the threshold for profitability will be negotiated with the Finance Ministry, with the support of the "President's Emergency Programme" created in 2016.

Working with the Global Water Initiatives programme of the Swiss Development and Cooperation Department (DDC), Antenna Technologies has started to create similar projects in Asia, with the objective of demonstrating that such projects can be reproduced and diversified.

Acknowledgements

The project could not have achieved such a success without a solid and enduring collaboration with the Antenna Technologies Foundation, which has played an essential role in enhancing the organisational, technical and commercial capabilities of the social enterprise, and in contributing to strategic decisions. The foundation granted an operating loan of 135,000 euros to Tinkisso-Antenna. The profits which Tinkisso-Antenna is making are now enabling it to repay this loan. A donation of a total value of 500,000 euros over six years has enabled Tinkisso-Antenna to develop knowledge and expertise in production tools and equipment, as well as quality procedures and social marketing. Long-term commitment of this type is essential for the implementation of a sustainable social enterprise model which can now be replicated in other countries.

Conclusions



Figure 5: Promotional material for *Chlore C*

- In spite of everything, there remain some people in the field who continue to hold negative ideological views in relation to public-private partnerships. One example is the UN agency which refused to finance a social marketing campaign planned for our area of intervention because it could have supported sales of Chlore C, which were deemed to be a purely commercial activity. The concept of a social enterprise does not currently exist in Guinea.
- The acquisition of carbon credits will soon enable the ecological dimension of the project to be validated (reduction in the use of wood for boiling water)
- Several governments in the sub-region have expressed an interest in consultancy services, with a view to replicating Tinkisso-Antenna in their respective countries
- The Antenna Technologies Foundation and its partner, Tinkisso-Antenna, are ready to replicate the business model in other countries.

Recommendations

- At operational level, it is important to develop partnerships with key players locally, particularly NGOs, product distributors, the media, and health agencies, in order to facilitate coverage of all intervention areas and raise awareness in households, through mass social marketing campaigns.
- Identification of wholesalers and sales points both within and outside the intervention area will facilitate access to the product by intermediate and end-consumers.
- Regular participation in WASH clusters makes it possible to combine efforts in the event of cholera and Ebola epidemics, train key players in the use of the chlorine solution and participate in debate on the renewal of the country's health system.
- Dependence on the only manufacturer of empty bottles in Guinea is a drawback which should be overcome by the installation of a bottle blowing machine on the Tinkisso-Antenna site.

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