

Ameli-EAUR project: which lessons for the promotion of agricultural value chains?

M B Traoré*, M S Dakouré and A H Maïga

International Institute for Water and Environmental Engineering (2iE), Burkina Faso

*Email : maimouna.bologo@2ie-edu.org

Abstract. Due to the lack of rain, dry spell and agricultural insufficient inputs, agricultural yields are very low and do not allow achieving food self-sufficiency in countries such as Burkina Faso. To fight against this situation in the context of climate change, several researches have emerged such as agronomic research with the promotion of crop varieties that require little water and short growth period. The Ameli-EAUR project is another example of research. This project aimed to promote hygiene and sanitation by the use of sanitation by-product in rural and sub-urban areas of Burkina Faso. Ameli-EAUR project was initiated and implemented within five years. Completed in 2015, it appears necessary to think over its impacts on production hence the question: which lessons for the promotion of agriculture, specifically for agricultural value chains"? Based on the result of a post-survey performed one year after the end of the project, the aim of this presentation is to show that project can support the promotion of agricultural Value Chains in spite of difficulties if we take into account some parameters. To do this, we will start by presenting briefly Ameli-EAUR; then we will take stock of the project; finally, we will examine the possibilities it offers for the promotion of agricultural value chains, taking as example the vegetable gardening. We will also try to show the limits of value chains which are presented nowadays as a solution to many problems of agriculture in Africa.

1. Introduction

The Ameli-EAUR project aims to recycle organic waste, and sanitation by-products such as feces, urine and grey water from showers, laundry and cooking. For that purpose, eight rural and suburban families were selected from 3 pilot villages of Barkoundba, Kolondjessé and Kamboinsé around Ouagadougou, the capital city of Burkina Faso, to test a sanitation system that permits the use of recycled feces and urine in agriculture. However, the modes of provision and use of organic materials, which were applied in the project, occurred in a context where these wastes are generally considered repulsive or synonymous with taboo and contamination by people [1].

During five years, 8 families tested Ameli-EAUR infrastructures such as, bathrooms, toilets and little gardens. Our presentation will focus on the village of Kolondjessé where post-survey has been realized one year after the completion of the project.

Before presenting the results of the surveys did by students, what is Value Chains?

“A value chain is a system of people, organizations and activities needed to create, process and deliver a product or service from input supplier to customer. Actors in the chains include primary input suppliers, producers, processors, packers, traders, distributors and service providers. They transform natural resources, raw materials and components into a finished product that is delivered to the end consumer. Value chains include the horizontal and vertical linkages between several actors that generate value in a product or service. They are interrelationship-driven and focus on governance and resilience while describing activities and actors related to bring a specific product to the market. Value Chain Governance is about the local mechanisms and power used to define or impose transaction parameters between the different actors. Value chains can present uneven power relations, barriers to entry or exclusion. “Good” value chain governance will strike a balance between a fair competitive advantage and an unfair dominance of lead firms.



Globalization and economic liberalization has exposed local farmers to new markets. Value chains show how smallholders and rural enterprises are linked to and are economically dependent on this wider environment. While markets could be a path out of poverty for many farmers, their potential is often left untapped [2]. The study aimed to show that project can support the promotion of agricultural Value Chains in spite of difficulties if we take into account some parameters. In our purpose, we don't focus on an example of Value chains. We insist that ecological sanitation can be a link in the agricultural value chain.

2. Methodology

In February 2016, we made a field trip with our third years' students in order to show them effectively what ecological Sanitation is. This field trip was focused on Kolongdjessé which is one pilot site of the Ameli-EAUR Project. Before the field trip, we explained to the students the aims of Ameli-EAUR projects; what was expected from the sociological section and how we collected data (surveys with questionnaire forms; Group focus, direct observation); and the relevant conclusions we attained. We also helped students to make questionnaire forms with engineering (type of technology) and sociological (behaviors of families) aspects. For a better consideration of the four pilot families, students were divided into four groups, with the goal for each one to administer a questionnaire to the head of the household and fill out an observation grid on the state of maintenance of the project's.

3. Result and discussion

One year after the Ameli-EAUR project, the assessment that we can make is as follows: The system of Composting toilet is broken; the mechanism to turn feces is not efficient. Families do not put urine systematically in bottle for sanitation process due to lack of bottles. The collected urine was thrown in a manure pit a traditional compost wall. Grey water collected during dry season was used to make bricks. This is another example of appropriating the AmeliEAUR project. The protection gloves and mask used by families to manipulate urine and feces were obsolete. The sustainability of sanitation practices and protection of people handling sanitation by-products threaten the sustainability of the infrastructure of Ameli-EAUR.



Figure 1. Area developed for Culture with crop during rainy season (Tomohiro GONDAIRA July 8, 2014).



Figure 2. Area developed for Culture without any crop, (Group 1, February 11, 2016).

Moreover, around houses, development of sanitation by-products by households proves difficult during the dry season because of wandering animals, the harsh climate and low water availability. Indeed, fencing of areas developed for the garden are not robust and during the dry season farm animals live outdoors out of the enclosure. The consequence of this situation is that no garden can survive once these animals in search for pasture pass by. That is why nobody maintained garden during dry season. Because there was no good protection for the garden, it is not possible to follow a good process for plants. On the other hand, there are possibilities of selling the yellow waters composed of urine contained in vegetable garden. Actually besides food crops that are cultivated in rainy seasons, most pilot families practice vegetable garden during dry seasons. Instead of chemical fertilizers used in the framework of their gardeners, these families could enhance the urine. That is, if the urine valuation is problematic around houses during the dry season, this difficulty would tend to fade at the market garden perimeters. This potential for reuse could lead to a systematic collection of urine, their sanitation, their direct valorization by households who practice gardening and / or marketing to gardeners. The marketing of urine will provide money for household and give it opportunity to maintain and/or renewal Ameli-EAUR infrastructure.

The assessment that can be drawn from the AmeliEAUR project is that, despite the difficulties regarding the operation of certain infrastructures set up by the project, pilot families tried to appropriate the technology through the use and maintenance of still functional equipment (shower), a collection of gray water and urine collection, part of which is put in manure pits waiting to be used as fertilizer during the winter campaign manure. This diversion function is a sign of technology ownership. However, to take into account the initially goal set to AmeliEAUR project, namely the use of by-products and in order to make a link with the green growth through the provision of agricultural inputs, it would be appropriate to develop grants to fund the construction and maintenance of sanitation facilities.

As part of the Value chain approach, the valuation of sanitation by-products as the urine reduced the costs of agricultural inputs while promoting productivity growth [3]. These solutions contribute to cleaner living environment for households and promote green growth. However, to meet these goals, it is important that certain limits of the value chains approach be taken into account

4. Conclusion

In conclusion, making of ecological sanitation a link in the agricultural value chain can be possible if incentives mechanisms such as subsidies to the adoption of ecological sanitation are planned. In a context where the primary concern is the satisfaction of basic needs such as food, ecological sanitation appears as an epiphenomenon. The opportunities it offers cannot be taken into account if a strong incentive based on:

- Highlighting the economic benefits related to technology;
- Mitigating the constraints linked to the nature of the materials to support (the repugnant nature of sanitation by-products)
- And alleviating or eliminating health risks related to the handling of sanitation by-products;
- Revising sanitation strategies and priorities and implement innovative funding mechanisms.

Acknowledgement

The Authors are grateful to JICA for AmeliEAUR Project funding. Our acknowledgements are addressed to Kolondjessé families for their cooperation.

References

- [1] Bologo/Traoré, M., Sou/Dakouré M., Maïga A.H., Nabeshima T., Hakoyama F., Dicko S. 2014 "Mobilizing Communities for use of by-products of Sanitation: Case study of the Ameli EAUR project", 9th IWA International Symposium on Waste Management Problems in Agro- Industries 24-26.

- [2] P Visser and al, 2011-2012 Value Chain for SNV Advisors
- [3] D. Sangare, M. Sou Dakoure, N. Hijikata, R. Lahmar, H. Yacouba, L. Coulibaly & N. Funamizu, 2015 Toilet compost and human urine used in agriculture: fertilizer value assessment and effect on cultivated soil properties, Environmental Technology, DOI: [10.1080/09593330.2014.984774](https://doi.org/10.1080/09593330.2014.984774)