



Evaluation report on irrigation design and installation at LSBs Kitembe and Wadelai

April 23, 2021

Thijs de Klein

0778807198 (UG)

+31627412655 (NL)

thijs@resiliencebv.com



1. INTRODUCTION

Within the scope of the ISSD project Resilience BV has provided a training on small-scale irrigation design, as well as an initial assessment of irrigation capacity and profitability for several LSBs in 2019. The follow-up activity of this assessment was to provide two LSBs with an irrigation system, which was performed in March and April 2021. This report describes the process of the design and installation at both locations (Kitembe and Wadelai), and gives some recommendations for future efforts.

2. DESIGN

This section provides a brief description of the design phase of both systems. Detailed designs have been shared in separate documents.

2.1. LSB Kitembe

The fieldwork for the design phase at LSB Kitembe took place on March 10 and 11, 2021, and was conducted by Thijs de Klein (Resilience), Jacob Karuhura (ISSD) and John Bosco Muhumuza (NARO). The initial discussion with the LSB members revealed that the location identified in the 2019 mission is not the current production location of the LSB: they are currently in the process of renting a 16-acre plot, which is already in use for bean production by the LSB. Members indicated that they were looking at irrigation as a solution to the increasing variability of rainfall within the production system, as well as a way to add another crop cycle in the dry months (June-September). They also were eager to produce irrigated vegetables as a way to increase income besides seed production.

The field visit revealed two potential water sources: a swampy area on the lower end of the production area, and a small stream up in the higher areas. The latter option was considered to be infeasible in the scope of this activity, since it was located at a large distance from the field (1.1 km), and a small dam should have been constructed, which both indicated construction costs which are out of the budget range. Therefore, it was decided to use the wetland as a water source. Here one of the already present small ponds should be enlarged to be able to provide enough water for the production area. After cost calculation, it was decided to start with a smaller pilot area of 1.8 acres, given the high costs for HDPE piping necessary to cover the distance and height difference to the field outlet point.



Discussion at LSB Kitembe

2.2. LSB Wadelai

The fieldwork for the design phase at LSB Wadelai took place on March 16 and 17, 2021, and was conducted by Thijs de Klein (Resilience), Geoffrey Otim (ISSD) and Moses Kadogoli (ISSD). The 56-acre production area of the LSB is now used for dry rice production during the time that the land is flooded by the Ora river (August-December), which is flows partly around the production area. The LSB members indicated that they were interested in the possibility of irrigated vegetable production during the time that the land currently is fallow, after the rice harvest. If properly timed, this gives the possibility of having two crop cycles of irrigated vegetables (January-March and April-June). This, in combination with the observed capacity of the Ora river and the local climate and soil conditions results in a great potential for irrigated agriculture at this location.

Initially members indicated that they were looking to put the entire 56 acres under irrigation. Some members were consistently indicating that they were looking to manage up to one acre of irrigated production, and seemed to aim for as big as a system as they could get out of this project. However, the presence of an irrigated rice trial on their land (measuring 8 x 25 meters) helped to put the amount of labor required for field preparation and irrigation management in perspective. This resulted in the agreement to start with a pilot area of 2.5 acres, to be expanded to 7.5 acres after the first cycle (if successful). This 2.5 acre area was to be divided into 50 blocks of 0.05 acre, which would be individually managed after initial construction. This left the possibility for some members to have more than one block.



Discussion on possible irrigation locations at LSB Wadelai

3. INSTALLATION

3.1. LSB Kitembe

After finalizing the procurement process and receiving the irrigation materials, the installation of the system for LSB Kitembe was planned on April 16 and 17, 2021, and performed by Thijs de Klein (Resilience), Charles Ssemwogerere (ISSD), Jacob Karuhura (ISSD) and John Bosco Muhumuza (NARO). However, upon arriving at the production site the LSB members indicated that the owner of the land did not agree with the installation of the system, apparently because of the non-temporary nature of the system (the HDPE pipes were planned to be put subsurface to prevent UV damage and theft). It was agreed that the issue would be discussed with the owner on the same day (April 16), after which the team could come back the following day to install the system.

The following day (April 17), LSB members indicated they had instead found another water source, similar to the ponds in the wetland below the production area, to which they had secured access. However, this source was located further away from the field (280 m), and could thus not be reached with the provided pipes and hose (200 m in total). After some discussion it was agreed to demonstrate the installation of the pump and the connection of the pipes and hose, such that the LSB could either buy additional material or look for another production location with a suitable water source. Additionally, a contract was signed regarding the cofinancing arrangement between ISSD (75% of the costs) and the LSB (25%).



Installation of the irrigation pump at LSB Kitembe

3.2. LSB Wadelai

The installation of the irrigation system was performed on April 19 and 20, 2021 by Thijs de Klein (Resilience), Charles Ssemwogerere (ISSD) and Moses Kadogoli (ISSD). The initial pilot area of 2.5 acres had been (partly) cleared of vegetation, such that the first blocks could be laid out on the field. Additionally, nurseries for tomato plants had been established and would be ready for transplantation to the production area after one or two more weeks. On the first day, three blocks of 10 x 20 meters were constructed, including a primary and secondary canals (for division between blocks) and furrows (for division within a block). The LSB members were trained on how to lay out a block using appropriate field measurement techniques and how to dig the canal. After installation of the pump by the ISSD team, LSB members got some first hands-on experience with managing a surface irrigation system. On the second day, an additional six blocks were constructed, and the LSB members were trained on installation and maintenance of the pump and pipes. A cofinancing agreement was not signed by this LSB, since it was agreed that their share would be paid in labor (land clearing and canal/furrow construction).



Construction of furrows at LSB Wadelai



Training on surface irrigation management at LSB Wadelai

4. CONCLUSIONS

The irrigation assessment at both LSBs indicated that there is quite some potential for irrigated production in both areas, not only to secure seed production in the light of increasingly variable rainfall patterns, but also to add another production cycle during the dry period or to start with irrigated production of vegetables. At both sites LSB members were eager to start with irrigation and generally aware of the implications of this development.

Although the installation at LSB Kitembe was somewhat problematic, it is still expected that a suitable solution for this location will be found by the LSB, since the cofinancing agreement provides a considerable incentive.

5. FOLLOW-UP AND RECOMMENDATIONS

It is advised to visit LSB Kitembe at least once before the closing of ISSD to see whether they succeeded in installing the system, either at the original or at the new location which they proposed during the installation. Resilience is available to provide support on distance for this follow-up if necessary. Additionally, it is proposed to work together closely with NARO to provide continued assistance to the LSBs which received an irrigation system through ISSD after the project ends.

Regarding the process itself, several recommendations can be made:

- **Tenure security:** During the initial irrigation assessment, tenure security should have a stronger focus. Although it had been extensively discussed during the first visit, the tenure security at LSB Kitembe proved to be lower than expected, resulting in an incomplete installation process. In the future, only LSBs with a secure tenure arrangement should be pre-selected for an irrigation system.
- **Budget and cofinancing:** Although indicated what the total budget for the systems would be, it could have been made more clear what the budget for each specific system was and what type of cofinancing arrangements were aimed for – this way a better informed discussion could have been held at the LSBs regarding the available options.
- **Contact with LSBs:** Regular contact with LSB members on the status of the process could lead to LSBs being better prepared for the installation – this was not so much the case for Wadelai (although more members could have been present on the first installation day) as it was for Kitembe (regarding the land security situation).

To conclude, this project showed significant potential for LSBs to start irrigated production, and for future seed sector development projects it is recommended to include an irrigated production component into the programming as well.