

Bee Better Project in Burkina Faso
An iterative learning and sustainable development project

Policy Brief
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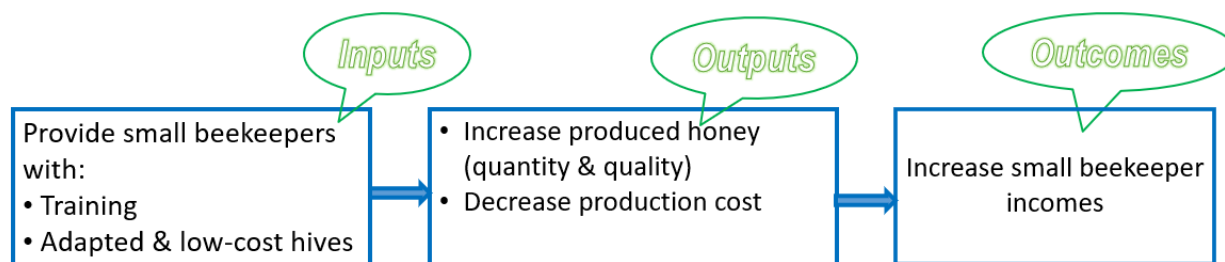
Summary

- The project has improved the hive quality, based on the results from this study. Moreover, rethinking the development model of the beekeeping value chain is needed.
- The study has not identified any significant increase in beekeeping income because of i) insufficient time between the project intervention and the evaluation, ii) low hive colonization, and iii) country security issues.
- The project presumes high promising and sustainable effects after its incubation phase, and calls for later evaluation of this impact.

1. Introduction

The beekeeping context in Burkina Faso is characterized by high opportunities, including increasing honey demand and export facilities. However, the quality standards and requirements are excluding small beekeepers from these opportunities. The main objective of the Bee Better project is to increase access to efficient and cheaper hives, while protecting the environment. The key strategy of the project consists of valuing and developing local beekeeping resources. Bee Better has developed and distributed low-cost hives (LCH) to small beekeepers in the Centre-Ouest, Centre Sud and Est regions in Burkina Faso in order to increase their incomes. The LCH hives are five times cheaper than the Kenyan hives usually distributed in rural poverty alleviation projects. The logic of change in income is summarized in Figure 1.

Figure 1 : Project logic of change in beekeeping income



The implementation of the project was strongly impacted over the 2019-2022 period by COVID19 and the increasing terrorist attacks. This security issue has limited beekeeping activities, including the field work of the research teams, apiary monitoring, and honey harvesting and selling. Some beekeepers have abandoned their apiaries because of this security concern. In addition, discussions with beekeeping centers, the Technical Office of Beekeeping in Burkina Faso (“Secrétariat Technique de l’Apiculture, STA”), and well-informed beekeepers revealed problems of hive colonization related to the trend of bee colonies and bee mortality phenomena in the West-Central and South-Central regions.

An impact evaluation of this project has been implemented to:

- Evaluate the effectiveness of the solutions developed in the first phase of the project in order to refine the second phase of this project;

- Influence the design of more inclusive development projects and programs in the beekeeping sector in Burkina Faso.

2. Methodology

The most robust impact evaluation method. This study uses the Randomized Control Trial (RCT) to identify the causal effects of the Bee Better project. The RCT is an experimental counterfactual method. We consider a partial RCT in two steps:

- Determine the eligible population, i.e., small beekeepers in the study areas (Regions of *Centre-Ouest*, *Centre-Nord*, *Centre-Sud*, and *Est*).
- Select randomly the treatment (beneficiaries) and control groups among eligible.

The RCT is considered as the gold standard method in impact evaluation literature, based on its random statistical characteristics

Well-defined beneficiaries. The project aims to increase the small beekeeper income by at least 20%. Based on beekeeping literature, discussions with the beekeeping centres, and the project objectives, We have considered a representative small beekeeper with six traditional hives and one Kenyan hive, corresponding to an average income of 24,517 CFA. In addition, we have used these criteria to estimate the minimum number of low-cost hives (LCH) needed by a small beekeeper to increase his/her beekeeping income by at least 20%. Some realistic estimation of honey prices and production costs has indicated three LCHs per small beekeeper.

3. Main results

Inputs, equipment and beekeeping practices

The average amount of hives per beekeeper is about 9. Treatment and control groups have 10 and 7 hives respectively. The LCH represent about 27% of the total number of hives for beneficiary beekeepers. About 75% of these hives are traditional. The sample beekeepers have on average 11 years of experience in beekeeping. Moreover, beekeepers have few beekeeping equipment. These statistics are similar across treatment and control groups.

The main advantages from using the LCH are yield and income increases, and environment protection, according to the beneficiary beekeepers. The limits in the use of LCH are related to the quality and handling of this hive, and beekeeping accessories. Regarding the LCH quality, beekeepers have identified the internal temperature of the hive as a cause of desertion of colonized hives. Indeed, the LCH appears to have a cooler internal temperature that is not suitable for small bee colonies. The handling issues are related to the LCH manufacturing, including its size, weight and lid.

According to the beneficiary beekeepers, the key difficulties in using the LCH are related to missing needed equipment, including coverall, smoke-out and hive stand. The difficulties in maintaining and transporting the LCH are also important. Based on this result and the perceived limits by beekeepers, the project has already reduced the size and weight of the LCH.

The average input cost is about 2,671 CFA per beekeeper, including 45% of labor cost. There is no significant difference in labor or non-labor cost between the treatment and control groups.

Honey prices

We compared honey prices between types of hives. There are significant differences in prices of honey from the types of hives. For instance, the price of honey from LCH is higher than price of honey from Kenyan hive. Similarly, honey price from Kenyan hive is higher than price from traditional hive.

The honey prices are significantly lower at the beekeeping center than prices at the local market. The average gap is 825 CFA per kilogram of raw honey.

Production, sales, yields and prices

The main objectives of the Bee Better project include the increase of small beekeeper income. The gross value of honey production is 43099 CFA from all hives per beekeeper, and 5273 CFA per hive. The differences of these values between treatment and control groups are not significant. Similarly, the honey net values are 43859 CFA and 36640 CFA for treatment and control groups respectively. There is no significant difference in these net values. We calculated the honey net value by subtracting the production costs from the gross value.

The honey sale value represents about 77% of the total produced honey. The honey gross value of treatment group is higher than control group, while the net value of control group is higher. This result confirms that treated beekeepers have increased their honey production and sales likely because they have received LCHs. However, the lower yields imply some possible decreasing return to scale for the treatment group, compared to the control group.

The quality of honey from the Kenyan hive is considered as the standard reference and leads to high price differences compared to other types of hive. The Bee Better aims at reducing this gap by developing the LCH that is expected to provide high honey quality. We have shown similar honey prices between LCH and Kenyan hive, while prices differences are remarkable between traditional hive and LCH (or Kenyan hive). Price differences across markets are also important. In addition, the price of the filtered honey is at least twice higher than raw honey.

Production

We have not identified any significant impact of the Bee Better project on the honey production and yield of small beekeepers. The difference in production values between the treatment and control groups are positive; however, they are not significant. Similarly, yield differences are negative, and not significant. These results confirm the descriptive statistics.

There are four main explanations of these results:

- Low rate of hive colonization in the country, due to agro-climatic issues.
- Short time between the intervention and the evaluation, including a delay in the intervention. For example, at the time of data collection, many beekeepers had not yet harvested their honey even though their LCH was colonized.
- Country security issues that had negative impact on beekeeping activities, including harvest
- Limited quality of the distributed LCHs.

Sales

The estimates of the project impact on honey sales are similar to those related to the honey production. Indeed, all sale differences between treatment and control groups are not significant.

4. Conclusion and lessons

The key objectives of the Bee Better project include the increase of the beekeeper income, while protecting the environment in Burkina Faso. The project has developed and distributed 750 LCHs to small beekeepers in three regions in Burkina Faso. This study has estimated the impact of the Bee Better project using the RCT method that is the most robust approach.

The study does not identify any significant impact of the Bee Better project on the small beekeeper production, sales and yields. The analysis has identified four explanations:

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- Short time between the intervention and the evaluation, including a delay in the intervention
- Country security issues that had negative impact on beekeeping activities, including harvest
- Limited quality of the distributed LCHs.

The main implications of these results are related to the need for later evaluation of the impact of this project. Moreover, based on these results, the project has already improved the quality of the LCH, including the size and efficiency of this hive. In addition, in view of the problems of low colonization of hives, the project supports in its second phase PhD thesis work to identify the causes and develop and test adapted solutions.

The main lesson learned is that for the establishment of an inclusive and multi-stakeholder dynamic within a sector, it is important not to grant, a priori, a privilege to a specific actor. This learning will allow CEAS to deepen his strategy to support the inclusive development of the honey sector in Burkina Faso. Indeed, while our current approach focuses on beekeeping centers to bring about the changes necessary for the inclusion of beekeepers in the benefits of the beekeeping sector, price analysis in different types of markets has revealed that local markets are more remunerative and non-discriminatory for beekeepers than honey sales to beekeeping centers. Indeed, several studies in the shea, mango and cotton sectors in Burkina Faso often highlight the significant or even contradictory gaps between the interests of organizations and those of their members at the grassroots level. This information will therefore be deepened within the multi-stakeholder action research platforms and complementary qualitative surveys in order to define the best strategy to implement, if possible in the second current phase, if not in the next phase of the project.

The impact evaluation made it also possible to generate an important data base on the beekeepers, their practices, their constraints, the threats to the development of the apiarian sector, the marketing channels of honey. This evaluation also showed that it was possible to reach equivalences of quality and price of honey between the Kenyan hive ("modern imported standard") and the LCH ("valorization of the local know-how") for costs of investment 4 to 5 times less expensive for the LCH. The LCH thus allows, a priori, an easier access to an important part of the investment for those which we named the small beekeepers.

This information and results will be shared with the international NGOs, the NGOs and local associations, the research structures, and the projects intervening in the beekeeping sector. This sharing will be done through targeted meetings (CEAS - individual actors), electronic dissemination of this report to the actors, and exchange and capitalization workshops at the national level. In addition, CEAS is collaborating with Miel Maya Honing (MMH) to organize webinars for sharing beekeeping innovations and practices, within the framework of the FAO TECA platform (TECA (fao.org)). The sharing of the results of this evaluation could be the subject of these online events.