

# H4G Final Report

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## Executive Summary

Every year, about one third of the total food produced for human consumption is wasted. The lack of adequate facilities where the produce can be stored post-harvest plays a key role, especially in developing economies in Africa, Asia, and Latin America. BASE (The Basel Agency for Sustainable Agency) has set out to help smallholder farmers access sustainable cooling using the business model “Cooling as a Service” and digitalisation under the project named Your Virtual Cold Chain Assistant. A mobile application, called Coldtivate, has been developed in order to help local entrepreneurs offering cooling room services operate, as well as provide intelligence for farmers to take informed decisions about when and where to sell their produce. BASE would like to upcycle the data gathered via Coldtivate to evaluate the project’s impact. The task of the team was to create a pipeline to evaluate key metrics identified by BASE and produce a monthly report. As our solution, we provide a Python script capable of automatically producing monthly reports by executing a list of SQL queries.

## Expected Impact

Our solution will allow BASE to better track the evolution and success of the project so that they may take more informed decisions in the future and have an improved understanding of the growth and development of Your VCCA. Therefore, BASE will be better equipped to fulfil its long term goals of reducing post-harvest loss and increasing farmers’ incomes.

## Approach and Implementation

We provide a brief summary of the implementation of the solution. We provide a Python script, `reporter_indicator.py`, which when called performs the following operations:

- Initiates connection to the Coldtivate database.
- Runs all the SQL queries in the folder `sql_queries`.
- For certain metrics which are more complicated, some additional processing on the query results is performed in Python.
- Aggregates results and outputs a CSV file for the given month.

For improved performance, some metrics were first placed in a view before being queried.

## Difficulties, Limits and Risks

There are several possible limitations relating to the data collected by Coldtivate and the metric computed, although this does not relate to the technicalities of our implementation. Possible limitations relate to the quality of the data and others to the formulae used to compute certain metrics. Some examples include:

- Farmers are not incentivised to provide accurate data in surveys.
- It is difficult to measure the increase in the selling price of the farmers due to the reduction in post-harvest losses. We provide some imperfect estimations of such measures.

## Results and Deliverables

This project did not require any analytical results. For deliverables, as explained in the Approach, we provide a series of SQL queries and a script capable of automatically executing and aggregating the results into a CSV file. For further details please refer to the project page: [BASE - Gitlab](#).

## Recommendations and Conclusions

The scale of the data and the trade-off between speed and usability of Python and SQL was a major point of discussion when developing the solution initially. In the end, it was concluded that the database would never be so “large” that using Python would be a hindrance due to its speed and so a hybrid approach was used. If the data obtained through Coldtivate turns out to scale faster than was estimated, it may be worthwhile rethinking certain aspects of the infrastructure as they may become bottlenecks.

We also recommend that BASE focus on improving the data collection process as a next step in order to provide more meaningful and reliable insights, as several metrics are not as meaningful as they could be due to inaccurate or missing data.