Impact Assessment Report
Methods Brief

This methods brief provides the data validation steps of the SEED Impact Assessment (hereafter referred to as SEED IA) that were used in assessing the open-ended questions that allowed respondents to input numbers. **There are four sections of the survey with these open-ended questions for number inputs which require validation to detect outliers, check for inconsistencies with proportional values, and identify other erroneous answers**.

The SEED IA survey gathered data from 289 enterprises as a part of assessing SEED-supported enterprises triple bottom line impacts and SEED business development programs effectiveness. These enterprises are at different development stages from ideation stage, to development, growth and expansion of proven models. We surveyed enterprises that participated in at least one of the SEED programmes since 2005 to 2018. The Enterprise respondents are a part of our SEED Awards Winners (n=81), SEED Starter (n=61), and SEED Replicator (n=147) programmes from 2005 to 2018. For the SEED Impact Snapshot Southern Africa Report, a subset of these enterprises was analyzed applying the same methodology presented in this document. In total 80 enterprises from Malawi (n=40), Zambia (n=19), and Zimbabwe (n=21) constituted the sample for the specific report.

The survey's timeframe was from mid-October to collected until mid-November 2019, including extended outreach via WhatsApp. An additional outreach was done to gather additional information from Zambia, Malawi and Zimbabwe from February 21st 2020 until the end of February 2020 for one week. Survey data/responses were collected by using online survey (i.e. LimeSurvey) consisting of 33 questions on enterprise profile information, environmental, social, economic impacts, and SEED programmes impact. These survey questions were self-reported.

There are four sections/ survey questions that had open-ended questions that allowed for number inputs as answers, these four questions are posed in the survey as:

1. Please enter the amount of **stakeholders** that have worked with you or whom you have served in the calendar year 2018. (This is then verified with another question in the survey which asks which social objectives the enterprise pursue that includes gender equality as an objective).
2. Please fill in the following information regarding **financing**, in US Dollars.
3. **Environmental impacts** that the enterprise pursue.
4. **Pollution prevention**: How many pollutant emissions were saved through the activities, products or services of the enterprise? [kilograms of pollutant]

Data Validation Steps
The first step in data validation for all questions was to eliminate the zeros and blank cells.

Section 1. Stakeholders

There are three marginalised demographic groups: women, youth, BoP and there are four stakeholders' groups: employees, customers, distributors, and suppliers.

Step 1. **Check for inconsistencies between the number of marginalized stakeholders thereof and the total number for that stakeholder categories**. For example: if there are more women (e.g. or youth, or BoP) employed than the total number of people employed- this will be **categorized as an inconsistent error and deleted**.

Step 2. Verify with the question in the survey on whether the enterprise pursues gender equality as a social objective. If the enterprise answers "Yes", we then checked if they have women in any of their stakeholders' group. If the enterprise answered "Yes" that they pursue gender equality but did not have women stakeholders, then the answer to that question on having gender equality was changed to "No".

Section 2. Financing

Step 1. Indicate all the enterprises that are/have:

a. Above 1 million for equity need, grant need, and personal funding need to scale up operations in the next year of 2019.

b. For debt finance need indicate those that are above 2 million in terms of how much they look for in finance. As for equity received indicated those that received above 100,000 USD[1].

Step 2. These enterprises that exceed these financing baselines are then vetted by:

a. Number of employees to gauge a component of the enterprise annual cost. A small and medium size enterprises may have 5 to 200 employees.

b. Which SEED group the enterprise is: 1) replicator, 2) starter, or 3) winner to gauge the accuracy of their reporting on their business valuation.

c. In which stage of development is the enterprise? 1) idea stage, 2) development stage, 3) growth stage, and 4) expansion stage. The assumption then made was that enterprises that are larger and expanding or growing may require larger financing.

d. The type of enterprise: what types of products and services and whether those are finance intensive operations.

Step 3. If after steps 1 and 2 there was still uncertainty to the plausibility of financing needed or received, we consulted with SEED team members who have worked with the enterprise in question to validate the data or contact the enterprise directly.

Step 4. Delete the answer(s) that are in the cell(s) which are improbable and erroneous after following Steps 1-3.

Section 3. Environmental impacts and Section 4. Pollution prevention use the same validation steps

Review the 6 survey questions and respondents' answers on their 2018 environmental objectives. The same steps apply in reviewing the 6 types of pollutant emissions saved through activities, products or services of the enterprise.

Environmental Impacts:

1. Saved greenhouse gas emissions: How many greenhouse gas emissions were saved through the activities, products or services of the enterprise? [Metric tonnes of CO2 equivalent]
2. Saved energy: How much energy was saved through the activities, products or services of the enterprise? [kWh]
3. Recycled materials: How many tonnes of material were recycled by the enterprise? [Metric tonnes]
4. Saved water: How much water was saved as a result of the enterprise's activities, products or services? [Cubic meters]
5. Land under sustainable management: How many hectares of land were under sustainable land management as a result of the activities of the enterprise and its beneficiaries? [Hectares]
6. Renewable energy generated: How much energy from renewable sources was generated through the activities, products or services of the enterprise? [kWh]

Pollution prevention:

- Pollution prevention: How many pollutant emissions were saved through the activities, products or services of the enterprise? [kilograms of pollutant]
- [Nitrogen Oxides (x)]
- [Particulate Matter - Particle pollution (PM)]
- [Dioxins]
- [Sulfur Oxides (SOx)]
- [Hazardous Air Pollutants (HAP)]

Step 1. The answers for the environmental impacts and pollutants were vetted through these following steps:

1. Enterprises with particularly large or small impacts- outlier- are marked and their business models are then reviewed:

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[1] The financing needs, debt finance needs, and equity received amounts differ and are based on the average responses of the 289 enterprises. Out of 289 responses these are the average amounts of finance needs and finance received for 2018.

a. In which sector is the enterprise or what is the business model? If it is agriculture sector, for example, the absolute quantity of water saved may be comparatively larger, considering that this sector is water intensive. Or if the enterprise produces solar power, they will generate more renewables, and save more CO_2 emissions and energy.

b. What is the scale of the enterprise in terms of employment?

Step 2. Each enterprises' environmental impacts and pollutant emissions saved were checked to ensure that there was consistency in the number in terms of scale of impact.

Step 3. Environmental impacts and pollutant emissions saved numbers were vetted with these standardized research values as follow:

- CO_2 emissions with values over 1,000 ton were double checked
- Energy values over 10,000 kWh were double checked
- Water values of over 1,000 m3 were checked, if the enterprise did not belong to the agricultural sector. Values over 500,000 m3 were double checked if the enterprise operated in the agricultural sector.
- For the pollutant emissions saved- any value over 10 kilograms of pollutant was verified.

The values are based on these researched calculations/references:

- Energy: a household in Germany is 6500 kWh/year (WorldData.info, 2020). An energy intensive manufacturing SME: 800,000 kWh/year
- Emissions: GHG of a SME (energy intensive (electric power)): 250 ton/year.
- Emissions from waste: 5 ton GHG/ton (StopWaste, n.d.)
- Carbon sequestration: 20-300 ton CO_2 sequestration/ha of forest. (FAO, 2011)
- Mitigation potential from organic agriculture: 30-70 ton CO_2 eq/ha/year (Smith, et al., 2007) Particulate matter approximately: 500 g/car/year (U.S. Department of Transportation, 2018)
- Water consumption: personal consumption: 20-100 l/person/day, which adds to 7.3 to 36.5 m3/year per person (World Health Organization, 2003). Water for irrigation: 20,000-50,000 m3/ha/year (FAO Land and Water Development Division, 1997)

If more than three data points from these 12 environmental impacts and pollutant emissions saved were inconsistent (including energy, water, emissions, or recycling numbers are too high or too low), those data sets were removed, meaning that those environmental impacts and pollutant emissions cells with those erroneous data were deleted and left blank.

References

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