Sustainable Project Baseline Data Form Restructuring

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Since 2005, The Trailblazer Foundation has been within the Siem Reap province of Cambodia, providing life changing aid to the local people who have gone through a genocide and a civil war within the most recent 40 years. These horrifying events led to a lack of infrastructure that we in the United States usually take for granted. Today Siem Reap is the second poorest area in Cambodia, despite being the largest tourist area with the world recognizable Angkor Wat temple just outside of town. A large portion of the Cambodian people do not have access to clean water, bathrooms, proper sanitation and consistent food security for personal consumption and economic gain. The Trailblazer Foundation has worked with locals to help with these issues with supplying valuable help such as water filters, well drilling, latrine installation, agriculture training and much more.

I was lucky enough to intern this summer with The Trailblazer Foundation to help with data analytics on the projects they were working on at the time. The main three projects that were active or ongoing when I arrived were well drilling, water filter installation, latrines, and agriculture. These projects have data collected before and after project completion to effectively quantify the benefits of the work being done along with the possibility of identifying trends in local communities. My project was to revamp and update the data collection process to better align with the United Nations Sustainable Development Goals. In addition, I wanted to ensure that the data collected is accurate and useful along with collecting qualitative information to help show the stories and lives of the people that this organization is assisting. Before I did any changes to the data forms, I spent two weeks physically making the water filters by hand to see how that process worked, along with spending multiple days in the field either installing the water filters in homes or doing pre selection family demographic data collection. These events helped me see firsthand how the Cambodian people lived in rural areas, as well as the stories and

impact of the work Trailblazer accomplishes every day. The collection of data and information was also great to see firsthand as it helped show where there could be improvements or points of clarification with the staff who conduct the interviews with the villagers.

Sustainable Development Goals

By using the UN's website (Nations, 2015), I matched the following goals with the four main projects being worked on. These goals are very open ended and don't have a statistical baseline to judge against or a number to set as a goal. These sustainable development goals were put in place in 2015 and are set to run until the year 2030.

1. Water Filters

* By 2030, achieve universal and equitable access to safe and affordable drinking water for all
* By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations
* By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
* By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity

* By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies

* Support and strengthen the participation of local communities in improving water and sanitation management

* By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases

2. Well Drilling

* Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all

* By 2030, achieve universal and equitable access to safe and affordable drinking water for all

* By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse

* By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity

* By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

* By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies

* By 2030, achieve the sustainable management and efficient use of natural resources

3. Agriculture

* Implement the 10-year framework of programmes on sustainable consumption and production, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries

* Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production

* By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature

* Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products

* Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems

4. Latrines

* By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations

* By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies

Developing Measurable Outcomes

Putting these goals into measurable variables is a tough challenge where there is no precedent. I was unable to find any Millennium Development Goals (the UN's set of goals for all nations before the Sustainable Development Goals) final assessment for Cambodia and how they did between 2000 and 2015, so these upcoming recommendations I make have been operationalized by me during my work.

Water Filters

Average daily income in Riel
Number of days in the hospital in the past few weeks
  - Child days missed from school
  - Adult days missed from work
Did this family use a water filter before?
If another filter is used, time used to walk to other water filter
Had education on sanitation/cleaning of water? (Pre and post question)
Number of times used a day to filter water (Post question)
What do you use the water filter for? (Post question)
  - Drinking, washing, cooking food, cleaning clothes, agriculture

Notes

I took old elements of the old baseline monitoring forms that were being used while I was with Trailblazer and combined them with new factors that will useful with evaluating outcomes as well as output. Average daily income in Riel as well as the numbers of days in the hospital within the past two weeks were from the old form but they provide easy measurable data that can be used in pre and post treatment (the water filter) assessments. Under the number of days in the hospital question, an expansion with questions of the number of school days missed for children and work days missed for adults would be helpful for showing how valuable education and working days are. Knowing if the family who will receive a water filter were using a filter before along with how much time it took them to walk to the filter would help show how having the filter could save time as well as their health. One thing I noticed in the field was that many villagers did not have any idea how important clean water and proper sanitation is in everyday health. Finding out if they have had any education on the subject of water filtration would help show the impact on the brochures given along with the water filters that help explain the education of clean water. The post question of how many times the water filter is used daily as well as what the water filter is used for would show the post impact of its usefulness in daily lives. A notes section at the end would be used for interviewers to write any stories or events that do not fit in the normal questions. These could be used for outcomes that aren't measured by data but can paint a picture differently. All four major data forms and their projects would have these at the bottom, and it should be encouraged to fill them out for each recipient of aid.

Well Drilling

Average daily income in Riel
Number of days in the hospital in the past few weeks

- Child days missed from school
- Adult days missed from work

How did this family get water beforehand?
- Pond, well, river, rain, other

Time used to get water from the other source used currently (Before question)

What do they use the water they have for?
- Drinking, washing, cooking food, cleaning clothes, agriculture

Notes

How did this family get water beforehand is a question that can be very insightful with how low income people around the world are struggling to get access to water. Many families I saw were using polluted stream water or other families' wells as they had no other choice. Time used to get water from another water source will show how a long walk or a motorcycle ride is necessary to get water, and even then it can take time away from children or work around the home. The rest of the questions are also mentioned in the water filter section as they have overlapping indicators on life.

Latrines

Average daily income in Riel
Number of days in the hospital in the past few weeks
- Child days missed from school
- Adult days missed from work

What was the way your family went to the bathroom before?
Do you have access to post bathroom sanitation supplies?
Have you had education on sanitation relating to bathroom use?
Notes

The new questions that have not been explained in previous projects questions involve the last three questions. Many families used the jungles behind their houses and were quite scared of the snakes and mosquitos, especially at night. Many families also do not have anything to clean their hands after bathroom use, and that can obviously lead to health issues, especially without education that not many get, especially the older generation. Latrines are not one of the projects

that are worked on daily at Trailblazer, but I believe that they are important enough to warrant

their own data form to track importance in villagers lives.

Agriculture

Average daily income in Riel
How many family members work on the farm?
Type of irrigation system
    - Bucket, pump, drip, rain
Amount of crop harvested each year (kg)
Amount of rice harvested last harvest (kg)
Amount of vegetables harvested last harvest (kg)
Source of water for irrigation
    - Pond, well, river, other
Notes

All these questions can be asked both before the agriculture training that Trailblazer puts on, as

well as after to see the differences and impact that are made. It would also be good to get

demographic information on how Cambodians farm in general. There is a good chance that many

farmers will not remembers the exact amount of kilograms that were harvested during their last

harvest but a rough estimate would be helpful. I have noticed that is the usual answer that is

received on the question of average daily income in Riel during collection, and the same

estimation could be made for kilograms harvested.

Specific Section Questions

Using the new questions that were mentioned in the developing measurable outcomes section,

we can combine them with what are currently on the forms to maximize the effectiveness of the

data and stories we collect. Here are the questions sets that will easily be transferable to the

projects that are active.

Village Information

-Village code
-Date
-Recorder name
-Village name
-Villager contact info
-Village
-Commune
-Donor/private contributor
-Existing water source
       - Add an extra line under other for further explanation
-Project location

Well Information

-GPS X
-GPS Y
-VFC amount
-Water color
-Odor
-Well number
-Well type after drilling
-Start date
-Finish date
-Depth of well
-Soil conditions
       -Add none option under soil conditions
-How did this family get water beforehand?
-    Pond, well, river, rain, other
-Time used to get water from the other source used currently (Before question)
-What do they use the water they have for?
-    Drinking, washing, cooking food, cleaning clothes, agriculture

Bio-Sand Filter Information

-Bio-Sand Filter number
-Water color

-GPS X
-GPS Y
-Did this family use a water filter before?
-If another filter is used, time used to walk to other water filter
-Had education on sanitation/cleaning of water? (Pre and post question)
-Number of times used a day to filter water (Post question)
-What do you use the water filter for? (Post question)
- Drinking, washing, cooking food, cleaning clothes, agriculture

Health Information

-Total beneficiaries
-Number of families
-Number of males
-Number of females
- Number of days in the hospital in the past few weeks
- Child days missed from school
- Adult days missed from work

Economic Information

- Average daily income in Riel
-Type of House
-Type of Transportation
-Type of Animals
        -Duck, Cow, Buffalo, Pig
-Fish Pond?
-Amount of food stored
-Number of family members who work on the property?
-Number of family members who don't work on property?

Agriculture Information

-Food Produced
-How many family members work on the farm?
-Type of irrigation system
- Bucket, pump, drip, rain
-Amount of crop harvested each year (kg)
-Amount of rice harvested last harvest (kg)
-Amount of vegetables harvested last harvest (kg)
-Source of water for irrigation
- Pond, well, river, other

Reorganization of Forms

The Sustainable Project Baseline Data Form will be split into three different forms, bio-sand filter, well drilling and agriculture. But not all the information is relevant for the all three forms, and in that case, each form will be custom built for its individual project. Here is a breakdown on the new updated forms.

Bio-sand Filter Sections

-Village information

-Bio-sand information

-Health conditions

-Economic conditions

-Notes

 Well Drilling Sections

-Village information

-Well information

-Health conditions

-Economic conditions

-VFC information

-Notes

Agriculture Sections

-Village information

-Agriculture information

-Health conditions

-Economic conditions

-Notes

Conclusion

With a shift from strictly qualitative data to a mix of both qualitative and quantitative, these improved data form collections will give new and insightful analysis on the work done by the Trailblazer Foundation in Siem Reap. An improved focus and emphasis on the notes section at the bottom of the forms should help with the collection of outcomes and stories on the lives that are being affected, as well as translating the form questions into Khmer to ensure that questions are understood both by the interviewer and interviewee. Overall, data analysis will help in future endeavors with bio-sand filters, well drilling and agriculture training, as well as improving the quality of life for current and future Cambodians.

Works Cited

Nations, U. (2015). *SUSTAINABLE DEVELOPMENTKNOWLEDGE PLATFORM* . Retrieved from un.org: https://sustainabledevelopment.un.org/?menu=1300