

1 **Title:** My Experience Building a Water System in a Small Rural Community in the Dominican Republic

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1 **ABSTRACT.**

2

3 Clean water is vital for physical, social, and mental health however, water insecurity is a public health threat
4 for many countries. Sabana Larga is a rural community made up of approximately 230 families located in the
5 province of Dajabon on the Northwest region of the Dominican Republic. Building a new water system has
6 been a priority for the community for many years, however the reason for the delay in the process is the lack
7 of funds and assistance in building such a water system. In 2016, as a Peace Corps volunteer living in the
8 community, I asked the Saint Cloud Rotary club for financial support to build a new water system. The
9 objective of this paper is to share my experience of building a water system in a rural community in the
10 Dominican Republic with the Saint Cloud Rotary Club, the Dajabon Rotary Club, local engineers, and the local
11 community. Between April 2017 and June 2017, the new water system in Sabana Larga was successfully
12 implemented. The water system improved access to clean and safe drinking water for all families, leading to a
13 healthier community and better quality of life. Many lessons were learned throughout the process including the
14 importance of community involvement, understanding local customs and traditions, establishing a Water
15 Committee, and gaining various skills.

16

17 **Key Words:** global health, public health, rural health, water insecurity, medical student

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1 **THE EXPERIENCE**

2

3 Clean water is vital for physical, social, and mental health however, water insecurity is a public health threat
4 for many countries. Water insecurity is defined as the inability to access adequate, reliable, and safe water
5 needed for a healthy life.¹ Studies have shown that lack of clean water is associated with food insecurity,
6 diarrheal disease, heightened blood pressure, poor mental health, and poor perceived health.²⁻⁶ It is therefore
7 essential to improve water-related intervention efforts.

8

9 Sabana Larga is a rural community of approximately 230 families located in the province of Dajabon on the
10 Northwest region of the Dominican Republic. The community relies heavily on rivers and streams for domestic
11 water use including bathing, washing, cleaning, and cooking, however these sources are unreliable because
12 of the irregularity and insufficiency of rainwater. All families in the community worry about the water
13 conditions. Building a new water system has been a priority for the community for many years but has been
14 delayed due to lack of funds and assistance in planning and building such a system. In 2016, as a Peace
15 Corps volunteer living in the community, I asked the Saint Cloud Rotary club for financial support to build a
16 new water system.

17

18 **Objective**

19 To share my experience during my Peace Corps service of building a water system in a rural community in
20 the Dominican Republic with the support and participation of the Saint Cloud Rotary Club, the Dajabon Rotary
21 Club, local engineers, and the local community. This information can help other medical students, who may
22 have been or become actively engaged in their communities,⁷⁻⁸ build similar water systems and related
23 infrastructure in the Dominican Republic or other Caribbean countries to provide adequate amounts of clean
24 water to these communities.

25

1 THE WATER PROJECT

2

3 The water project was divided into three stages. The first stage was the installation of solar panels in a large
4 field in Sabana Larga to retrieve solar energy to capture solar energy for generation of electricity (**Figure 1A**).
5 This electricity was used pump water from an already existing well 140 feet below ground. The water from the
6 well was pumped to a newly built water tank described below. The solar panels were purchased in the nearby
7 city of Dajabon and were transported and assembled by local community members.

8

9 The second stage was the placement of a 25,000-gallon water tank to provide sufficient water for the growing
10 population of Sabana Larga (**Figure 1B**). The tank was equipped with valves and piping to each home. All the
11 materials were purchased in one hardware store located in the city of Dajabon. All the items aligned with the
12 local culture and technology available. The water tank was designed by local engineers and was constructed
13 by community members. The Saint Cloud Rotary Club came to Sabana Larga in June 2017 for one week to
14 help with the construction under the supervision of the engineers.

15

16 The third stage was the distribution of the water filtration systems to each household, the primary school, and
17 the clinic (**Figure 1C**). Bio Arena, a Dominican company located in Dajabon, installed 125 water filters in 123
18 households, the primary school, and the local clinic. Prior to the distribution of water filters, most homes
19 purchased water in plastic jugs or "*botellon*" from large trucks that pass by every other day. Each *botellon*
20 holds five gallons and costs 150 pesos (~2.70 USD) for a new bottle or 40 pesos (~0.72 USD) for a refill. Each
21 household used at least one *botellon* a day and the cost of such purchases represented a financial burden for
22 many families. Households that were not able to afford the *botellon* instead used river water for drinking,
23 introducing associated health risks.

24

25 The construction of the water system was successfully implemented between April 2017 and June 2017. The
26 main aim of the water project was to increase access to clean water and reduce water insecurity for the
27 community.

1 **DISCUSSION.**

2 Several lessons were learned during the water project implementation. First, it was recognized that
3 community involvement at every step of the project was imperative. As a Peace Corps volunteer, I arranged
4 several community meetings to listen to the needs of the community (**Figure 1D**), understand future plans for
5 building a new water system, and discuss the importance of the maintenance of such a system once
6 established. The meetings also focused on local customs and traditions, leading to a stronger relationship
7 between the community members and the other stakeholders, fostering a positive working relationship.
8

9 Second, a Water Committee was formed at the time of planning to oversee construction, performance, and
10 maintenance of the water system. This was crucial because ultimately the community would take over the
11 project. The committee consisted of ten members, each with a specific role. One concern for me was that only
12 three women were included in the committee, and their roles were primarily administrative e.g. secretary, with
13 minimal decision making responsibility. I recommend equal gender representation in all organizations and
14 intervention programs in the future to empower women and girls.
15

16 Lastly, new skills were acquired during the process. Several community members gained construction skills;
17 for maintenance and when repairs are needed, these community members will know how to fix the problem
18 independently. If properly used with care, water systems last for decades. Financial management skills were
19 also developed. The Water Committee was required to collect 50 pesos (~1 USD) from every family at the end
20 of each month to maintain the water system. Ongoing financial responsibility will be required to ensure long
21 term sustainability of the water system. I personally gained valuable communication and project management
22 skills coordinating the diverse activities involved and communicating with multiple stakeholders during the
23 process.
24

25 The new water system in Sabana Larga was successfully implemented with the help of several stakeholders
26 including members of the local community and external partners. The new water system has improved access
27 to clean and safe drinking water for the families, leading to a healthier community and better quality of life for
28 everyone.
29

1 **SUMMARY - ACCELERATING TRANSLATION**

2

3 **Titulo:** Mi experiencia de construir un sistema de agua en una pequeña comunidad rural en la República
4 Dominicana

5

6 Sabana Larga es una comunidad rural con 230 familias ubicada en la provincia de Dajabón en el noroeste de
7 la República Dominicana. Hay poca lluvia durante todo el año. La falta de agua impide que las familias se
8 bañen, laven, limpien y cocinen. Todas las familias de la comunidad se preocupan por las condiciones del
9 agua. La construcción de un nuevo sistema de agua ha sido una prioridad para la comunidad durante
10 muchos años, pero la razón que no hay un proyecto todavía es la falta de fondos y asistencia para construir
11 este sistema de agua. Mi objetivo para este documento es compartir mi experiencia durante mi servicio en el
12 Cuerpo de Paz de construir un sistema de agua en una comunidad rural en la República Dominicana con el
13 Club Rotario de Saint Cloud, el Club Rotario de Dajabón, los ingenieros locales y la comunidad local. Esta
14 información puede ayudar a otros voluntarios u organizaciones a construir sistemas de agua similares en la
15 República Dominicana u otros países del Caribe para dar suficiente cantidad de agua limpia a las
16 comunidades.

17

18 Entre abril de 2017 y junio de 2017 se implementó con éxito el nuevo sistema de agua en Sabana Larga. El
19 sistema de agua mejoró el acceso a agua potable limpia y segura para todas las familias de la comunidad.
20 Se aprendieron muchas lecciones durante del proceso. Primero, era importante que la comunidad se
21 involucrara en cada paso del proyecto. El voluntario del Cuerpo de Paz organizó varias reuniones
22 comunitarias para escuchar las necesidades de la comunidad, considerar planes futuros para construir un
23 nuevo sistema de agua y hablar sobre el mantenimiento del sistema de agua. En segundo lugar, se formó un
24 Comité de Agua en el momento de la planificación para supervisar el correcto funcionamiento y
25 mantenimiento del sistema de agua. Esto fue crucial porque la comunidad se haría cargo del proyecto en el
26 futuro. Una cosa que observé fue que las mujeres en el comité de agua solo tenían roles simbólicos. Estos
27 puestos dan poca o ninguna responsabilidad. Recomiendo la representación equitativa de género en todas
28 las organizaciones y programas de intervención en el futuro para empoderar a mujeres y niñas. Por último, se
29 adquirieron nuevas habilidades durante el proceso. Varios miembros de la comunidad consiguieron
30 habilidades de construcción; si se necesitan reparaciones, estos miembros de la comunidad sabrían cómo
31 solucionar el problema sin participación de extranjeros. Si se usan correctamente con cuidado, los sistemas
32 de agua duran décadas. También se desarrollaron habilidades de gestión financiera. El Comité de Agua
33 estaba obligado a recolectar 50 pesos de cada familia al final de cada mes para mantener el sistema de
34 agua. Conseguí habilidades de comunicación y gestión de proyectos, ya que se esperaba que coordinara
35 varias actividades y me comunicara con múltiples partes interesadas durante el proceso.

36

37 El nuevo sistema de agua mejoró el acceso a agua potable limpia y segura para las familias, lo que llevó a
38 una comunidad más saludable y una mejor calidad de vida para todos.

39

40

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1 **FIGURES AND TABLES.**

2

3 **Figure 1. Different stages of implementation of the water project in Sabana Larga, Dominican Republic.**

4 A: Solar panels for electricity generation to pump water from the well. B: The 25,000-gallon water tank to store

5 water for the community. C: Schematic of the Bioarena filters that was distributed to 123 households, the primary

6 school, and the clinic. D: One of the many community meetings to discuss water-related needs.

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Accepted