Williams College
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Eliminating Water Crisis and Conflict in Jur Village, Pakistan
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Pakistan: Water Crisis and Conflict

"Create a sustainable supply of water to prevent conflict and disease emanating from the water crisis in Jur Village, Chakwal District, Pakistan."

Background:

Pakistan faces one of the most severe clean water crises in the world: almost 40 million people in a country of 180 million are devoid of clean drinking water and as many as 250,000 Pakistani children lose their lives to this crisis annually. My small village by the name of Jur, in one of the most isolated parts of the Chakwal region in Punjab, suffers from a similar lack of water. In the case of Jur, however, the detrimental effects of the water crisis are twofold: it is not only a source of ill health and disease but is also at the roots of village-wide distrust and conflict that has often escalated to physical violence. My project aims to target the water crisis as a source of conflict by focusing on increasing water supply, accessibility and hygiene in the area.

Community Need:

1. The lack of clean water leads to ill health and disease in the area; the District Headquarters Hospital of Chakwal reports that as many as 60% of those admitted from Jur are diagnosed with water-related diseases, including gastroenteritis, typhoid, cholera, and dysentery amongst others.
2. Water is shared between adjacent houses from the same underground water tanks and a first-come first-serve attitude has lead to unfair water allocation and subsequent conflicts between neighbors who fail to appropriately share the limited water.

Together the two issues have meant that obtaining clean water has become the first priority of every household in the village. Extremely high demand and meager supply of water, coupled with a high likelihood of disease and death in the absence of clean water, means that villagers aggressively, and violently compete over the very limited amount of clean water available. Competition and frustration frequently lead to violence and fights amongst the locals. There have been instances when neighbors have tried to steal each other's water over night or have attempted to poison competing neighbors.

Furthermore, tap water is unsafe for drinking due to contamination by various pathogens and the crisis has been aggravated over the last few years because of the natural gas crisis, which often means that gas is available only a couple of hours each day. Given that families also need to cook food and heat their houses within that time makes it infeasible to boil water everyday as a form of purification. Moreover, hand water pumps in the region with a bore range of 50 feet have dried up as the water table has dropped over the years. Thereby, eliminating the two sources that the village had previously relied on for clean water.

Project Objectives:

Task A: Clean Water Provision

- Establish a reliable, long-lasting and sustainable supply of clean water to the area.
- Provide water supply that bypasses the energy and natural gas crises so that water supply is independent of other factors. Solar water pumps achieve this goal by relying on solar energy that is readily available in the region.

Task B: Education and Training

- Educate locals about the importance of safe drinking water, and teach inexpensive but effective ways to purify water.
- Facilitate hygiene and sanitation training for households.

Plan of Action:

For task A, I will begin the project by consulting municipal authorities and locals to determine exactly the depth at which water is available in the region. Rough estimates so far estimate a depth of 250 meters. I will then take the reports to the solar-pump retailers in Rawalpindi and seek out the most appropriate equipment for the job. Initial research points to the Lorentz PS1800 HR/C water pump model, which is the standard model used throughout the Chakwal region. Moreover, solar-powered water pumps kill two birds with one stone by eliminating the need for electricity while still pumping water from greater depths. These pumps will be obtained from Nizam Energy, a national energy technologies firm that has been in operation since 1869 and has overseen the successful installation of some 4500 water pumps. The firm has a nationally established presence and serves all government-sanctioned contracts; I was introduced to the regional manager through my father who is a government employee.

I will buy the pumps in Rawalpindi, the nearest big city and transport them to the village, where they will be installed at four locations; four pumps will be enough to serve the entire village. Installation involves digging new wells that reach deeper underground (water from wells in the Chakwal district has been deemed safe for drinking by local authorities). While Nizam Energy will provide the technical expertise, physical laborers will be taken from the local community to more aggressively engage the locals in the project. A majority of the local workers (students and farmers) have, in fact, already offered to work on a volunteer basis. I intend for this project to be highly community-based as this will help establish cohesion in the community and perhaps bring together parties that once fought over the same water.

For task B, I will work in collaboration with the Association for Water, Applied Education & Renewable Energy (AWARE), which is a national NGO and has offered to help in educating the local community about water hygiene, sanitation and its impact on the community. As an intervention strategy towards increasing availability of clean water for households, we will teach the locals of Jur village to adopt a culture of household water treatment and safe storage practices. Locals will also be taught about low-cost but effective ways to purify water that also bypass the need for gas; for example, via solar radiation which involves disinfecting water using heat from the sun (the area is very sunny), or using iodine tincture solutions (iodine is readily and cheaply available in nearby hospitals). This will make clean water supply highly sustainable.

I will advertise these classes and make necessary arrangements with the village school to reserve adequately sized classrooms. My tasks will be made easier by the fact that my family has lived in the village for many generations and hence I can attain local assistance with ease.

Continued Water Supply and Maintenance:

A supervision committee will be set up by the village council. The committee will consist of eight members from the village and two members will be responsible for each of the water pumps. Their duties will include: weekly equipment check ups and reporting any damages to the village elders and Nizam Energy. The equipment is under warranty for 25 years and is guaranteed to perform up to 80% capacity until then. Nizam Energy has included tri-annual maintenance checks as part of the package.

AWARE will regularly report back to the village council on water sanitation practices and the extent to which water purification techniques have been adopted by the locals. Project supervision by the local leadership, together with the locals' role in digging wells will ensure that people in Jur take active part in all phases of the project, including planning, and implementation and sustenance of the water pumps; community engagement in this manner will also foster a stronger sense of ownership of the wells amongst the locals.

Expected Outcomes:

Firstly, solar water pumps and hands-on hygiene and water purification techniques, together, will make clean water supply highly sustainable; the continued water provision through this project will address the root cause of village-wide conflict and hence reduce communal discomfort and conflict. Secondly, it will greatly curtail, if not eradicate, the primary cause of water-borne illnesses in the region and immensely improve the health of the locals. Peace not only entails cordial relations amongst people but also a safe and healthy environment in which one does not have to constantly worry about the basic needs of life. Thirdly, I expect some spillover effects; higher labor productivity gained by better health and more land productivity gained by a more reliable source of irrigation, will contribute to the local economy. In such, other villages nearby might learn from water sustainability practices adopted by Jur and take this knowledge back to their own villages.