

A spectacular project in rural Nepal to reduce poverty and improve people's living conditions

Access to safe drinking water and sanitation is a given standard and considered as basic human rights in urban areas and industrialized countries. However 40 % of the world's population living in rural areas in developing countries lack access to safe drinking water. Many ongoing projects are focused on providing safe drinking water and sanitation in rural areas, including Hamro Paani. This pilot project aims to establish an efficient and sustainable water supply system in Madi, a rural area of Nepal, by constructing a new pumping well and extracting groundwater.

Building a sustainable and efficient groundwater supply system is so much more than just drilling a borehole and extracting water. The water must look clean and be free from chemical, physical and biological contaminants. Furthermore, the borehole should be located in a place with good potential for water extraction. Finally, the project must be cost-effective so that the system can generate enough income through user charges to cover maintenance and loan repayment costs.

The groundwater in Madi has good quality and purity and follows both national and international guidelines. Therefore the extracted water should be safe to drink. The borehole is connected to an unconfined aquifer, which is a geological unit in contact with the atmosphere and can store and transmit water. It is important to determine the characteristics of the aquifer to avoid overexploitation and mining a finite resource. A pump test is a commonly used method to determine aquifer properties. It involves discharging water from the aquifer at a constant rate and observing the resulting changes in water levels in the pumping well and surrounding wells. After conducting a pump test on site, it is most likely that the pumping well has strong potential for groundwater extraction. The aquifer consists of sand, gravel, pebbles and cobbles with high permeability and porosity. When the pump is stopped the water level in the well restores almost to its static level rapidly. This means that the aquifer can provide a desirable amount of water (in this specific case) without depleting the groundwater.

The total cost of the water supply system in Madi is 7,8 million Nepali Rupees (NPR). There are 400 households that will be connected to the system and each should pay 214 NPR per month. This amount is considered affordable and people are most likely willing to pay given the added benefit of having individual taps. Notably, the Hamro Paani project is unique in that it is entirely funded by donations. If the project was funded by loans, the monthly payment would become too high for Nepal at 1044-1438 NPR. Despite the high monthly payment, enough money can not be generated to make the project attractive from an investment point of view. One may conclude that such water supply projects are not financially viable and this is a true statement based on an

economic analysis. But this is not the entire reality and it is important to have an international point of view as well. In June 2021, the estimated cost for COVID-19 surpassed \$80,000 billion, while providing safe water and sanitation to the world by 2030 is estimated to cost \$1140 billion. The challenge of providing safe drinking water to people in developing countries is not only due to a lack of funds or low return on investments, but rather a lack of political will and interest.