



Partnerships

Knowledge

Solutions

Replacing flood damaged water supply systems at mountain villages in Pakistan

In July 2010, the monsoon rains caused severe floods in the mountain villages of Northern Pakistan and destroyed much of the infrastructure. Borouge and polyethylene (PE) pipe producer Sun International supported Pakistan NGO Health Education Environment and Development Association (HEED) to replace the water supply systems to four villages in the Neelum valley region.

The systems were designed using the natural fall of the mountains to bring water through polyethylene pipes to the individual houses below. Due to the damaged roads and bridges the logistics problems in transporting the pipes and equipment to site were severe and often manpower was the only solution. However, now the new systems are in place and should provide fresh water to the villagers for many years to come.



In July 2010 the monsoon rains caused the worst flooding seen in parts of Pakistan for more than 80 years. At its peak the flood water covered one fifth of the total land area and over ten million people were displaced from their homes. When the flood water subsided and the people could return home many faced scenes of devastation especially in the mountainous regions of Northern Pakistan where the floodwater had destroyed roads and bridges and of course their water supply systems.

Borouge asked Pakistan NGO HEED to use their expertise and knowledge to develop a proposal to replace the water supply systems in a number of the worst effected villages in Northern Pakistan. They selected the villages of Mattoo, Kandol, Matteiyan and Daba in the mountainous region of the Neelum valley, which had been particularly hard hit by the disaster.

Designing the new water supply systems

The system design was relatively straight forward and dictated by the mountain slopes which naturally carry the water down from the water sources to the villages. Each water source or spring was protected by a 'spring box' to help prevent contamination of the source. From there water was carried through polyethylene (PE100) pipes down to small reservoirs located above the villages. Each village then had a network of PE100 pipes to carry the water down the mountainsides to the individual homes, with small pressure break tanks being provided to keep the pipeline pressures within allowable limits. Due to the low temperatures during the winter, the pipes were laid in relatively deep trenches to ensure that the water continued to flow.

Gaining community involvement and support

HEED formed Village Water Committees in each of the villages to gain their support for the project. Each Committee was asked to sign an agreement to support the project not only during the construction phase but also to derive

a mechanism after the project to ensure an uninterrupted ongoing water supply to the communities.

The design provided taps in each house instead of a shared standpipe, which was considered necessary by the team because during winter, heavy snowfall often prevents people leaving their houses.

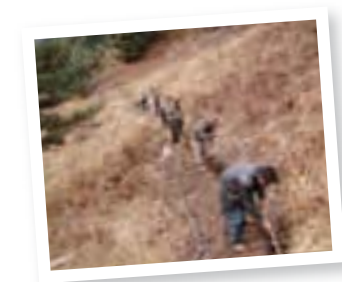
Fresh water for every house

After the design was completed HEED costed the whole project, which Borouge agreed to finance and local pipe manufacturer Sun International agreed to supply the PE100 pipes at subsidised rates. The pipes manufactured by Sun International utilised high quality pre-compounded BorSafe HE3490-LS from Borouge and conformed to the international ISO standards.

Many logistic problems arose in getting the pipe and equipment to site because the roads and bridges had been destroyed. In many situations the only solution was to use donkey or man power to reach the site – another very good reason to use coiled PE100 pipes which are lightweight and compact making them relatively easy to carry. The difficult logistics also meant it was not possible bring generators and welding equipment to site and therefore simple compression fittings were used. These were expensive but the use of long coils reduced the number of fittings that were needed for the project.

The scheme also provided a small stock of pipe, fittings and tools which would enable the local communities to repair any damage or install any additional extensions to the network. However the tough, flexible PE100 system installed in this project should provide a reliable water supply to the villages for many years to come.

The Health Education Environment and Development Association (HEED) is an NGO based in Pakistan that is striving to contribute towards achieving the UN Millennium Development Goals by active and continuous involvement in significant areas of health, education, environment and sustainable development.



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