



# IN ACTION

Partnerships

Knowledge

Solutions

## Additional villages in Northern Pakistan provided with new water supply systems

In July 2010, the monsoon rains caused severe floods that in the mountain villages of Northern Pakistan and destroyed much of the infrastructure. Later that summer, Borouge supported Pakistan non-governmental organisation (NGO) HEED to install new water supply systems to four villages in the Neelum valley region. In the summer of 2011, the partners agreed to provide new water systems to four more villages in the same region bringing the total number of people served to 5,200.

In order to provide additional protection against possible point loads in the rocky soil, the high stress crack resistant (HSCR) PE100 grade from Borouge, BorSafe™ HE3490-LS-H was chosen to produce the pipes. In one system, the route had to cross a deep valley which would have taken a considerable amount of time, effort and materials to cross. Therefore in consultation with Borouge the HEED engineers developed an innovative insulated “cable pipe bridge” to span the valley.



*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.*

Later in the summer following the floods, Borouge asked Pakistan NGO HEED 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 and these systems were completed by the spring 2011. Later that summer, the partners agreed to carry out a second project and the villages of Batagan, Nattan Pattian, Rayan Seri and Jandar Seri were selected. Again the success would depend upon the support of the local people who would do much of the work guided by the HEED engineers, and therefore Village Water Committees were formed at the beginning of each project.



specifically developed for use in trenchless installation methods or installation in poor soil conditions.

## Spanning a deep valley with a “cable pipe bridge”

The route of the new pipeline to supply the villages of Rayan Seri and Jandar Seri involved crossing a deep valley which would have taken a considerable amount of time, effort and materials. Therefore, the HEED engineers developed an innovative solution of a “cable pipe bridge” to span the valley.

Suspending 230 metres of small diameter PE100 pipe from a cable was no problem but they knew that with the winter approaching very fast that the water it carried would soon freeze. The solution was to develop a good insulation system that would protect the water from freezing. In consultation with Andy Wedgner of Borouge, the local HEED engineers tested several different solutions and finally settled on a 6 mm thick foam sheet. The sheet was cut into longitudinal strips that were wrapped around the pipe and temporarily fixed with tape. An outer plastic casing pipe was then slipped over the insulation holding it firmly in position.

## New challenges demand innovative solutions

The rugged terrain in this region posed many problems and a number of innovative solutions had to be developed by discussion between the experts within HEED and Borouge and by some additional experimentation in the field.

## Selecting the optimum polyethylene (PE) pipe material

The soil itself was very rocky and due to the remoteness of the site it was not possible to bring in granular backfill. In order to provide additional protection against possible point loads, the HSCR PE100 grade from Borouge, BorSafe HE3490-LS-H was chosen to produce the pipes. This material is extremely tough with a high resistance to the crack growth caused by external damage and point loads and was

## PE pipes ideal to use in responding to emergencies

The projects clearly demonstrated the value of high quality PE materials in quickly providing new systems to communities who have suffered major disasters such as earthquakes or floods due to their flexibility and toughness. In the two schemes, 5,200 people were provided with running water helping them resume their normal daily life and reducing the time spent collecting daily supplies and the threat of disease from drinking contaminated water.

Borouge also wish to acknowledge the contribution made by their local agent Arfeen International and local pipe producer Sun International.

For more information on this project visit: [www.waterfortheworld.net](http://www.waterfortheworld.net)

For more information on Borouge PE100 visit: [www.borouge.com](http://www.borouge.com)

For more information on HEED visit: [www.heed-association.org](http://www.heed-association.org)

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