

Gravity ropeways

Depending solely on gravitational force – and using no external power – gravitational ropeways are simple and inexpensive to operate as well as environmentally friendly.

Life is difficult for families living in the remote mountainous areas of Nepal. Getting crops to market can be exhausting and dangerous – it is generally mules, women and children who carry these heavy loads on their backs, down treacherous, winding dirt tracks. When it rains, or there's a landslide, it's completely impossible.

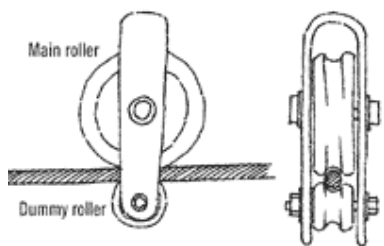
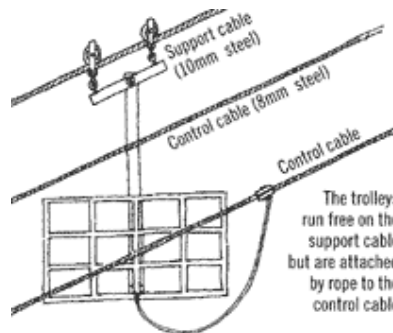
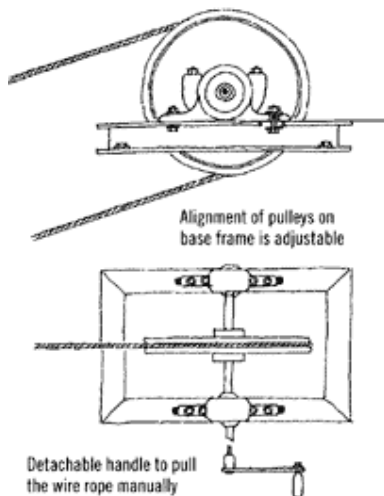
Six communities in Nepal, together with Practical Action, have found a surprisingly simple answer that's transforming their lives. It used to take two people over three hours to carry a 120kg load of apples 1.3 km down a steep mountain path – and that was just the first part of the grueling journey to market. Now, with a gravity ropeway, the apples take less than five minutes to cover the same distance.



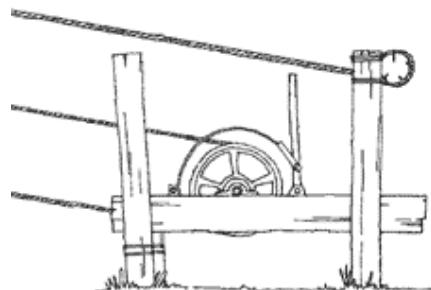
How it works

Gravitational ropeways use no external power, only gravity. Two linked trolleys, on pulleys, run on separate 10mm diameter steel wires which are suspended from towers: as the full trolley comes down, pulled by the weight of its load, it pulls the empty one up, ready for the next load. The trolleys' progress is controlled by another, 8mm wire, looped over a flywheel. A wooden drum brake, with bearing and bracket, governs their speed.

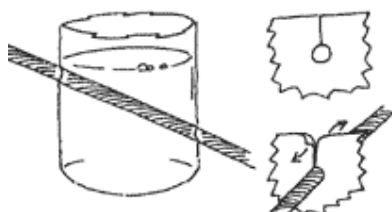
Rope and pulley arrangement at upper station



The two-roller assembly which keeps the trolley on the support cable prevents dislocation from the cable



A braking system at the lower station is required to control the speed of descending trolleys laden with fruit and vegetables



Running the wire rope through oil or grease in a cut down plastic bottle is a simple method to keep the support cables lubricated

Newton's law — applied to fight poverty

Life is difficult for families living in the remote mountainous areas of Nepal. One in every three people live on just £1 a day. They survive by growing food to eat and selling what is left over to provide the most basic necessities. But getting crops to market can be exhausting and dangerous

Janagaon is one of six communities in Nepal who together with Practical Action have found an answer that's transforming their lives. And it's surprisingly simple.

Dharma is 55 years old, with a wife and three children. He grows vegetables on a small plot of land in Janagaon village. He says, "It takes two hours to get down the mountain trail to the main road, and during the monsoon, accidents are frequent. Now we have the gravity ropeway, the time saved means I can earn three times as much from selling my vegetables. With that extra money I can afford to farm animals, too. But I'm not just glad for me – the whole village is prospering thanks to the ropeway."



It's a simple solution to the isolation endured by so many poor Nepalese families. The main components of the ropeway are sourced locally and project staff train local manufacturers to build the parts. We show the village group taking responsibility for the ropeway how to maintain it. A small charge to each user ensures enough money to keep the ropeway in good repair while also paying for two operators to manage the top and bottom stations safely.

Before the installation of the ropeway in Janagaon, families often went without food or medicine during the winter months. They could not afford the initial cost of establishing the ropeway, buying the steel cabling or getting the technical know-how to advise on its installation. Those are the elements Practical Action can help with, thanks to the generosity of our supporters.

The ropeway means people can get more produce to market from their mountain villages. And because it gets there quicker, it's fresher and earns them more. They have more time to tend their crops, more money to buy fuel for cooking and heating, and can even pay for education and healthcare. Technology really is making a remarkable difference to their lives.

A road in the sky

In the mountainous regions of Nepal, road-building is expensive. An affordable alternative is an electrically-powered aerial ropeway, to transport goods up the hillside

Something strange happened recently in the mountain village of Bharpak, Nepal. Prices fell. Rice, salt and even building sand came down by a rupee per kilo, and other essentials - such as oil and soap - were suddenly easy to get hold of.

The price cuts were one benefit of a new ropeway, a type of freight lift. Construction was co-ordinated by Practical Action and the Northern Gorkha Development Group. The ropeway spans 2.5km of gruelling mountain track over a 1,000m climb.



Before the ropeway was installed, this journey could take up to six hours. Most traders gave it a miss. For Bharpak, and other isolated villages higher up the valley, this meant high prices and scarce goods.

'People here have very little cash,' says Bhola Shrestha, Practical Action's programme manager. 'So if the ropeway helps people save money on necessities, that is important. Also they can have some time off. Everyone is always walking here - walking to collect water and fuel, walking to farm.'

Would a road have been a better solution? Not for Bharpak where roads are unlikely to last a season. Roads are expensive - even a gravel road would have cost at least five times more than the ropeway.

The triumph of the ropeway is its simplicity. Most of the maintenance can be done in the village, by locally trained operators. There is no fuel problem - the winch is powered by a micro-hydro scheme, which produces 35kw of power, enough to drive the ropeway by day, and supply the village with electricity by night.

