



AFTER THE UN CLIMATE CHANGE SUMMIT IN DECEMBER, WHERE SOME 195 GOVERNMENTS AGREED A NEW DEAL TO TACKLE GLOBAL WARMING BASED ON NATIONAL PLEDGES, THE TINY HIMALAYAN NATION HAS BEGUN TO PUT ITS OWN COMMITMENTS INTO PRACTICE

WIND POWERS

on greener future for climate-conscious Bhutan

● SARASWATI SUNDAS

From wind power to biogas, bicycles and electric buses, Bhutan is exploring new ways to play its part in the global push to keep climate change in check.

Last month, two wind turbines — the Himalayan mountain kingdom’s first — were inaugurated at Rubesa village in Wangduephodrang district, some 1,450 metres above sea level.

“Windmills are new to Bhutan, and we can easily harness wind (here) given the location of the village,” said Pema Letho, an electrical engineer with Bhutan Power Corporation Limited.

The turbines are expected to generate a combined 600 kilowatts, enough to provide electricity to 300 households in the village, a four-hour drive from the capital Thimphu.

Bhutan’s government is promoting new sources of renewable energy amid increasing demand for electricity.

It is also hoping to reduce its reliance on hydroelectricity — which can lead to power shortages in winter when water levels drop — and import less fossil fuel for transport.

“The plan is to boost energy security in the country and diversify the energy supply,” said Mewang Gyeltshen, acting director of the department of renewable energy.

“This is being done to counter the impending threats of climate change,” he said.

If the Rubesa project is a success, the department plans to install 24 more wind farms to make up for power shortages during the dry season, when hydro output drops to less than a fifth of capacity and electricity has to be imported from India.

The renewable energy department is also looking at installing solar panels that would generate 1 megawatt (MW) of electricity, and plans to supply 13,500 solar cook stoves and 2,800 home biogas digesters in 20 districts by the end of 2016.

Mini hydropower plants with a potential to produce 33,000 MW of electricity are also in the pipeline.

Bike-friendly city

After the UN climate change summit in December, where some 195 governments agreed a new deal to tackle global warming based on national pledges, the tiny Himalayan nation has



The number of cyclists has increased since the launch of popular races several years ago, such as the international “Tour of the Dragon” organised by the Bhutan Olympic Committee, according to cycle shop owner Ngawang Dorji.

The “Giant” bicycle shop opened around a year ago, and Dorji says he has sold 150 bikes since then.

Motor vehicles are going greener too. Electric cars were introduced two years ago, and four new charging stations were installed this month, funded by the Japan International Cooperation Agency, bringing the total to 10.

Funding needed

Bhutan’s 11th Five-Year Plan, a national economic strategy running from 2013 to 2018, has embraced carbon-neutral development. The government also aims to integrate into its 12th Plan the climate action commitments it submitted for the UN climate deal, which will come into effect in 2020.

The agriculture ministry, meanwhile, is encouraging farmers, who make up 70 per cent of the population, to adopt sustainable land use and improved livestock management, and is promoting organic agriculture.

“There are no doubts about the pledges we have made, and we are working hard,” said Agriculture Minister Yeshey Dorji, who represented Bhutan at the UN climate summit.

But the success of Bhutan’s commitments will largely depend on international financial and technical support to help tackle climate change and keep its progress towards sustainable development on track.

While the amount of funding the country will need is unclear, it is already receiving some assistance.

The Asian Development Bank and the Norwegian government, for example, agreed a \$6 million project in 2014 to boost Bhutan’s clean energy development and improve energy efficiency.

begun to put its own commitments into practice.

Transforming Thimphu into a bicycle-friendly city is one of Bhutan’s objectives to curb planet-warming emissions from transport. The municipal corporation is planning to build dedicated cycle lanes and tracks around the city.

“The government should encourage people to ride bicycles, walk or use public transport, and switch to electric cars to cut down carbon emissions,” said ardent cyclist Lungtok Tshewang Chedup, 23, as he climbed the road to Kuenselphodrang on his Trek 500 mountain bike.

Bike rider and bank worker Pema Gyeltshen said the government should make sure cycling is safe and conduct awareness campaigns for motorists.

“It would be easier then to encourage people to use bicycles to get to work,” he said, urging the authorities to introduce more parking areas for the two-wheelers.



DR SIVA KUMAR
doctsh@gmail.com

Newton’s Apple and Karan’s iPhone

Most people, upon seeing apples, think of ‘an apple a day keeps the doctor away’ and promptly take one. But two people did something truly amazing before doing so — Isaac Newton and Steve Jobs.

When Isaac Newton was sitting beneath an apple tree and contemplating the mysterious universe, an apple hit him on his head and made him realise that the very same force that brought the apple down should keep the moon falling towards the earth, the earth falling towards the sun and so on. Hence, Newton’s famous universal law of gravitation was born.

I could hear Karan, a school kid, over there mumbling that physics would have been easier if a jackfruit had fallen instead. Karan is always busy slashing falling apples in the ‘Fruit Ninja’ game on his iPhone and continues to be one of the highest scorers. Unfortunately the same cannot be said about his physics score.

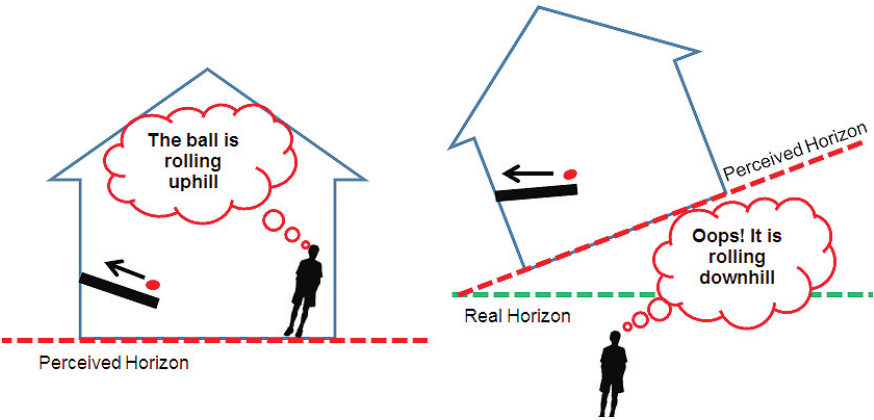
Most of the laws of physics are based on the discovery of the law of gravitation and hence Newton is known as the father of physics. Gravity is a universal phenomenon and defying it is completely impossible.

On the surface of earth, gravity always pulls bodies towards the earth’s centre — so when left to move freely everything moves from top to bottom. If things could freely move from bottom to top without any external influence, it would be called anti-gravity. Any observation of this kind on the surface of earth would mean most of the laws of physics would become null and void (huh, Karan is smirking) and would earn the discoverer a Nobel Prize ten times over.

After a trip to Mirbat Road in Salalah, Karan showed me some videos of his car moving uphill in neutral gear and looked at me emoting, “wassup bro?”.

There are a few mystery spots around the world, often given names such as gravity hill, magnetic hill or anti-gravity point. Although various explanations have been given for this phenomenon, most of the researchers believe that these are due to optical illusion. They argue that all these places are on hillsides where the straight horizon is obscured in every direction and there are no surrounding buildings. As people get their bearings either from the horizon line or from buildings, the absence of these means people are easily misled about slope.

Upon seeing Karan looking baffled, I understood the gravity of the situation and started telling him an Indian folk tale about Birbal, who was an adviser in the Mughal Emperor Akbar’s court. Once Akbar drew a line on the floor and ordered Birbal to make the line smaller without erasing it. The witty Birbal drew another longer line next to it, making the first line appear shorter. Therefore, like length, the perceived slope of the landscape also depends on its surroundings. Imagine a house that is slightly tilted, as in the figure below. When Karan is inside the house he believes he observes a ball rolling uphill, but when he comes out he realises that it is actually downhill.



In the absence of the horizon and with no buildings around, Karan must have perceived the road to be sloping uphill (from D to A in the image below) while standing near the baobab tree. But when he sees the road from a satellite (no rocket science, thanks to Google Maps), he can see that the road actually slopes downhill, causing vehicles in neutral gear to roll.



On the satellite map above you can see that point D is at a height of 84.6m above sea level and that point A is at 83.8m, indicating a downhill slope from D to A, although this appeared otherwise for Karan. I told Karan to go with a GPS device next time (I remember him showing off his phone’s built-in sensor) to get more accurate, up-to-date ground data and then update me.

Ignoring the science for a moment, it really is an amazing, visual treat to look at the apparent anti-gravity point. It is no wonder that Mirbat remains one of the most popular attractions in Salalah. Why don’t you visit there sometime and give Karan your explanation?

ECOTOURISM



Manipur emerging as a backpackers’ paradise

● IBOYAIMA LAITHANGBAM

Backpackers on a shoe-string budget who want to mingle with nature and see rare flora and fauna not found anywhere in the world and those who have emotional attachment or want to learn more about the battles between the Japanese and Allied forces during World War-II have been flocking to Manipur in northeast India like never before.

Imphal has daily flights from Guwahati or can be reached from Guwahati and Silchar through the mountainous NHs 2 and 37.

There are cheap hotels for backpackers or three-star luxury hotels for those with expense accounts or rich travellers.

Those who want to watch the brown-antlered deer, which is found only in Manipur, head to the Loktak lake where the Keibul Lamjao National Park, its natural habitat, is located, about 60 km from Imphal.

The tourism department has constructed huts at the Sendra hillock on the shore of the lake, but most of the tourists prefer the private hovels constructed on the floating bio-mass in

the lake or in the thatched inns that have been constructed in the recent past.

Also available are water sports and canoe riding in the Loktak lake, the largest fresh water lake in eastern India.

Thousands of fishermen and their families have been staying in the floating huts constructed on the bio-mass.

There are no toilets and the tourists are supposed to answer the call of nature or take bath while on the country canoes, like the fishermen.

Apart from the deer, tourists can watch hundreds of varieties of migratory birds coming from several countries.

Many backpackers said that they had experienced one-of-a-kind pleasure of mingling with nature once in the lifetime.

Other tourists go to the Ukhrul district to study the Shiroy lily which cannot be grown anywhere except high up on the Shiroy mountain.

Attempts to transplant the Shiroy lily in the foothills of the mountain have not been successful.

Despite warnings, domestic and foreign tourists clandestinely carry away some saplings in the hope of growing them in their homes.