

BRIEFS

Kerala prisons to go green with solar power

THIRUVANANTHAPURAM: In what is being billed as a pioneering initiative, all 52 jails in Kerala will now go green with the state government undertaking a Rs25.5 crore solar power project. All jails will now use solar power extensively, rather than grid power, which is being used for lighting and pumping of water from the jails' own source. The jail department will be saving Rs40 lakh by using solar cooking facilities instead of LPG cylinders.

Scientists create a 'dream' app

LONDON: Scientists have come up with an application to let you create your perfect dream, by playing a 'soundscape' that seeps into the sleeping mind. Users can choose from peaceful rural settings, busy street scenes or even dramatic space adventures. It could be a boon for sleeping disorders or depression. The app, called 'Dream: ON', is free and can be downloaded by iPhone users, the *Daily Mail* reported.

Polar bears losing fur from mystery illness

LONDON: Polar bears in Alaska have been seen with missing patches of fur, and reports say it may be due to a "mystery illness" related to the nuclear accident at the Fukushima power plant in Japan. Nine out of 33 bears studied were found to have alopecia - loss of fur - and skin lesions, Sky News reported. The theory of the Fukushima effect, however, has not been proved, the report said.

Russian found with radioactive car

MOSCOW: A man in Russia's eastern city of Vladivostok has been found with a radioactive car. A court ordered him to remove it from the country. "A second-hand Honda Fit was brought to Russia from Japan through the sea port of Vladivostok in November 2011. An inspection uncovered levels of radioactive emissions that were far higher than the acceptable level and ordered that the car either be cleaned up or removed from Russia," the regional prosecutor's office said.

Loss of predators is causing deforestation

WASHINGTON: The unbridled growth of moose, deer and other herbivore populations is contributing to deforestation thanks to the loss of predators such as wolves. This loss has allowed animal populations to greatly increase, crippling the growth of young trees and also reducing biodiversity, researchers said. They found that combinations of predators, such as wolves and bears, can create an important synergy for moderating the size of large herbivore populations.

PM for regulating groundwater use

NEW DELHI: Emphasising that India has nearly 17% of the world's population but only 4% of its usable fresh water, prime minister Manmohan Singh called for a legal framework to govern the use of groundwater. "Conserving our groundwater is now an urgent priority because we depend on it for more than two thirds of our water needs," he said.

Disappearing ice altering ecosystem

WASHINGTON: Shrinking sea ice, snow and glaciers, especially in high-latitude regions where water is frozen for sometime, the cryosphere, is affecting the ecosystem in hidden ways. Larger animals such as penguins and polar bears are responding to loss of their habitat. The study describes how decreasing snowfall threatens burrowing animals and makes plant roots more susceptible to injury because snow acts as an insulator.

The good news is that the successful test run of a car holds out hopes for an alternative to pricey fossil fuel

DNA Correspondent • AHMEDABAD

The Tavera travelled 201 km with an average mileage of 11.16 per km under full load condition. But what set this journey, which began in Delhi, aside from countless others, was the fact that the vehicle was not running on conventional fossil fuel!

It was running on neat (B100) biodiesel prepared from cultured marine microalgae in solar salt pans of CSIR-CSMCRI (Central Salt and Marine Chemicals Research Institute, Bhavnagar), Gujarat.

The good news is that the successful test run has held out hopes for an alternative to pricey fossil fuel. But, at present, B100 biodiesel is very costly (Rs155 per litre) though work is being done to bring down its cost.

Officials of the CSMCRI involved in the test drive on an unmodified Tavera said a PUC certificate for the car was also obtained.

On the pollution front, the B100 marine microalgal biodiesel generates carbon dioxide emissions just like any other fuel. However, unlike fossil diesel, the CO2 emissions released on driving the vehicle are effectively neutralised by the photosynthesis process.

This is so because biodiesel was obtained from a photosynthetic microorganism in the first place.

MARINE ALGAE yield precious biodiesel

How is this microalgal fuel different?

Certain marine microalgae store lipids much the same way as oilseeds contain lipids. The extractable oil yield is of course lower and solvent extraction is necessary unlike in the case of oilseeds where the oil can be mechanically expelled. The marine microalgal biodiesel was of the fatty acid methyl ester (FAME) type and in that sense it is similar to other FAME biodiesels. There are of course some differences in the fatty acid composition, vis-a-vis oils obtained from terrestrial plants, and the processing of the oil has to be tailored accordingly.

"We need to worry about the per litre cost and also the potential of raising biomass by millions of tonnes. As of now 10 million tonne of dry biomass would be required for 1 million tonne of microalgal biodiesel," said the official.

It should be noted that in April 10, 2011 CSIR-CSMCRI ran an unmodified Tavera vehicle with B20 biodiesel made from the

naturally occurring floating mat of the consortium of microalgae, and subsequently this year B100 biodiesel was made of oils obtained from the microalgal biomass generated in solar salt pans (from those isolated and screened in laboratories).

Officials said that no problems were reported with regard to the quality of the fuel so far. On its commercial viability, officials said it was too early to take a call.

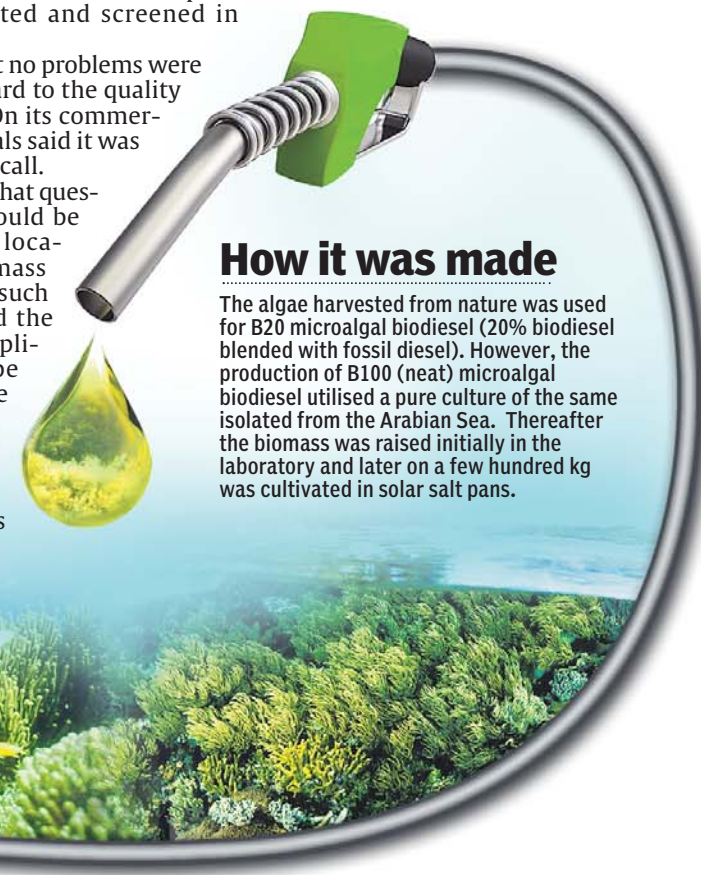
The official said that questions like what would be the appropriate locations to grow biomass cost-effectively in such large volumes and the environmental implications need to be considered before determining commercial viability of the fuel.

But they do agree that it holds

out hopes and is likely to put an end to the raging debate over biofuels. Of course, the cost factor has to be taken care of before it fuels a revolution of sorts.

How it was made

The algae harvested from nature was used for B20 microalgal biodiesel (20% biodiesel blended with fossil diesel). However, the production of B100 (neat) microalgal biodiesel utilised a pure culture of the same isolated from the Arabian Sea. Thereafter the biomass was raised initially in the laboratory and later on a few hundred kg was cultivated in solar salt pans.



Assam's rhino population up by 250 in 3 yrs

GUWAHATI: A census of one-horned rhinos at the renowned Kaziranga National Park (KNP) in Assam recorded an increase of almost 250 animals over a three-year period.

The last census in 2009 recorded 2,048 rhinos in KNP, of which eight were translocated to Manas National Park. The two-day census recorded the presence of 2,290 one-horned rhinos in the Park, a senior official involved in the census operation said.

"This indicates a healthy growth of the rhino population in the park. We are happy about the growth and now, we are only 495 rhinos short of attaining a 3,000 rhino popula-

tion, which was the target of Indian Rhino Vision (IRV) 2020," he said.

The IRV 2020 is a joint programme of the Assam forest department, World Wildlife Fund for Nature (WWF) and International Rhino Foundation (IRF) with the goal of attaining

a population of 3,000 wild rhinos in seven protected areas of Assam by the year 2020.

With 2,290 rhinos in KNP, Assam's total rhino population now stands at 2,505. The census operation, which was carried out last month at Pabitora wildlife sanctuary in Morigaon district

recorded 93 rhinos while the Rajiv Gandhi National Park at Orang in Darrang district recorded 100 rhinos. There were another 22 one-horned rhinos in Manas National Park in Assam.

The rhino census in different parks and sanctuaries were conducted in the supervision of the state's chief conservator of forests (wildlife).

The parks and sanctuaries were divided in various zones and then the group of enumerators, comprising enumerator, guide, mahout and a departmental elephant, undertook a visual counting of the rhino population. The census began at 5 a.m. in all blocks and lasted till afternoon. - IANS



First train with bio-toilet to keep tracks clean

DNA Correspondent • INDORE

Indore-Jammutavi Malwa Express (12919/12920) has become the first train of Western Railway to have a bio-toilet in its coaches. Defence Research and Development Organisation (DRDO) developed the rake to keep the railway station environment clean for workers working on the tracks.

The project will also help produce minimum waste immersion. Under this project, anaerobic bacteria will be used to maintain sanitation as they can survive below 60 degree Celsius and

can multiply to double in six to eight hours. When they come in contact with human waste, they dispose the same using carbon dioxide, methane and liquid. The liquid also gets disposed thereafter. The bio-toilet has been attached to a 500 litres capacity retention tank that has been installed beneath the toilet floor with seven chambers.

Every chamber is filled with the bacteria, decompose liquid and chlorine tablets. This is an ambitious project of Indian Railways to keep the railway station/tracks clean by reducing pollution.



A new bio-toilet attached to the train

Venus to transit sun after 120 years!

DNA Correspondent • BANGALORE

Belief in astrology is preventing India from getting its due recognition in science, said former chairman of Indian Space Research Organisation (ISRO) UR Rao recently.

Rao was speaking at the Jawaharlal Nehru Planetarium here during the inauguration of a show that details the transit of Venus, a celestial phenomenon that takes place only once in 120 years.

"Despite India's contribution in the field of astronomy, there is no due recognition. It seems that in our country, astrology has overtaken science," he said. P Balaram, director of the Indian Institute of Science (IISc), said he is excited to witness the transit of Venus, which will take place on June 6. "I am told that if we miss it due to cloud formation, the phenomenon will take place only in 2117. Even the youngest among us may not be alive for that event," he said.

The transit is akin to a solar eclipse, but instead of the Moon coming in between the Sun and Earth, Venus will appear in the same trajectory as the Earth and Sun, thus forming a small silhouette on the Sun.

The event will be visible at dawn in Bangalore and enthusiasts can observe the movement of Venus till 10 am. The planetarium has also started a programme to help teachers educate students about the phenomenon's importance. The transit of the Venus show, which will be shown in the planetarium's sky theatre, will be featured every day till the phenomenon runs its course.

Bikers to ride easy with new backrest

Engineering students design a device which ensures firm support to pillion riders while on the move

Aditya Singh Parmar • INDORE

If your back hurts due to long rides on the bike, then you are going to like this 'innovation' by mechanical engineering students of the city. The students have designed a backrest specially for bikes which provides firm support to the riders in the back while on the move. The backrest also acts as a 'support' to which a pillion can hold on to.

The students of SV Polytechnic College were guided in this effort by senior lecturer MK Jain, who himself is credited with developing several ingenious contraptions.

"It has been noticed that bike manufacturers make efforts to modify the cosmetics but concentrate less on safety measures of a rider and pillion. The students took up the activity as a practical extension to classroom teaching," said Jain.

"Medical practitioners were consulted and their report on ergonomics of the bike considered. Usually the weight of the rider is passed down on to the spine, and not shared with legs and arms. This, coupled with a fairly large saddle cupping the backside which restricts movement, results in spinal strain," he added.

The students Vijay Baraskar, Atrish Ahirwar, Bane Singh and Nitin Parmar spent three months in giving practical shape to this contraption.

The backrest is basically an adjustable seat position attached on a rail. The pushback seat becomes something like a backrest in a four-wheeler, providing support up to shoulder height. It also acts as a support to pillion rider. And the icing on the cake: the contraption costs approximately just Rs200.

Another group of students, Ravi Sharma, RP Gupta, Manje Chauhan and Nilesh Pachlod, came up with one more modification in the bike - extension bar hooked on to gear arm that locks the gear shift paddle.



PEOPLE IN SIX STATES FROM GUJARAT TO KERALA HAVE TO PROTECT FORESTS TO RETAIN PRECIPITATION FOR REST OF THE YEAR

Climate change in W Ghats to hit cash crops

Subir Ghosh • BANGALORE

It's bad news for all - from farmers to policymakers. Yields of tea, coffee and cardamom from high altitude plantations in the Western Ghats are falling because of the changing regional climate. Worse, the region is likely to see a 1.7-1.8 degrees C rise in temperature by 2030. Rainfall may increase in most parts, but the number of rainy days will go down. If that is not all, sediment yield is on the rise with the increasing intensity of rainfall.

The warning comes in a hard-hitting report 'Water Section Options for India in a Changing Climate', published by the New Delhi-based South Asia Network on Dams, Rivers & People (SANDRP).

"What this means is that for the overwhelming number of people staying in the 63 districts of six states from Gujarat to Kerala, protecting natural forests that can help retain the precipitation to



make it available in rest of the year is crucial. Creating small local reservoirs where possible and protecting them where they exist should also be part of the strategy," said Himanshu Thakkar, convener of SANDRP.

That is why the recommendations of the Western Ghats Ecology Experts Panel (WGEEP) are important for water, livelihood, food, en-

ergy and environment security of the people in a changing climate, not only for those residing in specific Western Ghats locations, but also for the people of the larger region whose rivers originate in this region, says Thakkar.

The SANDRP report points out a contributing number for the crisis that is looming large on 245 million people living in peninsular India: in-

Global and regional climate change is a reality we have to face. But, the ramifications are just evolving

-Latha Anantha and S Unnikrishnan, River Research Centre

creasing drought, lowering soil and atmospheric moisture, degradation of the surrounding forests, changing rainfall pattern and intensity, drying up of forest streams after the rains and drier soils.

Latha Anantha and S Unnikrishnan of the River Research Centre in a case study on 'Forest - Agricultural Plantation Settings in the Western Ghats' point out, "Global and regional climate change is a reality we have to face. However its ramifications for different sectors are just evolving. Since they are cultivated in high altitude, high rainfall, high

humidity and congenial temperature regimes, plantation crops like tea, coffee and cardamom were rarely irrigated. The changing climate is altering all that."

The Western Ghats have witnessed drastic landscape changes in the last 200 years - mostly because of the cash crops plantations. Now, it is these very plantations which are having to face the brunt of the changing climate. In the Coorg region, some areas have already seen rainfall drop by one-third - from 106 inches per year to 70 inches.

Coffee and tea growers are already under pressure due to climate change. Many crops are near their thermal limit, and even a slight change in average annual temperature could not only disrupt flowering, but even halt it entirely.

Coffee growers who had never given a thought to irrigation in such a wet climate have had to dig deep, high-volume wells, lowering the water table in the region.