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News & Views

40-km dual tunnel roads proposed to ease out traffic congestion in Bengaluru

As per reports, the Detailed Project Report (DPR) for a major tunnel road project has been finalized by the Karnataka state government. The project is being planned to ease out traffic congestion in South Indian cosmopolitan city Bengaluru. The dual tunnel road project, one of the state's most ambitious plans, spans a total length of 40 km, consisting of two tunnels. The project will connect the Hebbal flyover to the Silk Board junction via an 18-kilometer tunnel and link KR Puram to Mysore road through a 22-kilometer tunnel.

The Burhat Bangaluru Mahanagara Palika (BBMP), which is overseeing the project, anticipate significant expenditure for the construction of these twin tunnels. To fund the Rs. 19,000 crore project, BBMP has begun efforts to secure a loan. The state government has expressed support for the borrowing plan, which is crucial for moving forward with the project. However, BBMP is also exploring private investment options to help finance the construction.

The first phase of the tunnel road project, which covers the stretch from Hebbal to Silk Board, is expected to cost Rs. 16,5000 crore. Of this amount, Rs. 6500 crore will be funded through viability gap fund (VGF), with the rest likely to come from private sector investments. The second phase will extend from KR Puram to Nayandahalli, with a projected cost of Rs. 25,000 crore.

The BBMP's goal is to reduce the traffic congestion in Bengaluru by implementing this tunnel road plan, which is expected to shorten the travel times and alleviate blockages in key areas of the city. While there have been discussions about the high cost of the dual tunnel road, studies commissioned by the BBMP have concluded that the dual tunnel approach is the most viable solution, considering future traffic patterns and the anticipated volume of vehicles.

The project, once completed is seen as a critical step towards solving Bengaluru's persistent traffic woes. However, more details regarding the DPR for the tunnel road project have yet to be made public by BBMP.

This initiative is expected to be a significant step towards improving the city's infrastructure and providing a long-term solution to its growing traffic challenges.

Source: https://english.mathrubhumi.com; 20.12.2024

Underwater tunnel in Chennai Metro Rail's phase II project connecting Greenways Road to Adyar in Tamilnadu, India

As vehicles zip past one of the busiest areas of the city, the Adyar bridge, a 500-tonne gigantic machine operated by a bunch of workers quietly drills the earth. Under this bridge, tunnels are getting ready well beneath the Adyar River. In a couple of years down the line, trains will zip past

these twin underwater tunnels and those driving their vehicles over the bridge may opt to skip the traffic and take a ride below, in the train.

The Hindu gives you the first glimpse of one of the underwater tunnels built by Chennai Metro Rail for the upcoming phase II project. Of the twin underwater tunnels created between Greenways Road and Adyar Junction, one tunnel constructed by the Kaveri tunnel boring machine (TBM) has been completed and the next TBM named 'Adyar' will reach the Adyar Junction (near Theosophical Society) by January 2025. This stretch is a section of corridor 3 of the phase II project and once the work comes to an end in a couple of years, a commuter taking a train at Madhavaram can travel via this underwater tunnel at Adyar and head all the way till SIPCOT in Siruseri.

The Adyar TBM is a rather special machine. After creating a tunnel for Chennai Metro Rail's phase I project, it is once again back in the phase II project, after going through refurbishments. Weighing close to 500 tonnes with a length of 110 metres including its backup gantries, the machine has been at work nearly 20 metres below the ground and subsequently under the river, for several months now. It has drilled 1,050 metres so far, crossed the river and slowly drilling its way to Adyar Junction station.

As one steps into the tunnel, the presence of a large yellow ventilation duct is unmissable; it helps to pump in fresh air into the system and maintain the ventilation. "We also have wifi inside the tunnel for quite a distance to ensure we can communicate well," an official of Chennai Metro Rail Limited says.

One of the key challenges in constructing a tunnel between Greenways Road and Adyar Junction was the presence of soft rock and hard rock. "We had to make as much as 98 cutter head (an important component of a TBM) interventions. The TBM moves very slowly drilling through rock," he adds.
Sporting helmets and jackets, there are about 50 workers at the Greenways Road site. While nearly 30-35 workers are engaged in different jobs, a dedicated 15-member team operates the TBM, gauging the speed, its alignment, the geology through which it bores and monitoring the sensors to check if there is presence of any poisonous gas.

"Water from the river cannot enter the machine, because we have made meticulous arrangements for protection. But in some of the countries abroad, there have been instances of river water ingress into the tunnel," he says.

As one approaches closer to the massive machine, a locomotive train with huge barrels carries the soil and muck from the machine and transports it to the ground for disposal.

"The machine has drilled underneath petrol pumps, a college and a river. We are eagerly awaiting its completion next month," he says.

And soon after that, there will be another job waiting for the machine in another part of the city, to create another tunnel.

Source: https://www.thehindu.com; 14.12.2024

World's longest expressway tunnel built in Xinjiang, China

China completed on Dec 30, 2024 the construction of the world's longest expressway tunnel through snow-covered mountains in the Xinjiang Uighur Autonomous Region, marking a significant milestone in its infrastructure development.

Once operational, the 22.13km Tianshan Shengli Tunnel will reduce travel time through the Tianshan Mountains – one of the longest mountain ranges in the world – from three hours to about 20 minutes.
It will significantly boost connectivity between northern and southern Xinjiang and help the region, which is a core area on the Silk Road Economic Belt, further open up to Eurasian countries, the regional government said.

As a crucial section of the 319.72km Urumqi-Yuli Expressway, which runs from the regional capital of Urumqi in northern Xinjiang to Yuli county in southern Xinjiang, the tunnel will reduce the driving time between the two locations from about seven hours to just over three hours. The expressway is expected to open to traffic in 2025.

The tunnelling work started in April 2020. The construction team had to overcome many difficulties and continuously innovate to beat challenges such as an average construction elevation of over 3,000m and complicated geological conditions.

With the construction site located close to the Tianshan No. 1 Glacier and the Urumqi water source protection area, the team was also required to maintain exceptionally high ecological protection standards.

The team adopted the construction pattern of three drifts and four shafts, according to China Communications Construction Xinjiang Transportation Investment and Development, which built the tunnel.

Two specially designed tunnel boring machines were used to build the middle drift and create a working platform for further tunnelling, the company said.

This is the first time a tunnel boring machine was used to construct a road tunnel in China, marking a major technological breakthrough. The use of new technologies helped reduce the construction time from 10 years to just over four years, the company added.

Mr Yang Dongdong, a member of the construction team, said they successfully dealt with many incidents, including wall collapses and gushing water. "I feel very emotional to see the tunnelling work is finally over. It's like seeing my child being born," he said.

Company president Cui Jingchuan said all the machinery used to tackle the unprecedented challenges was domestically developed.

"We have broken the technological monopoly of foreign countries in this field and taken the lead in innovation," Mr Cui added.

The regional government said the new tunnel will boost the flow and communication of people between northern and southern Xinjiang, allowing for more career and development opportunities

Source: https://www.straitstimes.com/asia; 30.12.2024

Boring on Gotthard main tunnel (through the Swiss Alps) moves a step closer

The single shield TBM S-1384, named Paulina, has a diameter of 12.39m, is 102m long and weighs approximately 2,500 tons. The cutterhead is powered by 16 electric motors, delivering a combined output of 5,600 kW or 7,600 horsepower.

The TBM will be deployed by the consortium of Marti Tunnel, Mancini & Marti, and Ennio Ferrari SA on Main Lot 341, to build the 7.75km-long southern tunnel section.

The machine has been designed to drive through the hard rock of the Alps, where granite, gneiss and slate are expected.

Excavation of the southern access tunnel with a 7.4m diameter Herrenknecht single shield TBM was completed in August last year.

The new Gotthard Tunnel will supplement the existing 16.9km tunnel between Göschenen in the Swiss canton of Uri and Airolo in the canton of Ticino. The 45-year-old tunnel needs repair so the Swiss Federal Roads Office (ASTRA) has commissioned the construction of a second, parallel tube to ensure that traffic can continue to flow during the renovation and closure of the tunnel. Once work on both tubes has been completed, one tunnel with one lane (plus emergency lane) will be available for southbound and one for northbound traffic.

Around 16,000 vehicles use the Gotthard road tunnel every day.

Source: https://www.tunnelsandtunnelling.com, 14.11.2024

The $20-Trillion Tunnel That Could Link New York and London

Proposals for a tunnel connecting the U.K. to the U.S. underneath the Atlantic Ocean have resurfaced, but with a price tag of almost $20 trillion, the project is a big task.

The idea of a "Transatlantic Tunnel" has existed for a while, though issues of scale, cost, and utility have long stifled any realistic developments. While a flight between London and New York City takes around eight hours, it had previously been unclear if trains running underneath the ocean would make the journey fast enough to justify the cost of construction.

With the two global cities being over 3,000 miles apart, construction would take several years—the 23.5-mile Channel Tunnel linking England and France took six years to construct—and require significant investment. Estimates over the cost have reached as high as £15.5 trillion, the equivalent of $19.8 trillion.

However, developments in vacuum tube technology have made the concept more viable. By creating a vacuum within the tunnel and using pressurized vehicles, trains traveling along the structure could theoretically reach speeds of more than 3,000 mph, making the journey between London and New York barely an hour long.

This is because trains would not face any air resistance within the tunnel, allowing them to reach higher speeds than unconventional trains. This design, which has seen new development in Indian transportation, is sometimes called a "hyperloop".

Cutting the intercontinental journey down to a matter of minutes means that for the first time, the Transatlantic Tunnel justifies the hefty price tag that undersea construction comes with, as it would become significantly more efficient and environmentally friendly than flying.

However, there is still no set design for the tunnel. Various proposals have suggested a tunnel underneath the ocean floor, while others have suggested building it on stilts. One design even proposed making the tunnel float, held in place by cables attached to the ocean floor.

The Channel Tunnel linking France to the U.K. was built over a six-year period. If the trans-Atlantic tunnel were built at the same speed, it would take 782 years to cross the 3,000 gap between the U.S. and Britain.

Trains traveling through a vacuum were popularized by Elon Musk, who wrote a paper in 2013 that proposed sending capsules through a vacuum environment to reduce air resistance. Trials of the technology are underway in India and China, with plans to integrate it into their high-speed rail systems nationwide.

Source: https://www.newsweek.com, 9.12.2024

Indian premier Mr. Narendra Modi inaugurated Z-Morh tunnel on Srinagar-Leh highway

Prime Minister Narendra Modi inaugurated on January 13 the Rs 2,400 crore strategic Z-Morh tunnel on the Srinagar-Leh National Highway, which will be a major step towards making the Ladakh region accessible by road throughout the year.

The 6.5 km tunnel is vital in terms of the defence needs of the country in the Ladakh region and also connecting the youngest union territory to the rest of the country.

Without naming the tunnel project, Jammu and Kashmir Chief Minister Omar Abdullah, in a social media post, said the infrastructure will be a game changer for the expansion of tourism.

Heavy snowfall around the Gund area of Kangan forces the closure of Srinagar-Sonamarg during the winter months. With the opening of the Z-Morh tunnel, the Srinagar-Sonamarg stretch of the road will be an all-weather road and also boost winter tourism in Sonamarg area, officials said.

The work on the prestigious Z-Morh tunnel project began in May 2015 and was completed last year.

Besides reducing the travel time, the tunnel will replace the treacherous track of road which is avalanche prone as well.

Source: Concise information from various sources, 14.1.25

Fehmarnbelt tunnel project in Germany tests CO_2 reduced concrete

The Fehmarnbelt connection is the world's longest submerged tunnel at 18 kilometer long. When completed, it will connect Rødbyhavn on Lolland in Denmark with the island of Fehmarn in Germany. The immersed tube tunnel will carry two lanes of traffic in each direction, along with two rail tubes. The roadway portion of the tunnel is forecast for 2029.

The Fehmarnbelt project in Germany is the first civil engineering project to test the use of CO_2-reduced concrete in the construction of mega projects of the future.

The contractor consortium, Femern Link Contractors, FLC, is conducting the trial casting using a completely new type of concrete at a specially allocated area at the tunnel construction site in Rødbyhavn.

The trial casting is part of a larger collaboration on the concrete of the future, known as CALLISTE, in which Femern A/S, the developer behind the Fehmarnbelt project, is involved together with Aalborg Portland, the Technological Institute, several universities, concrete suppliers and public and private developers.

“We have strict requirements as regards strength and durability for the construction of mega projects, such as the Fehmarnbelt tunnel, and this is of particular relevance when building in the marine environment. We’re also firmly focused on reducing the CO_2 footprint from our construction project through new technologies and we want to give additional impetus to the development of concrete of the future,” says Kim Smedegaard Andersen, Deputy Technical Director at the Fehmarnbelt project.
Participating from the cement industry is Aalborg Portland, a sub-supplier of cement to the Fehmarnbelt tunnel.

Aalborg Portland has developed a type of cement known as Futurecem, which can reduce the CO_2 footprint from concrete production by 25 percent compared to traditional concrete. This is achieved by replacing some of the clinker content in the cement with specially treated clay and limestone. The CALLISTE collaboration is conducting applied research and aims to develop this technology further. The aim of the collaboration is to halve the need for cement in concrete while maintaining high strength and durability.

The trial casting at the Fehmarnbelt project is the first time that a type of concrete containing cement has been attempted where approximately 50 percent of cement clinker has been replaced by a special combination of clay and limestone. This significantly reduces the CO_2 footprint compared to the types of cement normally used in Denmark, says Pernille Nyegaard, Centre Project Manager at the Technological Institute.

“This is the first time for us to cast with the new type of concrete on this scale, which means that we can investigate the concrete’s durability. The trial is important to demonstrate how the concrete performs in a real traffic environment with frost and salting,” Nyegaard said.

If the CALLISTE project achieves the expected results, it will open up the possibility for the new concrete, with a reduced CO_2 footprint, to be used in future construction projects, where concrete production carries significant weight in the CO_2 accounts.

“As a state-owned company, we bear a special responsibility to contribute to a greener construction industry and develop new solutions that reduce the CO_2 footprint. We look forward to sharing the results of the CALLISTE project with our partners and contractors,” says Kim Smedegaard Andersen, Deputy Technical Director at the Fehmarnbelt project.

Source: https://tunnelingonline.com/, 10.12.2024

MoU for landslip forecast: GSI to sign pact with Italian research council

The Geological Survey of India (GSI) will sign a memorandum of understanding (MoU) with the Research Institute for Geo-Hydrological Protection of the National Research Council (CNR-IRPI), Italy, to collaborate on improving India's landslide forecast.

The Union cabinet in its meeting held on December 6, 2024 approved the proposed MoU between the GSI and the CNR-IRPI.

The National Research Council has worked extensively on landslide-related issues.

"This partnership aims to enrich the knowledge and acquire skills in landslide forecasting and early warning through collaborative research," read a statement issued by the ministry of mines under which the GSI functions.

"It is crucial to enhance and scale up India's Landslide Early Warning System (LEWS) to international standard, enabling better prediction and mitigation of landslide related damages, and to overcome the situation like Wayanad landslide in Kerala."

On July 30, 2024, multiple landslides triggered by heavy rainfall wreaked havoc on the hilly areas of Meppadi gram panchayat in Vythiri taluk, Wayanad district.

Landslides are frequent in the Himalayan regions of the country. Data suggest that in India, about 0.42 million sqkm or 12.6 per cent of land area, excluding snow-covered regions, is prone to landslide hazards.

In 2024, landlocked Sikkim faced major connectivity issues because of landslides.

Sources said the GSI established a state-of-the-art National Landslide Forecasting Centre (NLFC) in Calcutta to develop and operationalise the regional LEWS. "The vision of the NLFC is to provide timely information on landslide forecasting to stakeholders and the community for preparedness," said a source.

At the moment, the NLFC provides live reports on the forecast of landslides in Kalimpong and Darjeeling districts, and the Nilgiri district of Tamil Nadu. Ground testing of the live telecast in 13 other districts in India is also in progress.

The forecast is at present more for a region than a specific area or a hill slope.

"In this context, the collaboration with the Italian institution is an important development," the source said.

Since 2016, the GSI has been working on LEWS to predict rainfall-induced landslides. Various institutions make attempts to use sensors to forecast landslides for a specific hillside.

The Indian Institute of Technology (IIT), Mandi, has developed a sensor-based landslide monitoring system that tracks soil movement to make predictions. The system has in some instances provided forecasts three hours in advance.

Installing the system in all landslide-prone areas is a herculean task, said another source. "The area where a landslide might occur is huge in the country. The cost of setting up such a site-specific sensor is huge at the moment," said the source.

Studies are also being conducted to correlate hourly rainfall data and the possibility of landslips in a given area.

Source: The Telegraph, 15.12.2024

Herrenknecht AG to supply India's largest TBMs

Herrenknecht AG is set to play a key role in the construction of the prestigious Versova-Dahisar Link Road in Mumbai. The German family-owned company will supply two Mixshields, each with a diameter of 15,620 mm, which will make them the largest tunnel boring machines in India. At the same time, the recent visit of the Indian Ambassador in Germany to Herrenknecht headquarters underscores the strategic importance of the Indian market, which is emerging as one of the fastest-growing regions in global tunneling.

The Versova-Dahisar Link Road (VDLR) is the second phase of the Mumbai Coastal Road Project (MRCP), spanning a length of 22.93 kilometers. Packages C & D are the two parallel Underground tunneling packages of VDLR project, each extending 3.1 kilometers in length. The planned project will connect the suburbs of Versova and Dahisar along Mumbai's western coastline, easing traffic congestion on major routes such as the Western Express Highway. Underground tunnel sections will play a critical role, particularly in connecting sensitive areas such as the city center and densely built urban regions.

The project owner, Brihanmumbai Municipal Corporation (BMC), and client Megha Engineering & Infrastructures Ltd (MEIL) rely on Herrenknecht's longstanding expertise. The two powerful Mixshields are optimally designed for the challenging geological conditions of the region: slightly weathered basalt with a uniaxial compressive strength (UCS) of up to 150 MPa. The overburden of the tunnels ranges between approximately 13 and 23 meters. To ensure safe operations under these conditions, the TBMs are designed for a maximum operating pressure of 5 bar. The machines will be manufactured at Herrenknecht's Chennai plant in India, using core components from Schwanau. Thereby local expertise is strengthened, and transport distances are reduced in an environmentally friendly manner.

"The tunnel sections of the Versova-Dahisar Link Road are a prime example of sustainable urban mobility. We are proud to support this significant project with our cutting-edge technology," explains Dr.-Ing. E.h. Martin Herrenknecht, Chairman of the Board of Management at Herrenknecht AG.

Upon completion, the Versova-Dahisar extension of the coastal road is expected to reduce the travel time by 70 percent – a decisive improvement for millions of commuters in Mumbai.

This project highlights Herrenknecht's strong commitment to India, one of the world's most dynamic markets for tunnel construction. Alongside projects such as the Metro in Delhi and Chennai or the Rishikesh-Karnprayag railway tunnel project in Uttarakhand, the VDLR project marks another milestone that reinforces the company's position in the country. With its office in Delhi, a production facility in Chennai, and close partnerships with local stakeholders, Herrenknecht is driving the development of underground infrastructure. The company currently employs around 150 people in the region.

"Only a few other countries are investing as ambitiously in the expansion of infrastructure as India. We are excited to be part of this dynamic growth story," emphasizes Dr. Martin Herrenknecht.

On December 19, 2024, the Indian Ambassador to Germany, Mr. Ajit Gupte, visited Herrenknecht AG in Schwanau. The visit included a tour of the production facilities and a discussion with the company's management board.

"Herrenknecht's contribution to India's infrastructure development impressively showcases the potential of collaboration between our two nations," Ambassador Gupte highlighted.

Source: https://tunnelingonline.com, 1.1.2025

Top 10 longest railway tunnel in India

S. No.	Name	Location	Length (in Km)	Opened
1.	Pir Panjal Railway Tunnel	Jammu and Kashmir	11.21	26th June 2013
2.	Trivandrum Port Tunnel	Kerala	9.02	2022
3.	Sangaldan Railway Tunnel	Jammu and Kashmir	7.1	2017
4.	Rapuru Tunnel	Andhra Pradesh	6.6 km	2019
5.	Karbude Tunnel	Karabude, Maharashtra	6.5 km	1997
6.	Natuwadi Tunnel	Maharashtra	4.8 km	1963
7.	Tike Tunnel	Maharashtra	4.07 km	1997
8.	Maliguda Tunnel	Koraput, Odisha	4.4 km	1963
9.	Berdewadi Tunnel	Maharashtra	4 km	1997
10.	Savarde Tunnel	Maharashtra	3.5 km	1997

Source: https://currentaffairs.adda247.com/, 9.9.24

Light at the end of the tunnels: India set for big security, transport boost

The opening of the Z-Morh tunnel at Sonamarg in Jammu & Kashmir by Prime Minister Narendra Modi on Monday, 13th Jan 2025, along with the likely completion next year of the Zoji La tunnel that lies ahead, will provide vital all-weather connectivity between Srinagar and Leh, boosting military mobility and logistics support for deployed forces in the Ladakh sector as well as tourism in Ladakh's back country, officials aware of the development said.

Around 60% of work on the Zoji La tunnel has been completed, and it is expected to be ready by September 2026, the officials said.

It was at Zoji La that the Indian Army scored one of its finest victories in the 1947-48 J&K campaign. It took back the 11,600-ft pass from Pakistan in November 1948, in a bold assault called Operation Bison. Tanks were used in war at those heights for the first time anywhere in the world then.

The traditional Srinagar-Leh axis is one of the two existing routes to Leh -- the other being the Manali-Leh road. Neither is currently all-weather, and both remain shut for five to six months in the winter, presenting a logistics nightmare both for the armed forces and the civil administration, and impeding socioeconomic development of the Ladakh region, the officials said.

India's infrastructure push to provide year-round connectivity to the Ladakh region will get another boost in three years when the route from Manali to Leh via the Nimmu-Padam-Darcha axis will be functional, the officials added. This will be the third route to Leh.

In July 2024, Modi carried out the "first blast" for the Shinku La tunnel in Ladakh, aimed at providing all-weather connectivity from Manali to Leh via the Nimmu-Padam-Darcha axis. The "first blast" was significant as it marked the beginning of the tunnel's construction by the Border Roads Organisation (BRO), which is at the centre of India's forward infrastructure push.
The tunnel at 15,800 ft, expected to be ready in 2028, will be the world's highest, surpassing China's Mila tunnel at 15,590 ft.

The 4.1-km long Shinku La tunnel will cut the distance between Manali and Leh by 60km, bringing it down from 355km to 295km. The Nimmu-Padam-Darcha road is strategically important as it is shorter than the other two axes, and crosses only one pass --- the 16,615-ft high Shinku La. The military's readiness, among other things, depends on infrastructure in forward areas -- a landscape dotted with towering mountains, valleys and rivers.

All-weather connectivity to Ladakh is critical as the region is currently totally cut off from the rest of the country for several months in the winter, said strategic affairs expert Lieutenant General Harpal Singh (retd).

"It is as critical for swift military mobilisation in an exigency as it is for the region's integration and socio-economic development. It will help arrest the region's demographic shift caused by people moving to the lower hills because of poor connectivity. Maintenance costs will also go down as there will be no need to stock for the winters," Singh added.

Seamless movement

Built at a cost of over ₹2,717 crore by National Highways and Infrastructure Development Corporation Limited (NHIDCL), a company fully owned by the union ministry of road transport and highways (MoRTH) -- the Z-Morh (named after a Z-shaped bend) tunnel at a height of 8,652ft will ensure uninterrupted traffic flow between Srinagar and Ladakh year-round, bypassing avalanche-prone areas and providing a secure route for travellers, the MoRTH officials said.

It will facilitate seamless movement of local agricultural goods from Srinagar to Leh, significantly reducing travel time to 15 minutes from at least two hours. This bidirectional, 6.4-km tunnel features a parallel escape tunnel for enhanced safety. The tunnel project includes a 3.7km creeper lane for heavily loaded vehicles, a 4.6km western approach road, a 0.9km eastern approach road, two major bridges, and one minor bridge.

Other than facilitating seamless movement of local agricultural goods from Srinagar to Leh for locals and the overall supply chain for the armed forces, this road will also promote winter and religious tourism through enhanced access to Sonamarg and other destinations, the officials said. The Z-Morh tunnel, along with the completion of Zoji La tunnel, will reduce the travel time from Srinagar to Leh by three-and-a-half hours.

The Z-Morh tunnel project, originally planned in 2005, was to be built by the BRO. But later the project was transferred to NHIDCL in 2016 after the BRO project failed to take off through BOT (build-operate-transfer) mode based on a detailed project report prepared in 2013. NHIDCL took up the project in EPC (engineering, procurement, and construction) mode with Modi laying the foundation stone in May 2018.

With the inauguration of the Z-Morh tunnel, out of the 33 tunnels planned in the J&K in the recent years, 15 are ready and another 18 are under construction, HT has learnt.

Racing to reshape the strategic landscape of Ladakh, where China's predatory conduct and military ambitions led to the lingering border spat, India is also on the verge of completing an ambitious project to provide much-needed alternative connectivity to Daulat Beg Oldi (DBO), India's northernmost military base near the Line of Actual Control (LAC).

The construction of the 130-km road from Sasoma in the Nubra Valley to DBO near the Karakoram Pass is about to be completed. The existing 255-km Darbuk-Shyok-Daulat Beg Oldi (DS-DBO) road runs close to the LAC. Sasoma and Darbuk can be reached from Leh via two different road axes. Last March, Modi dedicated the Sela tunnel project in Arunachal Pradesh to the country, with the infrastructure upgrade putting military mobility and logistics support for the army in the strategic Tawang sector in the fast lane.

It is the world's longest twin-lane tunnel above 13,000 feet. The new route provides all-weather connectivity and allows quicker deployment of weapons, soldiers and equipment to forward areas near the LAC. The BRO has built the tunnel on the road connecting Tezpur in Assam to Tawang in Arunachal's West Kameng district.

Source: Hindustan Times, New Delhi, 14.1.2025

Is India splitting apart beneath the surface? Geologists uncover new evidence

The Himalayas - the world's highest mountain range, owe their existence to a colossal collision between the Indian and Eurasian tectonic plates over 60 million years ago. However, recent studies have revealed that India is splitting apart beneath the surface.

Continental plates like India's are thick and buoyant, unlike dense oceanic plates, making their behaviour during collisions unique. According to a report by the Brighter Side of The News, scientists have long debated what happens to the Indian Plate as it pushes against Eurasia. A group of scientists believe that the plate resists subduction entirely, while others suggest part of it crumples at the edge.

New data on earthquake waves and gas analysis, this time in the northeastern Indian region near Bhutan, indicate another mechanism - "delamination." That is, the denser lower portion of the Indian Plate is being torn away from the upper portion as it is sheared down into the Eurasian Plate. Researchers also identified a tear at the edge of the delaminating plate, with gaps through which hot mantle rock rises.

This discovery could explain the region's complex geology, including the crescent-shaped Himalayas. It also sheds light on earthquake risks, as the tearing plate may influence stress patterns in the Earth's crust.

Notably, this marks the first time such behaviour has been observed in a descending tectonic plate, offering fresh insights into the dynamic processes that shape our planet.

Source:https://www.msn.com/en-in/news/India, 14.1.2025

Awaken to restful sleep

For most human beings, sleep is the deepest state of restfulness. A far deeper state can be achieved through yogic processes. But for most, the profoundest state of restfulness is sleep. It is best not to overthink this simple natural process, and to approach it with total abandon.

We live in times when people want to do everything the hard way. Whether it is walking in the park or sleeping, everything is done in a state of tension. However, what the body really needs is restfulness. If you keep the body relaxed and infuse a spirit of abandon into your work or daily exercise, your activity will itself become restful.

Do not get dogmatic about these simple processes. At least in your sleep, don't take a position. But there are some simple insights you can integrate into your life. For instance, if you sleep without a pillow or a low pillow, which doesn't allow the spine to get pinched, neuronal regeneration and cellular revitalization will vastly improve. Likewise, if you sleep without a pillow, it is best to lie on your back in a supine position, rather than on your side. This position is known as *Shavasana,* and it enhances the purification and rejuvenation of the body, promoting the free flow of movement in the energy system. Also, it is best not to go to bed on a full stomach, because the drop in metabolism is adverse for digestion and organ function. Many ask if wearing magnets on the body can have an impact on their well-being. Human physiology is far too complex for such a simplistic approach. It's important to remember that we are living on a magnet. Aligning with this highly magnetic entity which is our very planet is far more impactful than merely wearing magnets. In the northern hemisphere, it is best not to sleep with one's head placed towards the north. This is not mere superstition. There is now much scientific evidence to support this simple yogic understanding. The logic is simple: the magnetic pull of the Earth is such that if your head is positioned northward, there is a natural movement of blood towards the brain. This increased circulation can exacerbate pressure on the brain and can create problems, especially for the elderly and the sick. As you know, those who are anaemic are prescribed iron. If the iron content in one's blood is affected by the pull of the magnetic pole of the Earth, there can be health problems. More commonly, there will be disturbed sleep. Those with sturdy physiologies may not suffer adverse effects, but their sleep is likely to be disrupted by the heightened blood circulation in the brain.

What are best directions to sleep in? In the northern hemisphere, it is best to sleep with your head facing east or northeast. The west is fine, or even the south, if you must. In the southern hemisphere, the logic is reversed. It would be best for people in this part of the world to sleep with their heads positioned in any direction but the South. Other than these simple adjustments, approach your sleep with absolute freedom. If you manage your food, your mental attitudes and emotional life sensibly, you will find your sleep quota will fall. If you adopt certain yogic practices, your sleep quota will fall further, ensuring that you spend more of your life in a wonderful state of consciousness, aliveness and exuberance.

Source: Times of India, Bengaluru, 29.12.2024

Broadcast your prayer through calm mental microphone

Your success in life depends not only upon your natural ability; it depends also upon your determination to grasp opportunities presented to you. Opportunities in life come by creation, not by chance. They are created by you, either now or in the recent or distant past. Since you have earned them, use them to the best advantage. Your thoughts will inevitably bring you either to failure or to success – according to which thought is the strongest. Therefore, you must thoroughly believe in your own plans, use your talents to carry them out, and be receptive so that God can work through you.

Many people believe they should pity themselves and that it will bring a little relief. But self-pity is an addiction like opium. Accuse no one, not even yourself. Blame and accusation won't erase what has been done. Reconcile yourself to what is, and to what needs to be done about it. You can reshape every karma, provided that from today onward you live by soul-consciousness.

You are stronger than your tests. If you do not realize it now, you will have to realize it eventually. *God gave you willpower, concentration, reason, and common sense so that you can help yourself.*

Never allow your mind to entertain thoughts of illness or limitation, and you will see your body change for the better. Mind is the power that is creating your body, and if your mind is weak, the body becomes weak. *Don't grieve or worry about anything. No matter what happens, you must be absolutely free in your mind*.

Sincere words or affirmations repeated feelingly and willingly are sure to move the omnipresent cosmic vibratory force and render you aid in difficulty. Appeal to that Force with infinite confidence, casting out all doubt. *In the early morning and before going to bed you must make contact with God in order to succeed.*

Your soul's message cannot reach the Divine through your mental microphone if the hammers of restlessness break it. Only through the practice of meditation are you able to feel peace. Increasing peace, or bliss, is the surest proof of Almighty's contact and response.

Just as you cannot receive an answer by calling someone on the phone and then running away, so also you must not pray once and run away, but *continuously broadcast your prayer to God through your calm mental microphone.*

The surest way to all-round prosperity – or attainment of health, wealth, peace, and wisdom – lies in reclaiming your lost divine birthright by continuously broadcasting your message to God through your calm mental microphone until you receive His answer through the increased bliss of meditation.
The Divine can never hide from the person who exercises devotion, love, right meditation, and soul-call. *God never fails to listen to soul calls*, but He does not always respond in the way we expect. Whenever new, ever-increasing joy fills your silence, know that you have contacted God and that He is answering you through your soul.

-Paramhansa Yogananda
The Speaking Tree
Source: Times of India, 10.1.2025

New year celebration

In ancient days, people celebrated the New Year by giving a neem leaf along with some jaggery; something bitter and sweet. And then people would look at the calendar. Because knowledge of time, and acceptance of sweetness and bitterness, give strength to move ahead in life. Neem is good for health though it is bitter. It destroys harmful bacteria. In life, what you considered as bitter has given you depth, made you strong. The challenges that came to you made you grow stronger and humbler.

Jaggery represents sweetness. It gives you comfort. If life is only bitter, it cannot be sustained. If life is all sweetness, there is no depth. In the cycle of time, there is always something wonderful happening, and there are some less palatable events. In unfavourable times, you need to have

strength, courage and knowledge. When good things happen, you must share it with others and serve.

On New Year's Eve and Day, we honour time, life and creation, and thank the divine for what the past year has given to us. The past year has given many lessons, and New Year 's Eve is the time to reflect on these lessons.

Welcome with open hearts the New Year 2025, and the wisdom, health, happiness and prosperity it is about to bring. Wish for wisdom more than anything else because when there is wisdom, happiness follows spontaneously.

Source: Economic Times, Bengaluru, 1.1.2025

MP scientists study whether 'hawan' can bring rain

Scientists from the Madhya Pradesh Council of Science and Technology and Scientific Council, Indian Institute of Technology, Indore, and Indian Institute of Tropical Meteorology (IITM), have started a research project to find whether Som Yagya, a *hawan*, in which juice of a medicinal plant Samovalli (Sarcostemma brevistigma, a kind of oleander) is offered to the fire which can purify the environment and promote cloud condensation, bringing about rain. Hawan or Homa is a Sanskrit word that means "to offer" referring to act of making offerings into the fire. It is a significant part of Vedic traditions, which is performed for various purposes, including invoking blessings, seeking purification and honouring dieties.

On April 24, around 15 scientists, with an army of instruments gathered at Mahakaleshwar temple in Ujjain in Madhya Pradesh, where seers performed a Som Yagya. They measured multiple parameters such as the release of various gases, changes in temperature and humidity, aerosol behaviour, and cloud condensation from April 24 to 29.

Facilitated by non-government organisation (NGO) Akshay Krishi Pariwar which aims to bridge traditional agricultural practices with modern ones, the study, scientists said, is aimed at validating religious beliefs and traditions.

Rajesh Mali, a scientist who retired from the India Meteorological Department (IMD) and who is part of the effort said: "This is a unique project which started on April 24, 2025 and will go on for next a few years. In this project, we are measuring various things by using 13 instruments. The two main instruments are Cloud Condensation Nuclei Counter (CCN counter) and a Tethersonde (an instrument that measures atmospheric parameters). CCN measures the concentration of aerosol particles in air to build blocks of cloud droplets. Tethersonde, a balloon with a sensor, measures pressure, temperature and humidity in the area where the Yagya is being performed."

He added that other machines used include the Scanning Mobility Particle Sizer (SMPS) to calculate aerosol events.

Another scientist Dr Yang Lian from the regional office of IITM added: "After measurement, we will analyse the effect of Yagya on environment. We are noting down the data four times a day -- two times during Yagya and in morning and evening. The comparative data will help us to conclude our study."

Anil Kothari, the director of Madhya Pradesh Council of Science and Technology, which is also participating in the research said, "This study will work as bridge between science and ancient practices of India. It will offer new insights in the field of environment and science."

Akshaya Krishi Pariwar convener Gajanand Dange said that the purpose is to provide "scientific evidence" for traditional beliefs which are there for centuries. If the study fails, he added, the team will look for new machines which can measure the atmospheric changes better.

"Our motive is not to question the efficacy of Yagyas and its effect mentioned in the Vedas. Our effort is to provide supportive scientific evidence so that these traditional methods can be used by the scientists to deal with problems such as global warming and drought," he said.

Source: Hindustan Times, 29.4.2025

Humour

- Inflation is when you pay Rs. 60/- for the Rs. 30/- haircut you used to get for Rs. 10/- when you had hair.

- Sam Ewing (adapted)

- One advantage of marriage is that when you fall out of love with him or he falls out of love with you, it keeps you together until you fall in again.

- Judith Viorst

- Politics is the only business where doing nothing other than making the other guy look bad is an acceptable outcome.

- Mark Warner

- The problem with beauty is that it's like being born rich and getting poorer.

- Joan Collins

- Before I met my husband, I'd never fallen in love though I'd stepped in it a few times.

- Rita Rudner

- Politicians are the same all over. They promise to build a bridge even where there is no river.

- Nikita Khrushchev