

## How AI can help spot the copper we need

- The world is going to need massive quantities of copper — an essential and highly efficient mineral used in renewable energy systems to generate power from solar, hydroelectric, thermal and wind energy.
- Using artificial intelligence to discover copper deposits formed along the ancient mountain ranges over the past 80 million years.

### Importance of copper

- Copper is an excellent conductor of thermal and electrical energy; the power systems that utilise this metal generate and transmit energy with high efficiency and with minimum environmental impacts.
- Use of copper in energy systems, therefore, helps reduce carbon dioxide emissions. It can also be recycled completely many times over without any loss in performance.
- The global need for copper, however, could increase by 350 per cent by 2050, according to a 2016 study published in journal Science Direct.
- The study underlined that the current reserves could deplete between 2035 and 2045, as wind and solar energy gains more

traction and more people shift to electric vehicles.

- The International Energy Agency in its report published May 2021 also flagged global supply of copper for accelerated deployment of solar panels, wind turbines and electric vehicles.

### GPlates technology

- GPlates software — desktop software that primarily helps understand where copper deposits have formed along the mountain belts — uses machine learning to understand the link between copper deposits and the evolution of the subduction zone.
- The branch of artificial intelligence measures how fast the tectonic plates are moving towards each other, how far the plate is from the subduction zone, how much copper there is in the crust, etc.

### About Subduction

- When tectonic plates converge, one plate slides beneath the other and descends into the Earth's mantle at rates of 2-8 centimetres a year.
- The process creates a variety of magmatic rocks (formed through the cooling and solidification of magma or lava) and copper deposits along the edge of the continent. The process is called subduction.

## DTE

### **Offshore wind energy potential in India**

- India's capacity to generate electricity from wind reached 39.2 gigawatts (GW) a year in March 2021.
- An addition of another 20 GW over the next five years was in the offing, according to Global Wind Energy Council (GWEC).
- The compound annual growth rate for wind generation has been 11.39 per cent between 2010 and 2020, and for installed capacity, it has been 8.78 per cent.
- The Union Ministry of New and Renewable Energy (MNRE) has set a target of installing 5 GW of offshore capacity by 2022 and 30 GW by 2030
- In addition to the slowing economy, low tariffs, tariff caps and curtailments, the sector was heavily burdened by a multitude of duties and tariffs.

### **About offshore wind energy**

- Offshore wind energy refers to the deployment of wind farms inside the water bodies. They utilise the sea winds to generate electricity. These wind farms either use fixed-foundation turbines or floating wind turbines.

- A fixed-foundation turbine is built in shallow water, whereas a floating wind turbine is built in deeper waters where its foundation is anchored in the seabed. Floating wind farms are still in their infancy.
- Offshore wind farms must be at least 200 nautical miles from the shore and 50 feet deep in the ocean. Offshore wind turbines produce electricity which is returned to shore through cables buried in the ocean floor. The coastal load centers distribute this electricity based on priority.
- In India, where land is limited and the population is increasing, large wind farms positioned over water bodies will be vital.

### **Steps needed**

- Renewable purchase obligation: Government-specified obligated entities such as power distribution companies, open access consumers and captive users can purchase clean energy as part of their total electricity consumption through a renewable purchase obligation
- Lower taxes: In India, the GST Law exempts electricity and power sales from GST. In contrast, wind power generation companies cannot claim input tax credits when they pay GST to purchase goods and/or services for setting up the project.

- Feed-in tariff: Discoms can adopt feed-in tariff (FiT) regulations and make offshore wind power procurement mandatory

#### **DTE**

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### **PRADHAN MANTRI GRAM SADAK YOJANA**

#### **About scheme**

- Pradhan Mantri Gram Sadak Yojana (PMGSY) was launched as a one-time special intervention to provide rural connectivity, by way of a single all-weather road, to the eligible unconnected habitations of designated population size (500+ in plain areas and 250+ in North-Eastern States, Himalayan States and Himalayan Union Territories as per 2001 census) in the core network for uplifting the socio-economic condition of the rural population.
- Relaxation has been provided to the Tribal (Schedule V) areas and Selected Tribal and Backward Districts (as identified by the Ministry of Home Affairs (MHA) and Planning Commission) and unconnected habitations in these areas with a population of 250 persons and above in the Core Network as per Census 2001 are

eligible for connectivity under the scheme.

- In the critical Left Wing Extremism affected blocks (as identified by Ministry of Home Affairs), additional relaxation has been given to connect habitations with population 100 persons and above as per 2001 census
- the world is going to need massive quantities of copper — an essential and highly efficient mineral used in renewable energy systems to generate power from solar, hydroelectric, thermal and wind energy.
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#### **PIB**

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### **New river boards**

- The Union Ministry of Jal Shakti's gazette notification on the jurisdiction of the Krishna and Godavari River Management Boards over projects and assets in the fields of irrigation and hydropower, though delayed, is a welcome development.
- The two river boards can now administer, regulate, operate and maintain 36 projects in the Krishna Basin and 71 in the Godavari to

ensure judicious water use in Andhra Pradesh and Telangana

- The States have been locked in a battle of sorts over the utilisation of Krishna water, with Andhra Pradesh proposing a few projects, including a lift irrigation scheme for Rayalaseema, and, in turn, Telangana coming up with half-a-dozen projects of its own.
- The Centre must now see to it that the empowered Boards function in a fair manner, as the Union government's decision will be final with regard to matters concerning jurisdiction of the two bodies.
- Both States have their own justification to pursue new water and power projects as several areas await economic development.
- Rayalaseema is a dry region and it was grievances over poor utilisation of the two rivers in then undivided Andhra Pradesh that was a factor that led to the bifurcation.
- At the same time, the two States should instead focus on water and energy conservation and improving the efficiency of irrigation schemes and hydel reservoirs.
- There was an 81%-plus growth in the Sensex between April 2020 and March 2021 in the backdrop of real GDP growth plummeting to -7.3% during the same period
- The equity bubble in India has not evolved in isolation.
- The global liquidity glut, following the expansionary, easy money policies adopted by the fiscal and monetary authorities of the OECD and G20 countries, has led to equity price inflation in several markets driven by FPIs, especially in Asia.
- With COVID-19 vaccination and economic recovery proceeding apace in the U.S., the U.K. and Europe, fiscal and monetary policy stances will change soon.
- Once the U.S. Federal Reserve and other central banks start raising interest rates, the direction of FPI flows will invariably change bringing about corrections in equity markets across Asia
- India remains particularly vulnerable to a major correction in the equity market because of two reasons.

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### Equity bubble

- Empirical evidence across several centuries, however, bears out a home truth — sooner or later, bubbles burst.
- First, the pace of COVID-19 vaccination in India, given the vast population, lags behind most large countries. India has so far fully vaccinated only 6.3% of its population.

- In the absence of a substantial increase in the vaccination budget and procurement, large segments of the Indian population will remain vulnerable to a potential third wave of COVID-19, with its attendant deleterious impact on the real economy.
  - Second, India's economic recovery from the recession will remain constrained by the weak fiscal stimulus that has been delivered by the Central government.
  - Data from the IMF clearly show that while the total global stimulus consisted of additional public spending or revenue foregone measures amounting to 7.4% of global GDP, India's fiscal measures amounted to 3.3% of GDP only, less than half of the global average
- religious groups segregated and live and marry within their own community.
  - This curious finding has resulted in a BBC Asia report stating that India is neither a melting pot (diverse cultures blending into one common national identity) nor a salad bowl (different cultures retaining their specific characteristics while assimilating into one national identity) but a thali (an Indian meal comprising separate dishes on a platter where they are combined in specific ways).
  - this form of living constituted a distinctly Asian cosmopolitanism.
  - It had developed in regions which have to accommodate not just diversities but "radical diversities" that may prove to be dangerous if they are brought together in the same space.

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### **Radical otherness**

- The U.S.-based Pew Research Center's survey has thrown up an interesting finding on religious tolerance in India: Indians of all faiths, paradoxically, support both religious tolerance and religious segregation.
  - Most Indians (84%) surveyed said that respecting all religions is very important to them and all religious groups must be allowed to practise their faith freely.
  - Yet, a considerable number of them also said they preferred to have
- To accommodate these differences and peculiarities in the practices of different communities, everyday mechanisms of coping have evolved.
  - This has resulted in a unique form of cosmopolitanism where differences can be accommodated without pressuring members of one community to be like the other based on a notion of universal brotherhood.
  - On the contrary, members of one community can go to extraordinary

lengths to help members of the other community maintain their own customary practices including their separate dining and dietary habit

- termed it an “unheroic form of tolerance” that allows interaction for various purposes without forcing one to declare brotherly love or adopt the other community’s practices.
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### **Minus India initiative**

- The creation of the China-South Asian Countries Emergency Supplies Reserve, and a Poverty Alleviation and Cooperative Development Centre set up in China on July 8,
- the outcome of a meeting of the Foreign Ministers of China, Afghanistan, Bangladesh, Nepal, Pakistan and Sri Lanka in April, had raised eyebrows in New Delhi, as it appeared to leave out only India, Bhutan and the Maldives
- The absence of India from the grouping as well as from a series of consultations on COVID relief between the Chinese Vice Foreign Minister and different combinations of all SAARC member countries (other than India and Bhutan) led some experts to

suggest this was meant to be a “Minus India” initiative.

- India is the only country of all eight SAARC nations that has not requested or accepted Chinese COVID vaccines.
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### **Jeff Bezos in space**

- Jeff Bezos blasted into space on Tuesday on his rocket company’s first flight with people on board, becoming the second billionaire in just over a week to ride his own spacecraft
  - Named after America’s first astronaut, Blue Origin’s New Shepard rocket soared from remote West Texas on the 52nd anniversary of the Apollo 11
  - Virgin Galactic’s Richard Branson pushed up his own flight from New Mexico in the race for space tourist dollars and beat him to space by nine days.
  - Named after Mercury astronaut Alan Shepard, the first American to go to space, New Shepard is our reusable suborbital rocket system designed to take astronauts and research payloads past the Kármán line – the internationally recognized boundary of space.
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### **Supreme court on cooperative Societies**

- In a major boost for federalism, the Supreme Court on Tuesday struck down parts of a Constitution amendment which shrank the exclusive authority of States over its cooperative societies.
- Part IXB, introduced in the Constitution through the 97th Amendment of 2012, dictated the terms for running cooperative societies.
- The provisions in the amendment, passed by Parliament without getting them ratified by State legislatures as required by the Constitution, went to the extent of determining the number of directors a society should have or their length of tenure and even the necessary expertise
- the court held that cooperative societies come under the “exclusive legislative power” of State legislatures
- whether the new Central Ministry of Cooperation would dis-empower them. The SC, however, said the Centre had power over multi-State cooperative societies.
- Part IX B, which consists of Articles 243ZH to 243ZT, has “significantly and substantially impacted” State legislatures’ “exclusive legislative power” over its cooperative sector under Entry 32 of the State List.
- In fact, the court pointed out how Article 243ZI makes it clear that a

State may only make law on the incorporation, regulation and winding up of a society subject to the provisions of Part IXB of the 97th Constitution Amendment

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