● POLITY   ● ECONOMICS   ● TECHNOLOGY   ● ECOLOGY

GEOGRAPHY

CLIMATE TARGETS ARE BECOMING OUTDATED

- The 1.5 degrees Celsius warming target has received considerable attention along with the El Niño this year. Reports claim that the planet could soon cross this temperature threshold due to this natural climate phenomenon.

- In the Paris Agreement, the world agreed to keep the planet's surface from warming by 2 degrees Celsius by the end of this century. But, there are two issues with this target.

  1. First, despite negotiations among the representatives of the world's countries for more than two decades, global carbon emissions have shown no signs of slowing down.

  2. Second, the 2 degrees Celsius target was not derived scientifically. The economics Nobel laureate William Nordhaus cautiously noted in the 1970s that a warming of 2 degrees Celsius above the pre-industrial level could render the planet warmer than it has ever been in several hundred-thousand years.

- Because of this, the Alliance of Small Island States demanded that it be lowered to 1.5 degrees Celsius. Thus there are a lot of uncertainties in climate projections and thus it makes the relevance of 1.5 and 2 degrees Celsius targets questionable.

Some real problems with projections and predicting future

- The impacts of the COVID-19 pandemic and Russia's invasion of Ukraine have made it abundantly clear that it is very difficult for us to imagine all the possible socioeconomic and geopolitical events that matter to the well-being of our world, including its people.

- Even population projections may not hold considering China's population is currently peaking and India is en route.

- As things stand today, reducing emissions as a paradigm for tackling climate change has essentially failed. Decarbonising the system is more likely to save us from ourselves.

What for India?

- India should continue its leadership role by demanding that the community centred on the U.N. Intergovernmental Panel on Climate Change (IPCC) be prepared to improve projections that quantify impacts at local scales.

- The IPCC and India must also track climate change and its consequences continuously at the socially relevant timescale of a few years.

- The country must consider non-market goods such as equity, well-being, and biodiversity more deliberately.

- India can cash in on these opportunities and grow its economy by focusing on green technologies to decarbonise the future.

TELLING TIME WITH GEOLOGY

Our planet is more than four billion years old. Hence, experts have divided earth's history into pieces of time. The largest unit is the eon, which is further divided into smaller units such as eras, periods, and epochs.

These divisions in earth's geological timescale demarcate key geologic events and the appearance (or disappearance) of notable forms of life. It all began with the creation of the earth's crust and continued with the appearance of plants, birds and animals, their ceaseless evolution making a mark in some way on their time.

1. **The first eon, the Hadean,** lasted from the formation of the Earth until about 4 billion years ago. It was a time of intense volcanic activity and frequent meteor impacts, and it is thought that the first oceans formed during this eon.

2. **The next eon, the Archean,** lasted from 4 to 2.5 billion years ago. This was a time of early life on Earth, and the first microorganisms appeared during this eon.

3. **The third eon, the Proterozoic,** lasted from 2.5 billion to 541 million years ago. This was a time of the evolution of early life forms and the formation of the first continents.

4. **The Phanerozoic eon,** which began 541 million years ago and continues to the present day, is characterized by the evolution of multicellular life forms and the development of the first animals. This eon is divided into three eras: the Paleozoic, the Mesozoic, and the Cenozoic.

Broadly, there are four geological eras.

1. **The Precambrian Era** began 4.6 billion years ago, with the formation of our planet and the emergence of the first life forms.

2. **The Palaeozoic Era** lasted from 541 million to 252 million years ago, and was characterised by the evolution of complex life, including fish, plants, insects, and amphibians.

3. **The Mesozoic Era** came next, lasting from 252 million years until 66 million years ago. This was the age of dinosaurs, together with the first appearance of birds and flowering plants towards the denouement.

4. **Finally came the Cenozoic Era,** which began 66 million years ago and continues to this day, distinguished by the rise of modern animals.

Today, scientists around the world are locked in a debate about

whether we are currently in a new geological time period, dubbed the "Anthropocene", marked by the oft-devastating effects of human presence on earth.

ART AND CULTURE

SAMRAT MIHIR BHOJ STATUE CONTROVERSY

- A controversy erupts in Haryana over the the unveiling of a statue of Samrat Mihir Bhoj, a 9th-century ruler.
- The kingdom of Mihir Bhoj, who ruled parts of northern India for over 50 years, is said to have spread from Multan in the west to Bengal in the east and from Kashmir in the north to Karnataka in the south.
- Mihira Bhoja (c. 836–885 CE) or Bhoja I was a king belonging to the Gurjara-Pratihara Dynasty.
- Mihir Bhoj had made Kannauj his capital. He was a devotee of Vishnu, so in honor of Vishnu, he had assumed titles like AdiVaraha and Prabhas. He is also known as Mihira.
- The achievements of Mihir Bhoj have been described in his Gwalior Prashasti inscription.

ECONOMICS

THE ETHANOL IMPETUS

PM Narendra Modi set out a target to roll out 20 % Ethanol-Blended Petrol nation-wide by 2025. Ethanol, also known as ethyl alcohol, grain alcohol, drinking alcohol, or simply alcohol is an organic compound with the chemical formula C_2H_6O. Ethanol is a volatile, flammable, colourless liquid with a characteristic wine-like odour and pungent taste. It is a psychoactive recreational drug, and the active ingredient in alcoholic drinks
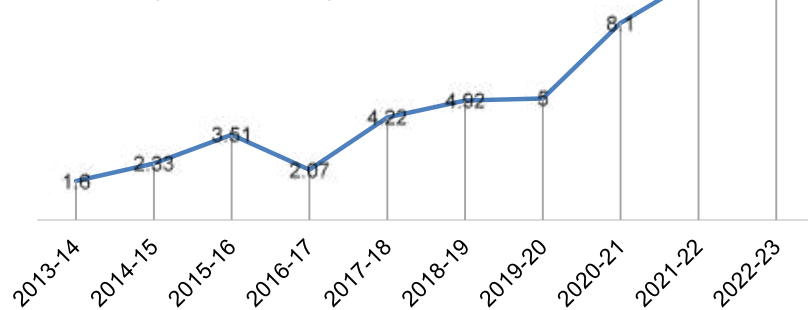
Figure: Bar chart representing the ethanol blending ratio in per centage.

The distilleries were compensated for their revenue foregone from reduced / nil production from sugar. The policy encouraged enterprises to commission multi-feed distilleries.

Figure: Bar chart representing the share of ethanol prepared from different feed stocks.

In 2017-18, the Union Government introduced the Differential Pricing Policy whereby higher prices were fixed for ethanol manufactured from B-Heavy molasses and sugarcane juice / syrup.
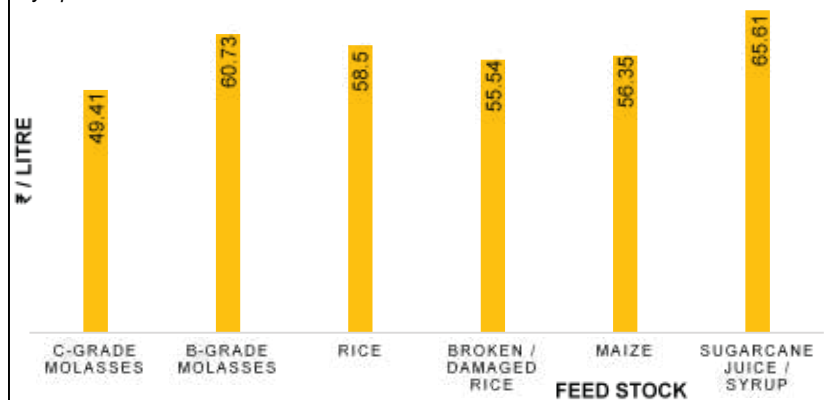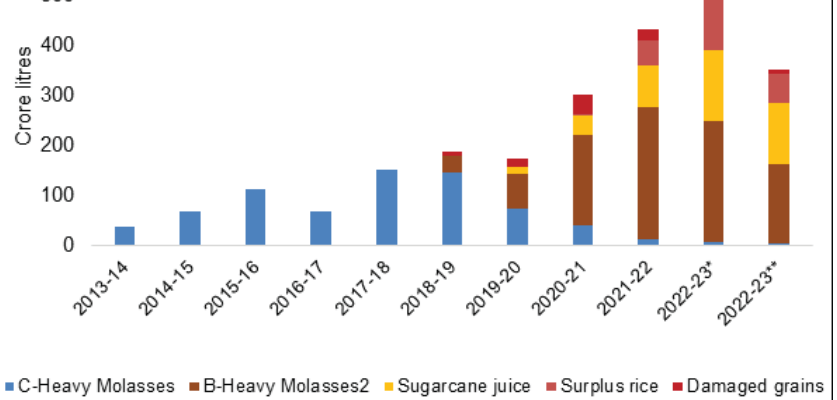
Figure: Bar chart representing the pricing of ethanol prepared from different feed stocks under the Differential Pricing Policy.

The process time required for preparing ethanol from grains are longer, as the starch in the grain has to be first converted into sucrose and simpler sugars (glucose and fructose), before their fermentation into ethanol by using yeast. Molasses already contains sucrose, glucose and fructose.
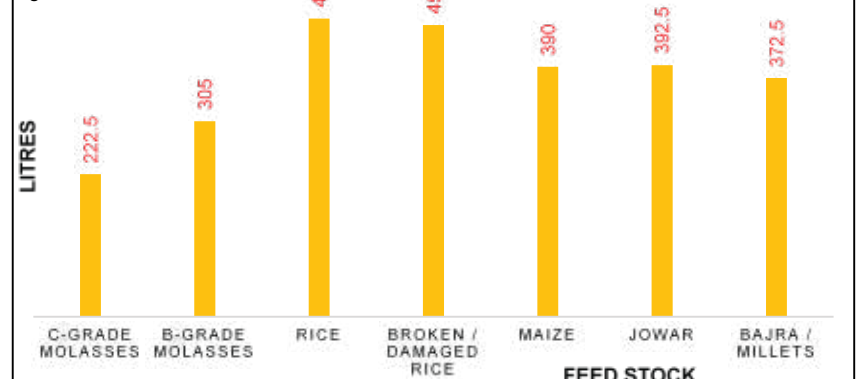
Figure: Bar chart representing the average yields from different feed stocks.

BANKS WRITE OFF BAD LOANS WORTH RS 2.09 LAKH CRORE IN 2022-23: RBI

CONTEXT: As per the Reserve Bank of India (RBI) reports, Indian Banks wrote off bad loans worth over ₹ 2.09 lakh crore ($ 25.50 billion) during the year ended March 2023, taking the total loan write-off by the banking sector to ₹ 10.57 lakh Core (~ $ 129 billion) in the past five years.

"the loan account after the borrower has defaulted on the loan repayment with a very low chance of recovery is not closed, meaning that the lender can try to recover the loan amount with the help of a legal entity."

- LOAN WRITE-OFF

"the bank will not attempt to take any legal action against the borrower to recover the loan."
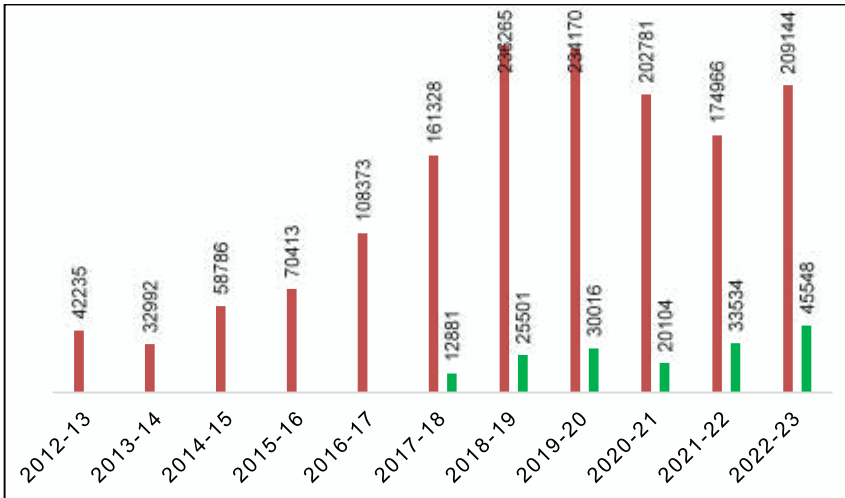
- LOAN WAIVER-OFF

FIGURE: Bar chart representation of loan write-offs (₹ Cr.) and recoveries from loan write-offs in green (₹ Cr.)

A loan becomes a Non-Performing Asset (NPA), when the principal or interest payments remains overdue for 90 days. When a loan is written off by a bank, it goes out from its asset book. The bank writes off a loan after the borrower has defaulted on the plan repayment and there is a very low chance of recovery. The lender moves the defaulted loam, or NPA out of the asset side reports the amount as loss. Afterwards, the banks are supposed to continue their efforts to recover their loan using various options. The tax liability will also come down as the written off amount in reduced from the profits. The Public Sector Scheduled Commercial Banks reported the lion's share of write offs at ₹ 3.66 lakh Cr. accounting for nearly 62.45 % of the exercise in the last three years.

POLITY AND GOVERNANCE

MANIPUR VIOLENCE: WHAT IS A ZERO FIR AND WHY IT IS REGISTERED

Background:

Just days before a Zero FIR was filed in connection to the May 4 incident, in which two Manipuri women were stripped and paraded in the state's Thoubal district, another Zero FIR was filed at the same police station — pertaining to the alleged abduction, rape and murder of two Kuki-Zomi women.

What is Zero FIR?

When a police station receives a complaint regarding an alleged offence that has been committed in the jurisdiction of another police station, it registers an FIR and then transfers it to the relevant police station for further investigation. This is called a Zero FIR.

No regular FIR number is given. After receiving the Zero FIR, the revenant police station registers a fresh FIR and starts the investigation.

Manipur Violence

The incident took place on May 5, when two young Kuki-Zomi women, aged 21 and 24, who worked at a car wash in Imphal East, were "brutally murdered" in their rented accommodation "after being raped and gruesome(ly) tortured by some unknown persons", believed to be "about 100-200" in number. On May 16, based on the statement of the younger victim's mother, a Zero FIR was registered at Saikul police station in Kangpokpi district — the hometown of both victims.

Justice Verma Committee

The provision of Zero FIR came up after the recommendation in the report of the Justice Verma Committee, which was constituted to suggest amendments to the Criminal Law in a bid to provide for faster trial and enhanced punishment for criminals accused of committing sexual assault against women, according to a 2020 circular released by the Puducherry government. The committee was set up after the 2012 Nirbhaya gang rape case.

Why do we need a Zero FIR?

The objective of a Zero FIR is to ensure the victim doesn't have to run from pillar to post to get a police complaint registered. The provision is meant to provide speedy redressal to the victim so that timely action can be taken after the filing of the FIR.

What is an FIR?

The term first information report (FIR) is not defined in the Indian Penal Code (IPC), Code of Criminal Procedure (CrPC), 1973, or in any other law, but in police regulations or rules, information recorded under Section 154 of CrPC is known as First Information Report (FIR).

Section 154 ("Information in cognizable cases") says that "every information relating to the commission of a cognizable offence, if given orally to an officer in charge of a police station, shall be reduced to writing by him or under his direction, and be read over to the informant; and every such information, whether given in writing or reduced to writing as aforesaid, shall be signed by the person giving it, and the substance thereof shall be entered in a book to be kept by such officer in such form as the State Government may prescribe".

Also, "a copy of the information as recorded…shall be given forthwith, free of cost, to the informant".

In essence then, there are three important elements of an FIR:

1. the information must relate to the commission of a cognizable offence
2. it should be given in writing or orally to the head of the police station
3. it must be written down and signed by the informant, and its key points should be recorded in a daily diary.

DEADLINE PUSHED TO 2024, SMART CITIES WORKING HARD TO SHOWCASE ACHIEVEMENTS

GIST

With the Government pushing the deadline of its Smart Cities Mission to next June, the 100 cities that are part of it are marking their completed projects with logos, in a strategy aimed at displaying the accomplishments so far.The cities have been asked to implement the "labelling strategy" by August 31.

Smart Cities Mission was launched by the Hon' Prime Minister on 25 June, 2015. The main objective of the Mission is to promote cities that provide core infrastructure, clean and sustainable environment and give a decent quality of life to their citizens through the application of 'smart solutions'. The Mission aims to drive economic growth and improve quality of life through comprehensive work on social, economic, physical and institutional pillars of the city. The focus is on sustainable and inclusive development by creation of replicable models which act as lighthouses to other aspiring cities. 100 cities have been selected to be developed as Smart Cities through a two-stage competition.

The Mission is operated as a Centrally Sponsored Scheme. Central Government will give financial support to the extent of Rs. 48,000 crores over 5 years i.e. on an average Rs.100 crore per city per year. An equal amount on a matching basis is to be provided by the State/ULB. Additional resources are to be raised through convergence, from ULBs' own funds, grants under Finance Commission, innovative finance mechanisms such as Municipal Bonds, other government programs and borrowings. Emphasis has been given on the participation of private sector through Public Private Partnerships (PPP). Citizens' aspirations were captured in the Smart City Proposals (SCPs) prepared by the selected cities. Aggregated at the national level, these proposals contained more than 5,000 projects worth over Rs. 2,00,000 crores, of which 45 percent is to be funded through Mission grants, 21 percent through convergence, 21 percent through PPP and rest from other sources.

There is no standard definition or template of a smart city. In the context of our country, the six fundamental principles on which the concept of Smart Cities is based are:

The Review of the Mission

According to data provided by the Union Housing and Urban Affairs Ministry to the Lok Sabha on July 20, 74% of the nearly 8,000 projects for which work orders have been issued, have been completed.

In May, when the Ministry extended the Mission's deadline from June this year to June 30, 2024, 72% of the projects were complete.

The "labelling strategy" was first rolled out as a pilot in 15 cities in April and expanded to all 100 cities in June. It laid out options for using bespoke logos as well as common imagery such as the Mission logo.

Stickers, boards, signage and other such material were also designed for installation on completed projects, including smart roads, lights, preserved heritage sites, etc.

According to the strategy document, the labelling exercise was "not marketing", but rather a method for creating awareness and providing information to the stakeholders of the projects.

Of the 15 cities selected for the pilot project, Udaipur, Agartala, Agra, Srinagar and Chandigarh are among those that have already put up logos on the Smart Cities projects.

In Udaipur, visitors are given additional information through a QR code that leads to a city app developed under the Mission. In Agartala, the boards that have been put up have left space for advertisements, for generating revenue.

The Srinagar Smart City put up small boards on 'Smart Poles' with the logo of the city on one side and of the Mission on the other. In Surat, digital logos are being displayed on screens that can be used for advertisements as well.

RAIN DEFICIT THREATENS ANOTHER KARNATAKA-TAMIL NADU BATTLE FOR WATER

Deficit showers in the Cauvery catchment area are threatening another battle for water between Karnataka and Tamil Nadu, a perennial feature of drought years in the region.

On July 19, farmers demanded the release of Cauvery water to the Visvesvaraya canal that supplies water for irrigation in Mandya and Mysuru districts.

The next day, Tamil Nadu wrote to the Centre seeking its intervention to ensure the release of water from the KRS dam for its Kuruvai crop.

Tamil Nadu CM complained that Karnataka had released only 3.78 thousand million cubic feet (TMC) water, against a prescribed quantum of 26.32 TMC till July 20.

Compared to reservoirs in North Karnataka, the ones in the South are yet to record any significant inflows. As on July 22, the cumulative inflow to all four major dams in the Cauvery basin – Harangi, Hemavathi, KRS, and Kabini – was around 26,608 cusecs.

The catchment area of the Cauvery basin is the only region in Karnataka that is still in red (deficit) when it comes to monsoon rainfall.

India Meteorological Department (IMD) data shows that Kodagu – where Cauvery River originates – has received less than half the normal rainfall for the ongoing monsoon season. The same was true for districts such as Hassan (44 per cent deficit), Mandya (23 per cent), and Mysuru (15 per cent). Similarly, rainfall in districts of Kerala, which are part of the Cauvery catchment, is also deficient till date.

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SCIENCE AND TECHNOLOGY

CERT-IN CAUTIONS INTERNET USERS AGAINST RANSOMWARE 'AKIRA' ATTACK

NEWS IN GIST: The Indian cyber security agency, CERT-In, warns of the ransomware virus 'Akira' targeting Windows and Linux systems. Akira steals personal data, encrypts victim's files, and conducts double extortion, demanding ransom payments. Non-payment results in data publication on the dark web, posing a significant threat to internet users.

HOW IT WORKS: The Indian cyber security agency, CERT-In, issues an advisory about the ransomware virus 'Akira' actively targeting Windows and Linux systems. Akira steals personal data, encrypts files, and conducts double extortion to force victims into paying ransoms. If payment is not made, the attackers release victim data on the dark web.

The ransomware group exploits VPN services without multi-factor authentication and uses tools like AnyDesk, WinRAR, and PCHunter. CERT-In advises users to follow online hygiene practices, maintain offline backups, update systems regularly, use strong passwords, and enable multi-factor authentication to counter such cyber-attacks.

What Is Ransomware Attack?

A ransomware attack is a malicious act where cybercriminals use software to encrypt a victim's data, demanding payment (ransom) for decryption.

- Ransomware is malicious software that encrypts data, demanding payment for decryption keys. Cybercriminals exploit vulnerabilities, phishing, or malware to deliver ransomware to victims' systems.
- It poses a severe threat to individuals, businesses, and governments worldwide. Paying ransom doesn't guarantee data recovery, and it fuels criminals to continue attacks.
- Understanding ransomware helps implement robust security measures and preventive strategies. Regular data backups are crucial to mitigate the impact of a ransomware attack. Awareness and education about phishing and safe online practices are essential defences.
- Cooperation among law enforcement, cyber security experts, and the public is vital for combating ransomware.

CERT-In

CERT-In (Computer Emergency Response Team - India) is the national nodal agency under the Ministry of Electronics and Information Technology (MeitY), responsible for coordinating and addressing cyber security incidents in India, providing guidance, and promoting a secure cyberspace environment.

- CERT-In operates as a 24x7 expert group, handling cyber security threats and vulnerabilities. The agency collaborates with various stakeholders to enhance the security posture of the nation. It issues alerts, advisories, and guidelines to prevent and respond to cyber threats.
- CERT-In serves as a central point of contact for international cooperation on cyber incidents. The agency conducts capacity building programs and workshops to raise cyber security awareness.
- Its assigned functions include analysing incidents, generating reports, and coordinating incident response for a secure cyber environment.

CURE FOR HIV: HOPES RAISED BY, AND LIMITATIONS OF STEM CELL TRANSPLANT

NEWS IN GIST: The Geneva patient, the sixth person with HIV, likely cured of the virus after a stem cell transplant for leukaemia. Antiretroviral therapy discontinued 20 months ago, with undetectable virus levels. The patient showed significant reduction in HIV-infected cells after the 2018 transplant, and subsequent tests found no viral particles or latent reservoirs.

PRESENT STATUS: Six patients achieved HIV remission through stem cell transplantation for cancer treatment. In five cases, donors with the CCR5 delta 32 mutation, linked to lower HIV risk, were sought. This mutation reduces receptors on CD4 immune cells, hindering the virus from entering cells. This breakthrough offers insights into potential HIV treatments.

Can stem cell transplant become routine treatment for HIV?

- The CCR5 delta 32 mutation's limited prevalence in specific populations makes it impractical as a widespread cure for HIV due to donor matching challenges.
- Stem cell transplantation carries risks, and HIV may evolve to use alternative infection mechanisms.
- Instead, global HIV treatment relies on antiretroviral therapy, effectively suppressing the virus and preventing transmission.

What is Stem Cell Transplant?

Stem cell transplant is a medical procedure involving infusion of healthy stem cells into a patient to restore damaged or depleted cells.

- It involves harvesting stem cells from the patient or a donor, often from bone marrow or blood. Prior chemotherapy or radiation is given to deplete existing cells and suppress the immune system.
- The stem cells are then infused into the patient's bloodstream. Stem cells find their way to the bone marrow and begin producing new blood cells.
- The procedure is used to treat conditions like leukaemia, lymphoma, and other blood disorders. Finding a suitable donor with a matching tissue type is crucial for successful transplantation.
- Stem cell transplant can be a life-saving treatment, but it carries risks like infection and graft-versus-host disease.

DAILY NEWS ANALYSIS