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Cicadas

Recently, scientists have found that 3 groups of cicadas emerged together for the first time in North America after 1,547 years.

- **Cicadas** - They are **medium to large insects** and
- **Family** - Cicadoidea, consists of more than 3,000 species of sound-producing insects.
- **Scientific Name** - Cicadoidea.
- **Appearance** - They have short antennae, 2 pairs of transparent membranous wings, prominent compound eyes, and three simple eyes that form a triangle between the compound eyes.
- **Size** - Ranging from 2 to 5 cm (0.8 to 2 inches).
- **Types**
- **Annual cicadas** - They emerge from the ground at different times each summer.
 - **Appearance** - They are usually dark with greenish markings.
 - **Life Cycle** - Span 2-5 years.
 - **Distribution** - Annual cicadas can be found throughout the world.
- **Periodical cicadas** - Even periodical cicadas occur most years in different geographic regions as they are split among 15 brood cycles, each lasting 13 or 17 years.
 - **Appearance** - They have black backs, orange bellies, and red eyes.
 - **Life cycle** - Emerge in spring only every 13 or 17 years.
 - **Distribution** - Periodicals are unique to North America.
 - **2 specific broods** - Brood XIX - Southeastern United States, and Brood XIII - Midwest United States have emerged together.
 - Periodical broods emerge in synchrony depending on the year and soil temperature.
 - They wait for the right conditions for breeding, which are when the ground thaws to **65°F (18°C)** in a brood's designated year.
- **Sounds** - **Males produce this species-specific noise** with vibrating membranes on their abdomens.
- It uses different sounds to express alarm or attract mates.
 - **3 distinct sound responses** - a congregational song, a courtship song, and a disturbance squawk.
- **Habitat** - Forests, Tropical jungles, Grasslands, Deserts, Chaparral, and Scrub forests.
- **Distribution** - They are found in **tropical and temperate areas** worldwide.

The largest cicadas in the world are found in Asia.

- **Diet** - *Drink plant sap* from the xylem of various species of trees, including oak, cypress, willow, ash, and maple using their sucking mouthparts.
- **Life cycle -3 stages** - Egg, Nymph, and Adult.

Recent Findings of Life Cycle

- For the first time in more than 200 years, two specific broods of the 13- and 17-year cicadas have emerged together
 - Brood XIX, in the southeastern United States, and
 - Brood XIII, found in the country's Midwest.
- It coincides with the emergence of a big batch of Australian greengrocer cicadas, which have a 7-year life cycle.
- North American periodical cicadas span life cycles for ***prime numbers of years (13-17 years)*** and Australian cicadas with their 7-year cycle.
- Its way of survival is to emerge from the ground when its predators are lying dormant.
- It will help them avoid emerging simultaneously as their predators.
- It turns out to be the best way to avoid periodical predators.
- It will also help them to avoid interbreeding with other broods.

References

1. [The Hindu| Cicadas](#)
2. [Britannica| Cicadas](#)

Global Energy Efficiency Alliance

The United Arab Emirates (UAE) launched the Global Energy Efficiency Alliance at COP29, hosted in Azerbaijan.

- **Aim** - To ***double global energy efficiency rates by 2030*** and contribute to significant emission reductions.
- This initiative builds on the 'UAE Consensus' from COP28.

UAE Consensus is a commitment that brings together countries, organizations, and corporations to reduce carbon emissions and promote sustainable resource management.

- It encourages strategic ***public-private partnerships*** and bolsters investments in energy efficiency initiatives.
- The UAE plans to lead the alliance by sharing its expertise in energy efficiency, fostering knowledge transfer, and building effective partnership models with the private sector.

- **Features** - It is designed to support the reduction of carbon emissions and the sustainable use of natural resources through knowledge sharing, capacity building, and standardization efforts.
- It will focus on compiling and disseminating best practices, with a particular emphasis on *assisting African nations*.
- This support will extend to developing financing options and technological solutions vital for the continent's progress in energy sustainability.

Energy Efficiency Global Alliance (EEGA)

- It is ***an international coalition of*** government, corporate, and NGO leaders that champions faster and deeper implementation of energy efficiency solutions to meet global energy and climate goals
- The International Energy Agency (IEA) estimates that energy efficiency could provide *more than 40% of the emissions abatement required by 2040* to be in line with the Paris Agreement (IEA, 2018).
- It *meets annually at the EE Global Forum* to discuss global energy efficiency needs and opportunities, and to coordinate action.

References

1. [DD News| Global Energy Efficiency Alliance](#)
2. [EE Global Alliance| Global Energy Efficiency Alliance](#)

AI Data Bank

The Minister of Science & Technology launched an Artificial Intelligence (AI) Data Bank, at the 7th edition of the ASSOCHAM AI Leadership Meet 2024.

- It is ***India's first practical AI Data Bank***.
- **Aim** - To accelerate *technological growth and innovation* by providing researchers, startups, and developers access to high-quality, diverse datasets.
- It is essential for creating scalable and inclusive AI solutions.
- It *enhances national security* through real-time analytics of satellite, drone, and IoT data.
- This step aligns with India's goal to utilize AI for predictive analytics in disaster management and cyber security.
- **India's AI** - It is guided by a comprehensive approach focused on innovation, ethical governance, and global collaboration.
- It is fostering partnerships between academia, private enterprises, and startups to propel AI applications in critical sectors such as healthcare, agriculture, smart cities, and space exploration.
- It focuses to *empower citizens and ensure equitable access* to the benefits of this transformative technology.
- **Significance** - It aligns with India's goal to utilize AI for predictive analytics in disaster management and cyber security.
- It shows India's strategic roadmap for harnessing the transformative potential of AI.
- It addresses pressing challenges such as climate change, public service delivery, and

national security.

7th ASSOCHAM AI Leadership Meet 2024

- The Associated Chambers of Commerce & Industry of India (ASSOCHAM) is the country's oldest apex chamber.
- **Vision** - Creating a New India.
- **4 strategic priorities** - Sustainability, Empowerment, Entrepreneurship and Digitisation.
- **Theme** - AI for India: Advancing India's AI Development - Innovation, Ethics, and Governance.
- It served as a platform for leaders, policymakers, and industry experts to exchange insights and chart a responsible path for AI.

References

1. [PIB| AI Data Bank](#)
2. [ASSOCHAM| AI Data Bank](#)

Central Value Added Tax (CENVAT) Credit

Recently, the Supreme Court allowed telecom companies to claim Central Value Added Tax (CENVAT) credit for the installation of mobile towers and shelters.

- It allows a manufacturer to utilize the ***credit of excise duty/additional duty*** paid for the procurement of input services to pay off the excise duty on his/her final product or output services.
- It was introduced as a modification to the previously functioning ***Modified Value Added Tax*** or MODVAT.
- During the course of the manufacture of final products, the raw materials travel through various stages of production, wherein a duty is levied on every value-added at each stage.
- CENVAT, therefore, ***eliminates this double taxation***, thereby simplifying taxation for manufacturers, and consumers at large.
- The CENVAT Credit Rules, 2004 established to implement CENVAT across the country and offer Indian manufacturers of final products certain tax credits on the excise duty payable by them.
- CENVAT credit refers to the set-off available to manufacturers if they utilise some specific inputs for manufacturing their products.
- A manufacturer can claim CENVAT credit on the following cases
 - **Excise duty on a final product** - For manufacturers and producers of final products.
 - **Service tax on output services** - For providers of taxable and exempted services.
 - **Input and capital goods** - If these goods are being partially processed.

Central Value Added Tax (CENVAT) Credit Rules, 2004

- It exercises the powers conferred by section 37 of the Central Excise Act, 1944, and section 94 of the Finance Act, 1994.
- Rule 2(a)(A) Capital Goods - All goods falling under the First Schedule to the Excise Tariff Act, and
- Pollution control equipment, components, spares and accessories of the goods, moulds and dies, jigs and fixtures, refractories and refractory materials, tubes and pipes and fittings and storage tank used.
- 2(k)Input - All goods, except light diesel oil, high speed diesel oil and motor spirit, commonly known as petrol, used in or in relation to the manufacture of final products whether directly or indirectly and whether contained in the final product or not, or used for providing any output service.

References

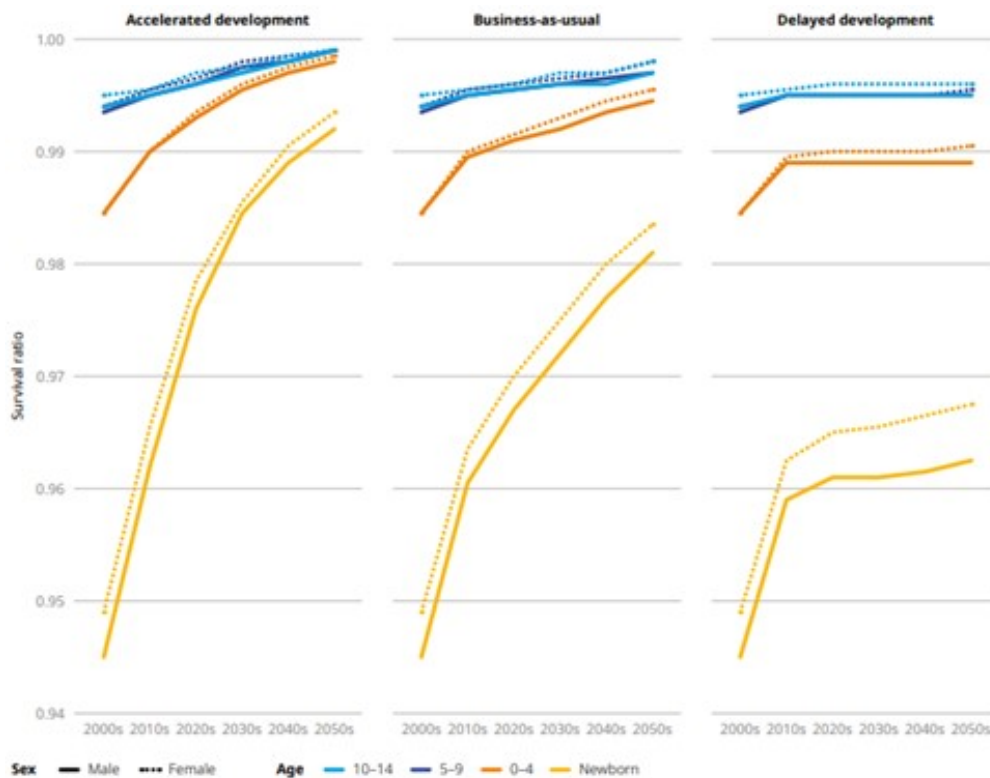
1. [The Hindu| Central Value Added Tax \(CENVAT\) Credit](#)
2. [India code| Central Value Added Tax \(CENVAT\) Credit](#)

State of the World's Children report, 2024

The United Nations International Children's Emergency Fund (UNICEF) published the State of the World's Children Report which determine the future of childhood in a changing world.

Report Findings

- It is a vital statistics on child survival, development and protection across countries and regions worldwide.
- It explore all future indicators and their impact for children.
- **3 Megatrends** - Impact children's lives between now and 2050:
- **Demographic transitions** - Movement and migration can offer benefits and also carries dangers, including increased risk of exploitation and separation from caregivers.
- **Climate and environmental crises** - Children developing brains, lungs and immune systems are affected by pollution, disease and extreme weather.
- **Frontier Technologies** - Its developing and governing will affect the future generations to learn, work, communicate, and also their well-being for years to come.
- **3 Future scenarios** - It shows children depending on rates of progress and on the actions of decision-makers.
- **Business-as-usual trendlines** - Child populations in low-income and lower-middle-income countries will surge by the 2050s.
- **Accelerated development** - They are exposed to prolonged subnational conflict and heatwaves.
- **Delayed development** - They are still facing extreme gender inequality with 1.1 billion living in gender unequal societies.



Children and young people are powerful agents of change, bringing new ideas and perspectives that can help shape a better future for all of us.

UNICEF

- **UNICEF** - It is an agency of the United Nations responsible for *providing humanitarian and developmental aid to children* worldwide.
- It works in *over 190 countries and territories* to protect the rights of every child.
- It provides children to survive, thrive, fulfil their potential, education, health, and nutrition services, and protect them from violence, and abuse and keep them safe from climate change and disease.
- UNICEF is world's largest provider of vaccines, and also runs the world's largest humanitarian warehouse.

Reference

[UNICEF| State of the World's Children 2024](#)