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S.NO.	TOPIC
1.	DEEPPAKE TECHNOLOGY
2.	GLOBAL TUBERCULOSIS REPORT 2023
3.	PRELIMS POINTERS

DEEPPAKE TECHNOLOGY

SOURCE: [INDIAN EXPRESS](#)

WHY IN NEWS?

Recent viral video of Actress is a deepfake, highlighting **the spread of deepfakes using AI tools**. The **ease of creating and disseminating deepfakes through social media** is a **global concern**, especially in polarized political environments.

ABOUT DEEP FACE TECHNOLOGY:

➤ Introduction:

- ✓ Deepfake technology is a **method that leverages powerful computers** and deep learning to **manipulate videos, images, and audios**.
- ✓ Its applications include **generating fake news, committing financial fraud**, and various illicit activities.
- ✓ **Cybercriminals utilize Artificial Intelligence** technology to create deceptive content.



➤ Origin of the Term:

- ✓ The term "deepfake" **originated in 2017** when an **anonymous Reddit user self-identified as "Deepfakes."**
- ✓ This user **harnessed Google's open-source deep-learning technology** to produce and share pornographic videos.

KEY ASPECTS OF DEEPPAKE TECHNOLOGY INCLUDE:

➤ Face Swapping:

- ✓ Deepfake technology **can swap one person's face onto another person's body** in videos or images.
- ✓ This involves training a neural network on **large datasets of the target person's face** and then **superimposing it onto the source video**.

➤ Voice Synthesis:

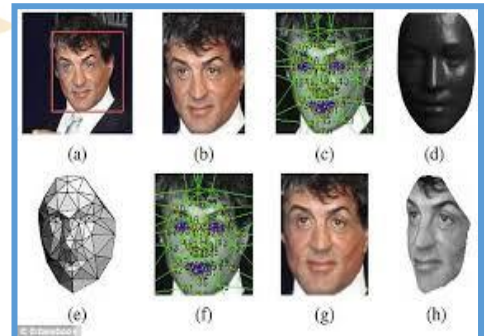
- ✓ Deepfake technology can **also be used to synthesize human-like voices**.
- ✓ By training on an **individual's voice data**, it can create **audio that mimics the target's speech patterns**.

➤ Realistic Results:

- ✓ One of the notable features of **deepfakes is their ability to produce highly realistic** and convincing content.
- ✓ These **manipulations can be challenging to detect** with the **naked eye or ear**.

➤ Potential Uses:

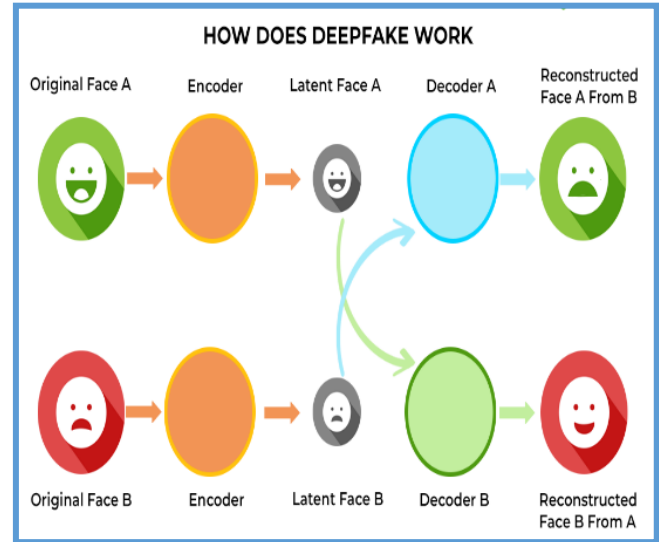
- ✓ While deepfake technology has raised concerns **about misuse for deceptive purposes**, it has some legitimate applications.
- ✓ For example, it can be used in the **film industry for special effects** and in **voice assistants to generate more natural-sounding interactions**.





ACKNOWLEDGING CONCERNS:

- The **Bletchley Declaration**, signed by **28 countries**, including the **US, UK, France, China, Japan, and India**, **acknowledges the risks posed by deepfakes** and calls for global action.
- Different countries have **different approaches to regulating AI**, with some favouring strict oversight while others opt for a lighter touch.
- **Challenges in Deepfake Life Cycle:**
 - ✓ Deepfake life cycle consists of **creation, dissemination, and detection**.
 - ✓ Regulation can **mitigate the creation of unlawful or non-consensual deepfakes**.
 - ✓ Countries like **China require consent, identity verification, and recourse for deepfake technology providers**.
 - ✓ Canada focuses on awareness campaigns and possible legislation to combat malicious deepfakes.
- **Challenges in Content Moderation:**
 - ✓ Vague terms in content moderation like **"making reasonable efforts"** and **"acting on"** user complaints pose challenges for platforms.
 - ✓ Clear definitions and actions are needed to **avoid platforms' liability for non-compliance**.
- **Detecting Deepfakes:**
 - ✓ Detecting deepfake videos is **increasingly difficult due to AI advancements**.
 - ✓ A **multi-pronged regulatory approach engaging with both AI and platform regulation is needed**.
 - ✓ **Upcoming Digital India Act to regulate AI**, emerging technologies, and online platforms provides an opportunity to address these issues.



ARE DEEPFAKES ALWAYS MALICIOUS?

- **Not All Deepfakes Are Malicious:**
 - ✓ Deepfakes **serve a variety of purposes**, not all of which are harmful.
 - ✓ They can be **entertaining and even helpful**, such as **restoring lost voices due to illness or animating art exhibitions**.
 - ✓ In the **entertainment industry**, they can improve **dubbing in films and even resurrect deceased actors**.
- **Misuse of Deepfake Technology:**
 - ✓ Deepfake technology is increasingly **misused for malicious purposes**, such as **scams, hoaxes, celebrity pornography, election manipulation, social engineering, automated disinformation campaigns, identity theft, and financial fraud**.
 - ✓ Notable personalities, including former **U.S. Presidents like Barack Obama and Donald Trump, as well as India's Prime Minister Narendra Modi**, have been **impersonated** using deepfakes.

WHAT DOES THE LAW SAY?

- **Regulations in India:** India currently lacks specific legal rules addressing deepfake technology. However, legal action can be taken under existing laws if the **technology is misused**, including laws related to
 - ✓ Infringe copyright.
 - ✓ Breach data protection laws.
 - ✓ Be defamatory if they expose the victim to ridicule.



- ✓ Violate laws related to sharing sexual and private images without consent, such as "revenge porn," which can result in up to two years in jail for offenders.
- **Laws related to deep fake in India:**
 - ✓ **IT Act of 2000 – Section 66E:** Addresses **deepfake crimes involving capturing, publishing, or transmitting a person's images in mass media**, potentially resulting in imprisonment or fines.
 - ✓ **IT Act of 2000 – Section 66D:** Allows **prosecution of individuals who maliciously use communication devices or computer resources to cheat or impersonate someone**, with penalties including imprisonment and fines.
 - ✓ **Copyright Protection under the Indian Copyright Act of 1957:** Safeguards works like films and music, allowing **copyright owners to take legal action against unauthorized use** of their content, with penalties outlined in Section 51.
 - ✓ The Ministry of Information and Broadcasting issued an **advisory on January 9, 2023**, recommending **media organizations to label potentially manipulated content as "manipulated" or "modified" for viewer awareness.**

GLOBAL RESPONSE TO COMBAT DEEPPAKES:

- Various countries are **taking measures to address the challenges posed by deepfake technology.**
- Regulatory responses may include **explicit labelling and traceability for manipulated content**, as seen in China's approach.
- Other nations are exploring **regulations and safeguards to curb the harmful impact** of deepfakes on society.
- Deepfake technology's misuse **raises concerns globally**, necessitating coordinated efforts **to combat its detrimental effects and protect individuals from deception and fraud.**

SOLUTIONS FOR DEEPPAKE CHALLENGES:

- **Social Media Platform Responsibility:**
 - ✓ Social media platforms have a **responsibility to prevent misleading advertisements** featuring deepfakes, whether of celebrities or ordinary citizens.
 - ✓ **Cases like Karen Hepp v Facebook highlight** the need for **stricter regulation on deepfake content** in advertisements to protect individual rights and reputation.
- **Government Regulations:**
 - ✓ Governments **should implement preventive measures to mandate advertisers** to disclose the use of deepfake content in advertisements.
 - ✓ **Similar to the EU's AI Act, regulations can ensure transparency and accountability** in advertising practices.
- **Proposed Legislation:**
 - ✓ The US government has **proposed the Deep Fakes Accountability Bill, 2023**, which aims to address **deepfake issues.**
 - ✓ Legal frameworks, such as the **Digital Personal Data Protection Act, 2023, and the Consumer Protection Act, 2019**, may require harmonization and cross-referencing to effectively regulate AI and its use cases in the consumer market.
- **Definition Clarification:**
 - ✓ Clear definitions of **terms like consent, personality rights, deep fakes, dark patterns, AI**, and their limits are essential for protecting consumers and data principals.
- **Comprehensive Guidelines:**
 - ✓ Issuing **comprehensive guidelines under the Consumer Protection Act to mandate advertisers and social media platforms** to disclose the usage of deepfakes in advertisements.
 - ✓ Inclusion of AI-based deepfakes in the **guidelines on dark patterns to address emerging trends.**
- **Single Regulation:**



- ✓ In the long run, a **unified regulatory framework is essential to cover the potential implications** of AI's adverse use across various sectors, including the consumer market.
- ✓ **Delhi High Court's order is a step in the right direction, emphasizing the government's role in safeguarding consumers** from sophisticated deepfake advertisements.

Prelims Specific

<i>Technology Concept</i>	<i>Description</i>
Quantum Computing	<ul style="list-style-type: none">✓ Quantum computing utilizes the principles of quantum mechanics to process information, potentially solving complex problems exponentially faster than classical computers.✓ It has applications in cryptography, optimization, and scientific simulations. However, it also poses cybersecurity risks due to its ability to crack current encryption methods.
Artificial Intelligence (AI)	<ul style="list-style-type: none">✓ AI involves the development of computer systems that can perform tasks requiring human intelligence, such as problem-solving, language understanding, and image recognition.✓ It has transformative applications across various industries but raises concerns about privacy, bias, and the potential for misuse, including deepfake technology.
Gene Editing (CRISPR-Cas9)	<ul style="list-style-type: none">✓ CRISPR-Cas9 is a revolutionary gene-editing technology that allows precise modification of DNA.✓ It has the potential to treat genetic disorders and improve crop yields.✓ However, ethical concerns arise regarding its use in humans and the environment, along with the risk of unintended consequences.
Virtual Reality (VR) and Augmented Reality (AR)	<ul style="list-style-type: none">✓ VR and AR technologies create immersive digital experiences.✓ While they offer innovative solutions in gaming, education, and training, they also raise questions about privacy, addiction, and their impact on the real world.
5G Technology	<ul style="list-style-type: none">✓ The fifth generation of wireless technology, 5G promises ultra-fast data speeds and low latency, enabling innovations in IoT, autonomous vehicles, and telemedicine.✓ Concerns include health implications, cybersecurity, and the digital divide.
Quantum Cryptography	<ul style="list-style-type: none">✓ Quantum cryptography leverages quantum properties to secure communication by detecting any unauthorized interception.✓ It has the potential to revolutionize cybersecurity but faces challenges in practical implementation and scalability.
Brain-Computer Interfaces (BCIs)	<ul style="list-style-type: none">✓ BCIs allow direct communication between the brain and external devices.✓ They have the potential to assist individuals with disabilities and enhance human capabilities.✓ Ethical concerns include privacy, consent, and cognitive enhancement.



GLOBAL TUBERCULOSIS REPORT 2023

SOURCE: [THE HINDU](#), [WHO](#)

WHY IN NEWS?

in 2022, there were **7.5 million people newly diagnosed with TB**, marking the highest number since global TB monitoring began in 1995. This surpasses the pre-COVID baseline of 7.1 million in 2019, up from 5.8 million in 2020 and 6.4 million in 2021.

WHO GLOBAL TUBERCULOSIS REPORT 2023

➤ Overview:

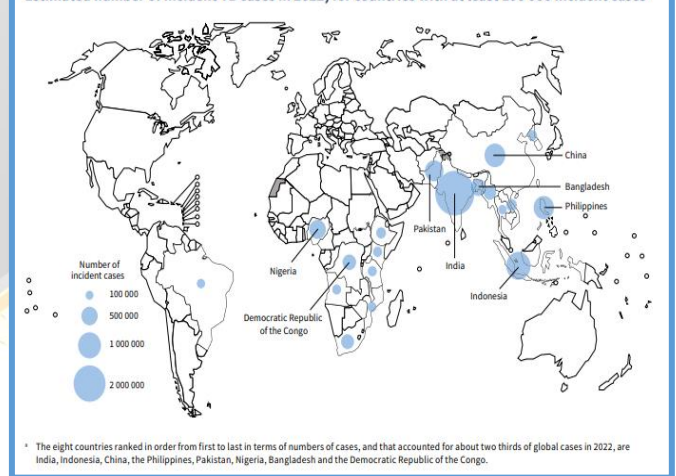
- ✓ The WHO Global Tuberculosis Report 2023 **provides a comprehensive and up-to-date assessment of the TB epidemic** and of **progress in prevention, diagnosis and treatment of the disease**, at global, regional and country levels.
- ✓ This is done in the context of **global TB commitments, strategies and targets**.
- ✓ The 2023 edition of the report is, as usual, based **primarily on data gathered by WHO** from national ministries of health in annual rounds of data collection.
- ✓ In 2023, **192 countries and territories with more than 99% of the world's population** and TB cases reported data.

KEY FINDINGS OF THE REPORT:

➤ Key findings of the report:

- ✓ Global recovery in **TB diagnoses and treatment occurred in 2022** after two years of COVID-19 disruptions.
- ✓ TB remains the **world's second leading cause of death after COVID-19**, and global TB targets are off track.
- ✓ In **2022, 7.5 million people were newly diagnosed with TB**, the highest since monitoring began in **1995**.
- ✓ This increase includes a **backlog of delayed diagnoses due to COVID-19 disruptions**.
- ✓ **India, Indonesia, and the Philippines, key contributors to global TB reductions**, recovered to above 2019 levels in 2022.
- ✓ TB caused an **estimated 1.30 million deaths in 2022, close to 2019 levels**.
- ✓ COVID-19 disruptions led to nearly half a million excess **TB-related deaths between 2020 and 2022**.
- ✓ Progress towards global TB targets falls **significantly short of WHO's End TB Strategy milestones**.
- ✓ Economic barriers and funding **shortfalls are major challenges in addressing TB**.
- ✓ To end the global TB epidemic, **commitments made at the 2023 UN high-level meeting on TB need to be translated into action**.

Estimated number of incident TB cases in 2022, for countries with at least 100 000 incident cases*



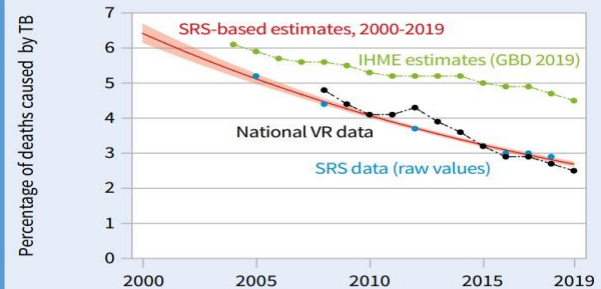
REVISED TB DEATH ESTIMATES IN INDIA:

- WHO revised TB death estimates in India using new data from the country's sample registration system (**SRS**) for **2014-2019**.
- National vital registration coverage in India was limited, **ranging from 16% to 22% between 2008 and 2020**.
- Previous WHO estimates relied on **IHME's Global Burden of Disease study 2019**, first used in 2016, which involves **redistributing causes of death based on verbal autopsy**.



- SRS-based TB death estimates for India were **consistently lower than those in GBD 2019**, with differences growing over time.
- Estimates for TB deaths in India **from 2000-2019 underwent two steps**: adjusting SRS-based estimates for inaccuracies and multiplying them by WHO's total death estimates.
- The revised TB death estimates for **India during 2000-2019 are notably lower than interim estimates published in 2022**.
- Estimates for **2020-2022 incorporated COVID-19 disruptions** using a specific dynamic model based on the new SRS-based data.

Estimates of the percentage of deaths in India caused by TB, alternative sources



WHAT ARE THE INITIATIVES TO COMBAT TB?

- **WHO's TB Vaccine Initiatives:**
 - ✓ **Investment case (2022)** highlights **benefits of TB vaccine development**.
 - ✓ A **50% effective vaccine could save lives**, reduce antibiotic use, and cut costs.
 - ✓ **\$1 invested in a 50% effective vaccine yields \$7 economic return**.
 - ✓ High-level event (Jan 2023) underscores **new TB vaccines and partnerships**.
 - ✓ "Accelerator council" planned for TB vaccine development.
 - ✓ **5-year initiative (2023–2027)** aims for at **least one new vaccine by 2027**.
 - ✓ "**TB vaccine accelerator council**" (Sep 2023) for global collaboration.
- **Efforts in India to Combat TB:**
 - ✓ **National Strategic Plan (NSP) for Tuberculosis Elimination (2017-2025)**.
 - ✓ **The Nikshay Ecosystem**, a National TB information system.
 - ✓ Nikshay Poshan Yojana (NPY) **providing financial support to TB patients**.
 - ✓ The **TB Harega Desh Jeetega Campaign**.
 - ✓ Development and **Phase-3 clinical trials of TB vaccines - VPM 1002 and MIP (Mycobacterium Indicus Pranii)**.
 - ✓ Nikshay Poshan Yojna (2018) offering **Direct Benefit Transfers (DBT) of Rs 500 per month** to TB patients for nutritional support.

Estimated number of people who developed MDR/RR-TB (incident cases) in 2022, for countries with at least 1000 incident cases*

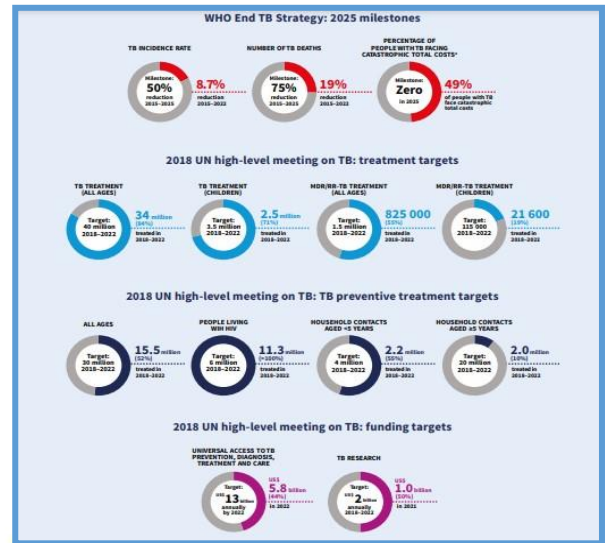


WAY FORWARD TO END TB EPIDEMIC:

- **Commitment to End TB:**
 - ✓ Global commitment to ending the TB epidemic through the WHO End TB Strategy and UN SDGs.
- **Targets and Milestones:**
 - ✓ 2030 targets aim for a 90% reduction in TB deaths and 80% reduction in TB incidence compared to 2015, with 2025 milestones set at 50% and 75% reductions.
- **Reaffirmation and Expansion:**



- ✓ Commitments reaffirmed and expanded upon at two UN high-level meetings on TB, including funding, treatment, and new vaccines.
- **Pandemic Setback:**
 - ✓ COVID-19 pandemic reversed progress, resulting in decreased TB care access and increased TB-related deaths and cases.
- **Recent Recovery:**
 - ✓ Encouraging recovery in TB diagnoses and treatment in 2022 starts to mitigate the pandemic's impact.
- **Global Challenge:**
 - ✓ Despite being preventable and curable, TB remains the second leading cause of death after COVID-19, causing more deaths than HIV/AIDS.
- **Urgent Action:**
 - ✓ Translating commitments into action is crucial to end the global TB epidemic.



Prelims Specific

Tuberculosis:

- ✓ TB is an infectious **disease caused by Mycobacterium tuberculosis.**
- ✓ It can **affect different parts of the body**, with the most common being the lungs.
- ✓ TB spreads through the air, **especially in crowded and poorly ventilated areas.**
- ✓ Typical symptoms include cough with **sputum and blood, chest pain, weakness, weight loss, fever, and night sweats.**
- ✓ TB is treatable and curable with a **6-month course of 4 drugs**, supported by healthcare workers or trained volunteers.
- ✓ **Drug-resistant TB strains exist** and may require different medications.
- ✓ **Multidrug-resistant TB (MDR-TB) resists common TB drugs** but can be treated with second-line drugs.
- ✓ Extensively **drug-resistant TB (XDR-TB)** is more resistant and can be challenging to treat, sometimes with no further options.



PRELIMS POINTERS:

DIGITAL LIFE CERTIFICATE (JEEVAN PRAMAAN)

Purpose	Simplify and enhance the submission of life certificates for pensioners
How it Works	Pensioners can create Jeevan Pramaan online or through a mobile app; uses biometric authentication
Beneficiaries	Pensioners of the Central Government, State Government, or other government organizations
Exclusions	Not available to reemployed pensioners
Benefits	Digitizes the life certificate process, prevents fraud, and ensures continuity of pension

INDO-PACIFIC MARITIME DOMAIN AWARENESS (IPMDA)

Announcement	Announced at the 2022 Quad Leaders' Summit in Tokyo
Purpose	Enhance maritime domain awareness and transparency in the Indo-Pacific region
Coverage	Integrates critical regions: Pacific Islands, Southeast Asia, and the Indian Ocean region
Technology	Uses innovative technology, including satellite radio frequency data
QUAD	An informal forum comprising the USA, India, Australia, and Japan to promote a free, open, and prosperous Indo-Pacific region

ACUTE LYMPHOBLASTIC LEUKAEMIA (ALL)

Definition	A type of cancer affecting the blood and bone marrow
Symptoms	Include bleeding, bone pain, fever, infections, nosebleeds, etc.
Causes	Result from genetic mutations causing uncontrolled blood cell production
Treatment	May involve chemotherapy or targeted drugs to kill cancer cells

EUCLID SPACE TELESCOPE

Mission & Purpose	Part of ESA's Cosmic Vision program to study dark matter and dark energy
Launch Date	Launched on July 1, 2023
Named After	Named after the Greek mathematician Euclid
Mission Goals	Create a 3D map of the universe, studying dark energy and its influence
Spacecraft & Instruments	Comprises a telescope and two scientific instruments
Orbit	Operates around the Sun-Earth Lagrange Point 2 (L2)
Lifetime	Nominal mission duration of six years, extendable if possible

Dark matter makes up most of the mass of galaxies and galaxy clusters, and is responsible for the way galaxies are organized on grand scales. Dark energy, meanwhile, is the name we give the mysterious influence driving the accelerated expansion of the universe.

