

INDIA IN FUTURE TENSE

47

WORDS FOR

2024





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FOREWORD

India in 2047; what does our future look like?

When we think about India in 2047, we envision an India where well-being is prioritised alongside economic growth; where we use our natural resources to meet the needs of everyone; where there is zero hunger and zero malnutrition; where farming is a viable and a dignified livelihood; where our soils are fertile, water is clean and plentiful, and our biodiversity is thriving; and at the same time, India is a global power in health, technology, and innovation, reimagining the contours of the country, extending into space.

Imagine an India that is leading this future by building it today.

India stands at the cusp of an extraordinary transformation. Since Independence, India has demonstrated leadership and innovation across diverse spheres, by building a robust economy, an influential entertainment industry, a pioneering space programme, and more. The spirit of India is one of boundless ambition – of dreams yet to be woven into reality. As custodians of future generations, this vision for tomorrow is powered by the vision of young people today.

The 47 words within these pages capture the essence of the future we are building together. *India in Future Tense* is a dictionary and a powerful compass for young minds, guiding them toward an India envisioned for 2047. Each word reflects the values that will define our nation's journey: inclusivity, sustainability, and technological advancement.

As we share this dictionary with you, dear reader, we ask for only one thing in return. We ask that you believe. Believe in the power of your words, believe in the power of your dreams, and believe that in the face of challenges, you can make a difference.

Consider this dictionary our official invitation to you, the youth of our country, to become shared architects in realising this vision.

Next Generation India Fellows
November 2024

ABOUT THE NEXT GENERATION INDIA FELLOWSHIP

Young India is the pulse of a new world order, standing at the forefront of change, with over 52% of the Indian population under the age of 30.

Positioned to transform not just the nation but the global stage, this generation has the power to strengthen multilateralism, revitalise the United Nations, tackle climate crises, and bring the voice of the Global South – 88% of the world – into the spotlight.

The Next Generation India Fellows initiative is a partnership between the United Nations Foundation and the Council on Energy, Environment and Water (CEEW). Launched in line with India's G20 Presidency, the Fellowship puts young people at the forefront of shaping the country's future and solving the world's most pressing challenges, as they work closely with intergenerational changemakers globally to build consensus around a 'future agenda' for India.

11 Fellows, 1 Mission; securing the rights of future generations today.

Learn more



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INTRODUCTION

Download, Google, meme, and stream. These words meant little to an average Indian — or anyone on the planet — in 1947. Today they are part of our everyday reality. Fast forward to 2047, India's centennial, we'll need new nouns, verbs, and phrases to describe our living environment and our evolving world.

“The only way to predict the future is to shape it.” - Dr Arunabha Ghosh, CEO, CEEW

Anticipating the evolving needs of language and knowledge, the Next Generation India Fellows are taking the lead in shaping a vocabulary for the future. *India in Future Tense* is a youth-led dictionary that will identifies trends that will be dominant when India turns 100 in 2047.

It is designed for leaders in technology, governance, health and other spheres to prepare them for the future.

Mapping out a world where tomorrow's breakthroughs are today's vocabulary, the dictionary includes predictive phenomena of the world like the forthcoming Yottabyte Era. It highlights uniquely Indian concepts that are poised to influence global policies and decisions, like Digital Public Infrastructure. Finally it explores cutting-edge innovations, which hold substantial potential to impact the world and its future including bioprinting, pharmacogenomics, and more.

India in Future Tense is capturing the evolution of our everyday vocabulary thus foretelling the challenges and innovations that will shape how we live, work, and thrive in the years ahead.

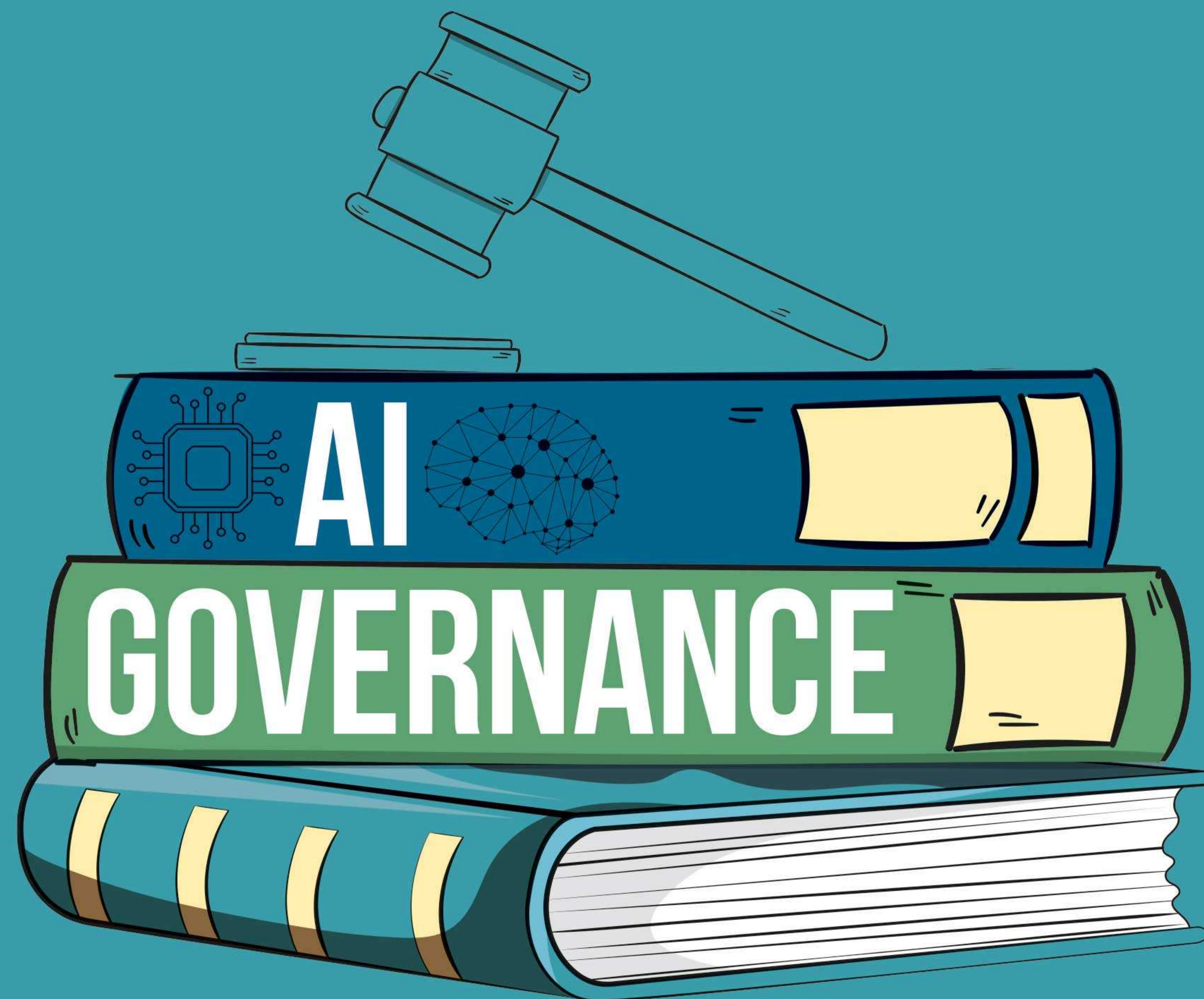
Once upon a time in 1947 a new independent India was born.

Once upon a future in 2047 our leaders made the right policy decisions to secure prosperity for all.

A-Z

47 Words for 2047

Noun
/ˌeɪˈlɪ ˈɡʌnəns/



Definition

AI governance refers to policies, processes, and national and global guiding frameworks that steer the use of emerging artificial intelligence (AI) technologies to safeguard and regulate their design and deployment.

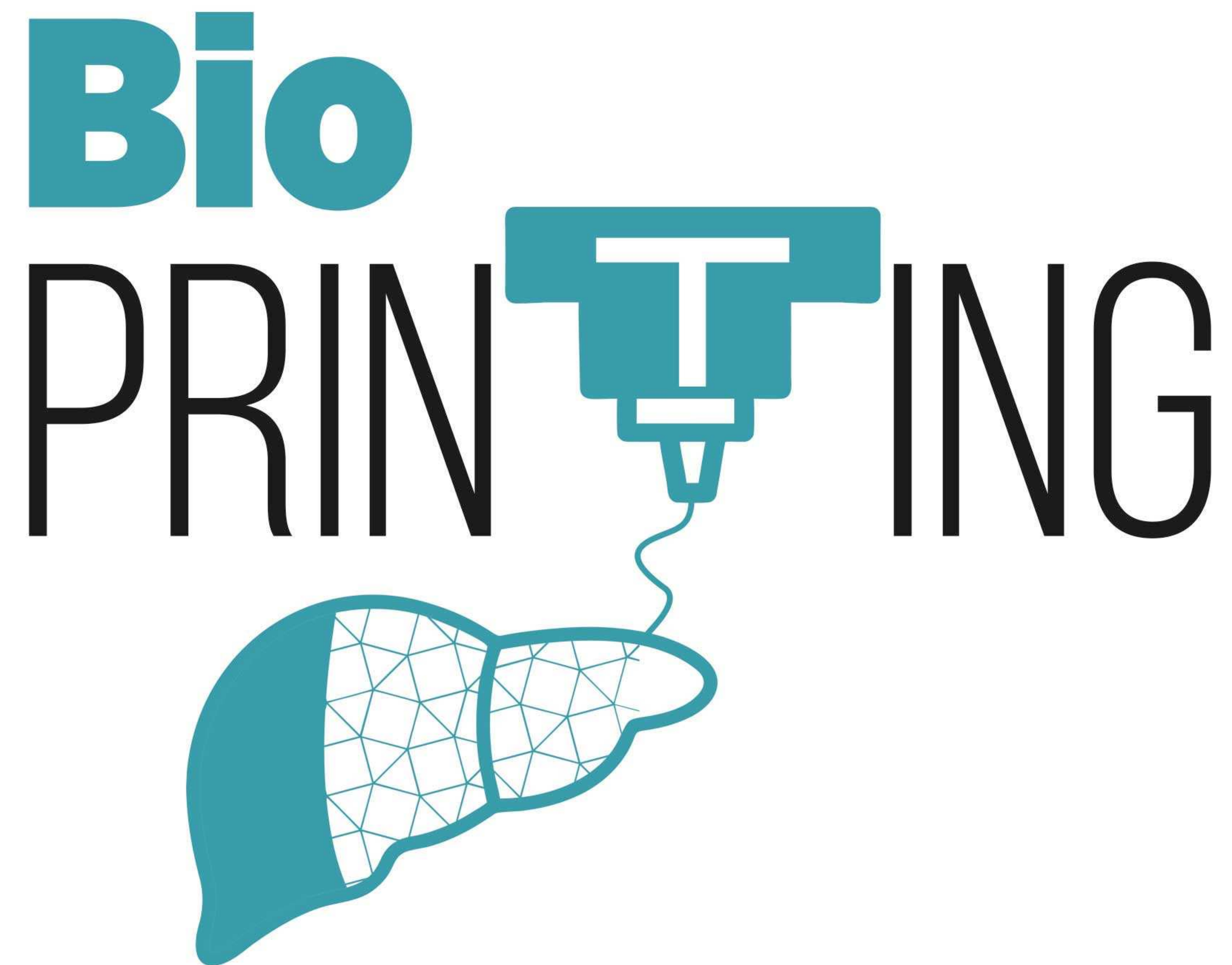
Relevance for future India

AI is rapidly gaining prominence in all avenues, from tech innovation to art and music. This AI surge, often termed 'AI Spring,' currently has little mention in governance frameworks.

Despite creating committees to draft such frameworks, the world does not have a definitive AI governance model.

Recognising some of these issues, India, during its presidency in the G20, agreed on the need to “pursue a pro-innovation regulatory/governance approach that maximises the benefits and takes into account the risks associated with the use of AI.”¹ Moving forward, it's essential to maintain this momentum to close the gap between innovation and policy, especially as AI continues to integrate into all areas of the digital economy.

Noun
/'bʌɪə(ʊ),prɪntɪŋ/



Definition

Bioprinting uses bioinks - natural or synthetic material that is biocompatible - for 3D printing that can, consequently, mimic real tissue.² This technology has the potential to replace animal testing and help in organ transplant through creating human-like tissue.

Relevance for future India

Known as the 'pharmacy of the world', India supplies medical products, services and personnel globally, is the largest exporter of generic drugs, and is the largest global manufacturing hub supplying 60% of the world's vaccines and more. This positions India to lead in bioprinting innovations.

The global bioprinting market is valued at USD 1.3 billion (2022) and expected to be worth USD 8.64 billion by 2032 providing Indian innovators the incentive and opportunity to establish India as a leader in Global Health services.³

Leading Indian institutions are already researching bioprinting, with the Indian Institute of Science (IISc) in Bengaluru inaugurating a 3D bioprinting centre in 2023.

Noun
/blu: 'kɑ:bən/

BLUE CARBON

Definition

Blue carbon is the carbon that is absorbed from the atmosphere and stored in the ocean. 'Blue' refers to the colour of the carbon storage in mangroves, salt marshes, and seagrasses.⁴

Relevance for future India

As India marches towards 2047 with a vision to emerge as a global sustainability champion, it can utilise blue carbon for climate mitigation strategies that align with its 2070 net-zero targets.

Carbon absorption by mangroves and salt marshes is tenfold higher than absorption by tropical forests. Their storing capacity per acre exceeds that of tropical forests by five times. Given that India's coastline is more than 7500 km long, it could support 5000 sq km of mangroves, 500 sq km of seagrasses, and 300 to 1400 sq km of salt marshes, increasing its blue carbon storage capacity.^{5,6}

Noun
/'kɑ:bən 'hændprɪnt/

CARBON HANDP RINT



Definition

Carbon handprint is a new terminology reflecting the opposite of a carbon footprint. It refers to the beneficial environmental impact achieved by an individual, organisation, product, or activity compared to a baseline.⁷ This impact is achieved through actions that either lower carbon emissions or boost carbon capture.

Relevance for future India

As India works to balance economic growth with environmental sustainability, promoting carbon handprint initiatives can inspire innovation, encourage investment in clean technologies, and support communities in adopting sustainable practices. Mission LiFE (Lifestyle for Environment), an Indian government-led movement, encourages citizens to take up sustainable ways of living.⁸ This aligns with the Indian value of moderation and builds a broad consensus on combating climate change.

As per India's 2022 Nationally Determined Contributions under the Paris Agreement, it has an enhanced target to reduce the emissions intensity of its GDP by 45 percent by 2030 from 2005 levels.⁹ The concept of Carbon Handprints can shift the otherwise pessimistic narrative of climate targets to positive actions that individuals can take.

Noun
/'kɜː ɪ 'kɒnəmi/



Definition

Care economy refers to activities undertaken to extend care and support, particularly within households, that enable individuals, especially women, to participate in the labour economy and in society at large. Examples include childcare, eldercare, and other forms of social and domestic care.

Relevance for future India

India's G20 presidency has highlighted the need for women-led development, advocating for community-based initiatives that can distribute care responsibilities more equitably, thereby allowing young girls and women greater access to education and skills development.¹⁰

By forming public-private partnerships to create essential care infrastructure, implementing inclusive parental leave policies, and advocating to challenge the implied role of women in participating in the labour economy, India can build systems that address current challenges.¹¹

Noun
/'klɪmɪt rɪsk ɪn 'ʃʊərəns/



Climate Risk Insurance

Definition

Climate risk insurance includes a set of financial instruments that offer protection against losses resulting from extreme weather events.

Relevance for future India

Climate risk insurance is an evolving field. As climate-related risks expand, temperatures in Indian cities are reaching all-time highs, and cities are experiencing flooding due to erratic rainfall. Such climate conditions will inadvertently affect the most vulnerable communities. While governments formulate climate response plans, climate risk insurance can support vulnerable communities and promote sustainable practices among businesses.

Noun
/kri'eɪtə(r) ɪ 'kɒnəmi/



Definition

The **creator economy** is a growing segment of the current workforce that engages their creative talents on digital platforms for the purposes of gaining a digital audience and receiving compensation. These are among 'the fastest growing type of small businesses'¹² and anyone who creates content and disseminates it on the internet is a part of it.

Relevance for future India

In 2021, and growing exponentially each year, the creator economy has been valued at USD 104 billion. By 2027, it could touch nearly half a trillion dollars. India is expected to have the world's largest base of creators, with around 100 million in 2023, and ranks as the second-largest user market, with over 692 million internet users projected in 2024. This positions India to benefit significantly from the expanding creator economy while also leading efforts globally to establish safeguards and regulations for creators.^{13,14,15}

Noun
/'kʌl.tʃəˌrou.mɪks/



Definition

Culturonomics is a portmanteau of culture and economics, which describes the global transmission of culture through varied mediums such as entertainment, food, sports, and more. This process promotes positive perceptions of the people embodying the culture and can boost a country's economy.

Relevance for future India

Culturonomics is essential to India's positioning as a global leader. Celebrations like International Yoga Day, increased global engagement with the Indian entertainment industry, and the growing popularity of traditional and alternate forms of medicine exemplify the sharing of India's cultural heritage worldwide.

During India's G20 presidency, India strategically organised over 300 cultural events involving 18,000 artists, showcasing India's dance forms, artistry, and unique cuisine. These events were as much a part of the G20 conversations as discussions on women's empowerment, the digital stack, climate change, and the economy.¹⁶ With India looking to expand its cultural footprint by 2047, initiatives in cultural diplomacy and soft power will continue to establish the country's influence and values globally.

Noun
/'sɪtɪzən vɔɪs 'fɔːrəmz/



Definition

Citizen voice forums are platforms designed to empower individuals to participate in significant discussions. It encourages public engagement in policy-making and solution development, enabling citizens to actively participate in shaping global and national agendas rather than remaining passive observers.

Relevance for future India

India's G20 presidency showcased the power of citizen voice forums through unprecedented public participation and collaboration across various regions. Emphasising the principle of *Jan Bhagidari* (people's participation), the G20 presidency hosted numerous *chaupals* (community spaces) for people to share their feedback on the agenda, which engaged 1.4 billion citizens across all states and Union Territories, creating what has been termed “a People's G20 in every way.”¹⁷

This initiative reflects India's dedication to fostering a future where citizen involvement in global governance becomes standard practice, aligning with the principles of inclusive multilateralism. Future high-level summits should prioritise participatory frameworks that invite real-time inputs from citizens. Citizen voice forums are a crucial component for achieving an inclusive global agenda.

Noun
/'dɪdʒɪtl 'nəʊmæd/



Definition

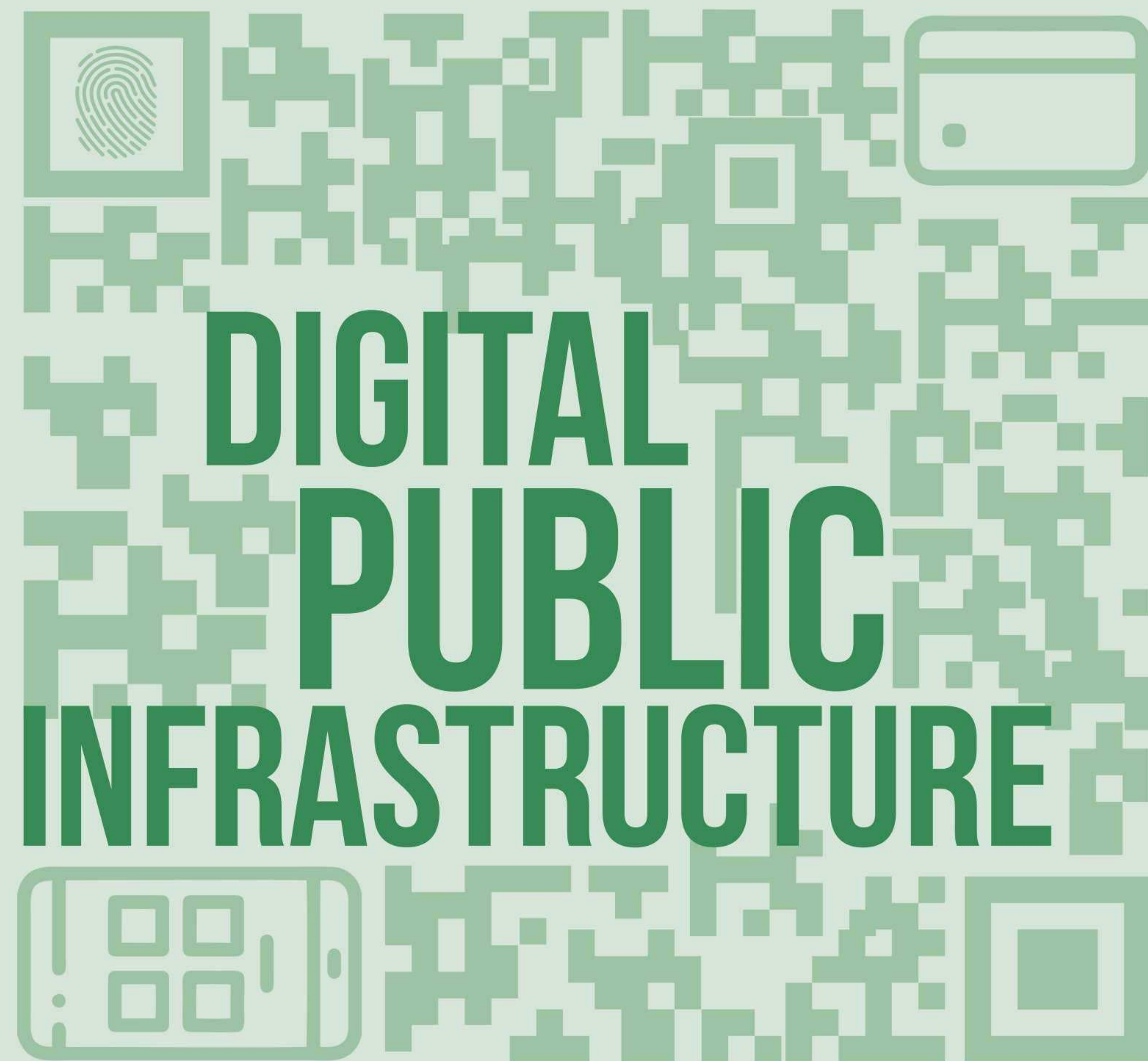
A **digital nomad** is someone who uses digital technologies to work remotely while embracing a nomadic lifestyle. Such individuals engage in remote work, frequent travel, a reliance on technology, and greater work flexibility.¹⁸

Relevance for future India

In their forward-thinking book, *Digital Nomad*, published in 1997, Tsugio Makimoto and David Manners said, “Just as we are already seeing governments competing with each other to attract industrial investment, we may see governments competing with each other for citizens.”¹⁹

Countries offering digital nomad visas have witnessed an uptick in tourism revenues.²⁰ While India is a popular tourist destination, it currently lacks visa programs tailored to digital nomads. Revising immigration policies to align with existing infrastructure could promote digital nomadism and provide new income opportunities for local communities. However, this trend must be balanced with effective policymaking to mitigate risks, as digital nomadism can also overwhelm local economies, including the housing market, and cultures if not regulated.

Noun
/'dɪdʒɪtəl 'pʌblɪk 'ɪnfəstrʌktʃər/



Definition

Digital Public Infrastructure (DPI), involves the creation and implementation of essential digital systems, generally managed or overseen by governments. It emphasises designing technologies that are innovative, while also ensuring policies prioritise individuals' rights. DPI encompasses secure services like digital identity systems, financial and payment systems, and e-government services that play a key role in supporting both society and the economy.

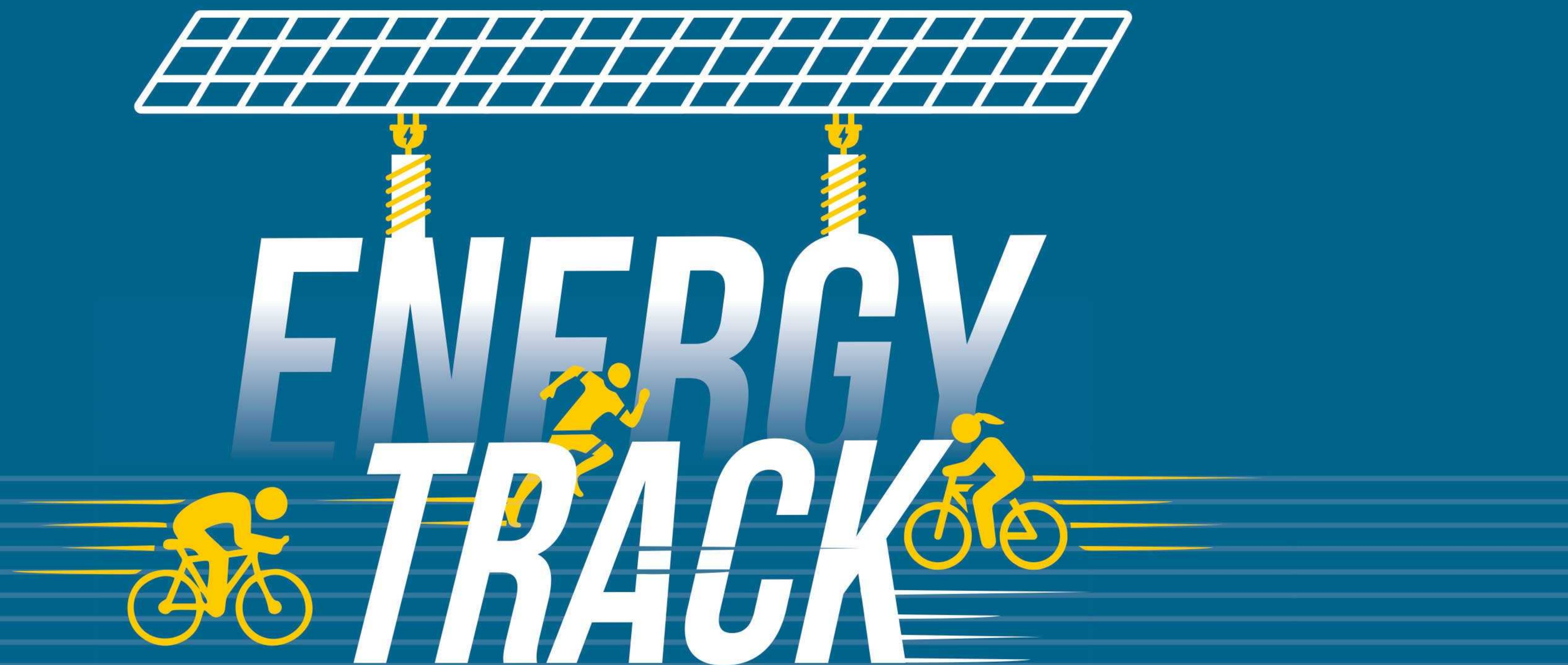
Relevance for future India

India is widely recognised as a world leader in transforming the scope of Digital Public Infrastructure (DPI). The expansion of DPI in India has expanded access to digital services among its people, enabling millions of citizens who previously operated either on the fringe of the economic system or outside of it to achieve financial independence and prosperity.²¹

For instance, India's digital identification system, an example of DPI, has led to a doubling of bank account ownership to 78 percent within a decade, enhancing financial inclusion.²²

Continued investment and public-private partnership in DPI will yield transformational results in India's future, both at home and on the global stage.

Noun
/'ɛn.ər.dʒi træk/



Definition

Energy tracks are innovative surfaces that harness solar energy while providing a functional shaded walking surface. These walking and cycling tracks integrate photovoltaic technology, allowing them to convert sunlight into electricity. The generated energy can be utilised to power streetlights, traffic signals, and nearby buildings, promoting energy efficiency.

Relevance for future India

Given India's strong emphasis on transitioning to renewable energy, energy tracks can help leverage India's solar potential while providing utility for people. The cover provided by the solar panels serves the dual purpose of providing shade during the scorching summer heat while generating electricity.

In fact, technical trials have already begun on expressways under the 'Green Field Expressways' pilot programme, which aims to establish energy tracks to power 26 highways and expressways.²³

Noun
/ˌfɪf'ti:n 'mɪnɪt 'sɪti/

15-MINUTE CITY

29

Definition

A **15-minute city** places all essential services within a 15-minute radius of people residing anywhere in the city. Such a design increases quality of life and well-being and promotes sustainable living, especially for urban dwellers.²⁴

Relevance for future India

Indians on average spend over two hours daily on office commutes. Studies have found that long commute times can negatively affect an individual's health, happiness, and overall well-being. Efficient urban planning systems are an urgent need especially with research showing that 600 million people in India, almost half the population, will be living in urban centres by 2030.²⁵

While the initial focus of the model is on urban areas, improving public transport systems, such as expanding railway networks, would benefit satellite towns and rural communities. Efficient public transport systems would reduce travel time between rural and urban areas, connecting rural regions to larger economic hubs, providing access to jobs, healthcare, and education and limiting the impact of rural-urban divide.

Noun
/flocks/



Definition

Flox is a versatile, on-demand shared living space designed for remote workers, offering cutting-edge amenities that enhance well-being and efficiency. The name comes from a combination of 'flex' meaning flexibility and 'ox' indicating resilience.

Relevance for future India

Flox ecosystems have the potential to transform how the expanding remote workforce lives across India. It can either be integrated into organisational structures by private entities looking to build community-based organisations or taken up by local and state governments looking to promote up-and-coming townships among digital nomads.

Flox community spaces can support local economies by fostering innovation, improving work-life balance, and reducing urban congestion. Currently unexplored in India beyond functional co-living spaces, this concept has the potential to flourish in urban and semi-urban centres as communities that centre well-being.

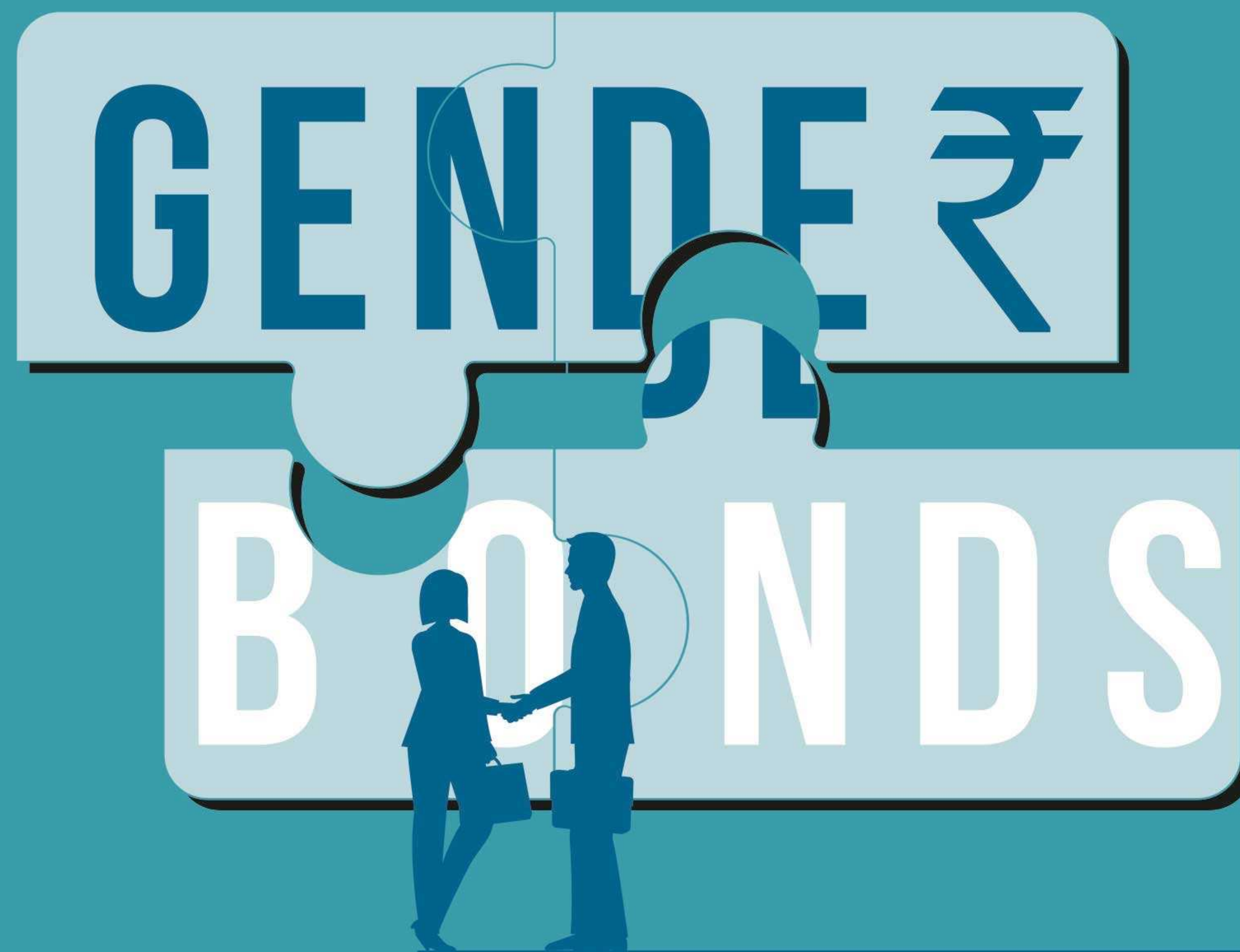
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Gamification involves incorporating game design, including its mechanics, into non-game contexts to boost participation, well-being and incentive. It makes tasks more enjoyable, interactive, and rewarding and promotes desired behaviours, helping achieve targeted outcomes.

In India, gamification has been extensively used in the education sector through the use of interactive tools and apps like Byjus and Khan Academy.²⁶ Gamified tools also facilitate adaptive learning that is personalised towards each student and can be beneficial for those with limited resources. Investment in this educational technology will continue to grow as the National Education Policy (2020) recognised and encouraged the shift from rote learning to gamification.

Regulations surrounding the extent to which gamification can influence consumer behaviour in India is also pending. With the increase in government focus on gamification, such regulatory mechanisms are expected to be enforced in the near future.

Noun
/'dʒendə bɒndz/



Definition

Gender bonds are social bonds that steer financing towards women-owned businesses or businesses aimed at reducing gender inequalities by investing in women's health, education, and empowerment.

Relevance for future India

India has several schemes that promote investments in women-led micro and small enterprises, including the Startup India scheme and the MUDRA Yojna.

The creation of gender bonds would complement this approach by earmarking specific funds for gender-focused projects and signalling commitment from investors and the market towards advancing gender equality. Setting up gender bonds would also reflect India's commitment during its G20 Presidency that asserted, “promoting women's inclusion...by strengthening their access to economic resources.”²⁷



Noun
/'herɪtɪdʒ hʌbz/



Definition

Heritage hubs are community spaces centred on intergenerational dialogue, which house a repository of material memories and the stories of the people who shape our heritage. These hubs serve as a means for future generations to inherit a piece of cultural history.

Relevance for future India

India has a rich oral tradition. Prominent epics have been passed down through generations via oral storytelling. With India's rapid urbanisation, some of these oral traditions are lost in translation, leaving young people without information on Indigenous knowledge systems.

Heritage hubs can foster a sense of belonging and pride in Indigenous knowledge, especially by involving young people in the process. This engagement can lead to innovative community projects that not only celebrate local heritage but also empower youth to play an active role in their communities. Similar hubs have been set up across the European Union and Africa;²⁸ India can build on this momentum and ensure that its knowledge systems are passed down to future generations.

Noun
/ˌhaɪpərˈspektrəl ˈɪmɪdʒɪŋ/



Definition

Hyperspectral imaging is a method that extends beyond the visible light spectrum to capture wavelengths such as infrared and ultraviolet, which are invisible to the human eye, thereby increasing the effectiveness of imaging.²⁹

Relevance for future India

Hyperspectral imaging technology can be applied to monitor and improve agriculture, identify critical minerals, and combat climate change, among other uses. For example, India loses 18 percent of its crop yield, valued at INR 90,000 crore, to pest attacks each year.³⁰ New-age hyperspectral imaging can predict pest attacks, enabling risk mitigation in agricultural practices.³¹ Through this technology, farmers can make informed decisions about crop management and reduce losses from pests and diseases, ultimately leading to increased annual incomes and food security.

Noun
/ˌɪn.douˈfjuː.tʃə.ɹɪ.zəm/



Definition

The dominant discourse around the future lies in Eurocentric ideas of the world. Indofuturists, influenced by Afrofuturism, assert their vision of the future through Indigenous practices and perspectives. Like other movements such as Gulf Futurism and Sinofuturism, **Indofuturism** creates new possibilities where colonial histories are challenged and Indigenous knowledge is central to shaping future narratives.³²

Relevance for future India

Indofuturism encompasses a broad range of fields, including art, culture, music, and fashion. Preserving past practices and traditions encourages communities to build a strong sense of identity, build intergenerational connections, and promote resilience.

For instance, the global trend toward embracing sustainability is something that has been a core part of Indian society for generations. Traditional Indian homes have been built with the climate in mind. Homes in the hills have thick walls and small windows to retain heat and most traditional homes use bio-construction, employing natural materials like mud, clay, and cow dung. These homes are better at regulating temperature extremes than modern homes.

As India's diaspora population expands, Indofuturism allows our stories to be told and promotes a sense of belonging across all those who share the Indian heritage.

Noun
/ɪnˈtɛlɪˌfabrɪk/



INTELLI FABRIC

Definition

IntelliFabric or smart fabrics use technology to enhance the functionality of fabrics. They can monitor health, environmental conditions, and other data and go beyond the capabilities of traditional fabrics

Relevance for future India

IntelliFabrics has an emerging scope in sports, health, safety, overcoming increasing impacts of harsh climatic conditions and more.

For instance, in sports, where wearable devices are already popular for monitoring performance and vitals, smart fabrics can effectively track and support athletes. Nike launched a self-lacing basketball shoe in 2024 that adapts to the shape of the wearer's feet in real-time, giving better grip and control over movement. Several companies, such as Sensatex, have developed smart shirts to monitor the health vitals of users, recording data from the heart, lungs, etc. Nyoka Technologies, an Indian startup recently created a safety jacket that is light and flexible but can detect an attack and send a SOS alert to authorities.

Utilising India manufacturing and textile capacities to design, produce, and supply IntelliFabrics can help in promoting overall well-being.

Noun
/'dʒʊ'gɑ:d/



Definition

Jugaad is a colloquial word with roots in Hindi, Punjabi, and Urdu, and it is widely used in India. It refers to quick and innovative problem-solving using limited resources.

Relevance for future India

Jugaad has since expanded from the Indian vocabulary to be discussed at high-level forums on management and marketing principles. Several books, such as *Jugaad Innovation: Think Frugal, Be Flexible, Generate Breakthrough Growth*, have been published on the use of jugaad to drive growth and innovation.³³ As a concept, the idea of Jugaad goes beyond the Hindi-speaking states of India and also exists in other languages like "തട്തികൂട്സി" (tattikute) in Malayalam, and globally as *Arrangiarsi* in Italian and "改善" (kaizen) in Japanese.

Jugaad is as much a concept as it is a part of a uniquely Indian way of life that rejects overconsumption and promotes thriftiness. It is embodied in almost every Indian home through sustainable reuse of materials going beyond their initial function. For instance, store bought jam jars become storage containers for pulses,³⁴ broken buckets transform into flower pots, old t-shirts are converted into mops.³⁵ This is not something that is taught but imbibed across Indian households, making sustainability not a trend but a lifestyle.

Going beyond the household, India demonstrates jugaad in its manufacturing and innovation with low-cost alternatives to different products. With India's future generations continuing the fight against poverty, inadequate infrastructure and rising temperatures, jugaad can help bridge the gap left by limited resources.

Noun
/kɪ'sɑːn saɪ'ðɪ/



Definition

Kisaan s(AI)thi are advanced digital assistants designed to provide farmers with tailored advisory services. Utilising machine learning and artificial intelligence, the bot analyses real-time information to offer insights on crop management, pest control, and resource optimisation, helping farmers make informed decisions.³⁶

Relevance for future India

Kissan s(AI)thi incorporates information and communication technologies (ICT) to make information available to every farmer. A comprehensive government-supported bot could radically transform the ability of agricultural workers to access important information regarding rain, irrigation schemes, bank loans, government subsidies, and more.³⁷

The bot could offer speech-to-text functions, extend mental health support, and support the comprehensive development of a national e-agriculture strategy.

Noun
/'lɪvɪŋ weɪdʒ ɡə'rentiːz/



Definition

Living wage guarantees refer to policies or frameworks that ensure that all workers receive a wage sufficient to cover basic living costs, allowing them to maintain a decent standard of living without relying on additional support or assistance. The living wage goes above and beyond the minimum wage.

Relevance for future India

The International Labour Organization (ILO) recently endorsed the concept of a living wage, following an agreement reached during a meeting of experts on wage policies in February 2024. This endorsement underscores the global push to uplift millions out of poverty and safeguard their well-being.

In a significant move, India is one of the few countries implementing a nationwide living wage policy.³⁸ The country is actively seeking technical assistance from the ILO to enhance its capacity for systematic data collection, with the goal of establishing a framework for calculating and implementing a living wage. India aims to transition from a minimum wage to a living wage by 2025, reflecting its commitment to improving workers' living standards and addressing economic inequality.

Noun
/lɒn'dʒɛvɪti + 'kɒnəmi/



Definition

Longevity economy is an economic framework focused on products, services, and innovations catering to the needs and aspirations of an ageing population, recognising the potential of older adults as consumers, workers, and contributors to society.

Relevance for future India

By 2050, approximately 2.1 billion people will be aged 60 years or above.³⁹ As demographic trends change, countries will age with the current generation of young people becoming a part of an increasingly aged population. With fertility rates continuing to decline and life expectancies increasing, this can result in trend reversals, as has been noted in countries such as China.

Longevity economy recognises these trends and encourages the creation of a multigenerational workforce, prioritising healthy ageing and building supporting infrastructure and social securities such as robust retirement plans. Longevity economy planning includes twin investments in the skills development of young people today and continued investment in ageing populations.



Noun
/ˌmʌl.tiˌplæn.ɪˈteə.ri ˌsɪ.və.laɪˈzeɪ.ʃənz/

Definition

A **multi-planetary civilisation** is a society that has established sustainable human habitats on more than one planet, with advanced technologies and infrastructure enabling interplanetary travel, resource extraction, and ecosystem support. Such civilisations can truly take us beyond Earth.

Relevance for future India

As India advances its space exploration efforts through public-private partnerships, with the Indian Space Research Organisation (ISRO) taking the lead, it can significantly contribute to the research and development necessary to introduce initiatives that take India beyond the confines of the Earth.

However, India's history of colonialism raises critical ethical considerations as humanity considers inhabiting new planets. India has the opportunity to champion policies and practices that emphasise shared responsibility, sustainability, and respect for planetary ecosystems and potential life forms beyond Earth.

By leading international discussions on ethical frameworks, India can help ensure that the governance of outer space avoids past mistakes and is based on a model rooted in collaboration and equality.

Noun
/'nju:kliə(r) ,maɪkrəʊ.ri'æktərz/

NUCLEAR MICRO



Definition

Nuclear microreactors are 100 to 1000 times smaller than traditional nuclear reactors, with energy generation capacities ranging from 1 to 20 MW. They are compact, transportable, and factory-fabricated. Because of their compact size and design, several risks associated with conventional reactors are minimised in nuclear microreactors.⁴⁰

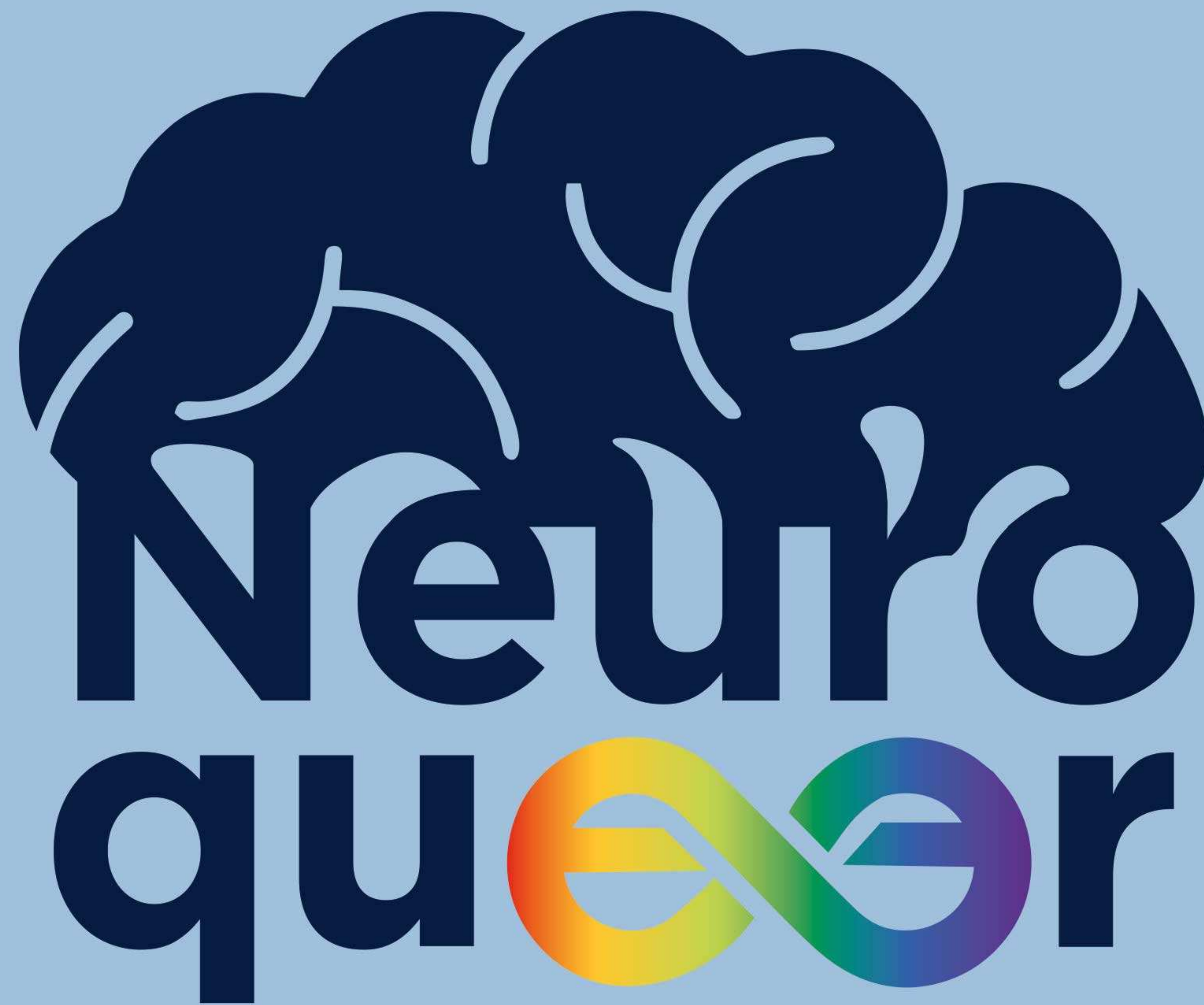
Relevance for future India

Shifting towards greater use of nuclear power, which is regarded as one of the most promising clean energy sources, – aligns with India's goal of reducing reliance on fossil fuels and achieving its net-zero targets.

At the 2024 Nuclear Energy Summit in Brussels, India announced that nuclear energy will play a significant and positive role in the country's electricity generation mix by 2047, marking 100 years of independence.⁴¹

Nuclear microreactors are central to this future vision. The Indian Youth Nuclear Society is already working on the development of India's first microreactor, Sookshma (SUK-M), which is expected to be completed by 2031.⁴²

Noun
/'njʊərəʊkwɪər/



Definition

Neuroqueer blends “neuro”, relating to neurological diversity, and “queer”, reflecting non-conformity with mainstream gender and sexuality constructs. It describes an approach and identity that embraces the intersection of neurodiversity and queer identities, fostering environments where individuals can explore and express their authentic selves without masking or conforming to societal norms.

Relevance for future India

Research indicates that there is much convergence between neurodiverse individuals and members of the LGBTQIA+ community. Yet, there is little investigation into the reason behind this overlap between the communities.⁴³

As this convergence becomes more visible, India will need to develop inclusive policies and social support structures. This includes expanding mental health and social services that are sensitive to the needs of neuroqueer individuals, as well as increasing awareness in educational institutions, workplaces, and public spaces. Advocacy and research into neuroqueer experiences could help India create safe spaces, strengthen anti-discrimination protections, and provide resources that empower neuroqueer individuals to thrive.

Noun
/wʌn hɛlθ/



Definition

One Health is a comprehensive approach to understanding public health by recognising that human health is interconnected to animal and environmental health.

Relevance for future India

Post-COVID 19 pandemic, India began to expand on its existing work on zoonotic diseases, aiming to develop a comprehensive approach to resolving health crises by effectively monitoring and predicting outbreaks through a “One Health” approach.

In 2022, India launched a “One Health” pilot project in Karnataka and Uttarakhand⁴⁴ to improve livestock, human, wildlife, and environmental health. It is preparing for a broader National One Health Mission to be spearheaded by the Office of the Principal Scientific Advisor to the Government of India.⁴⁵

India should aim to revamp its public health infrastructure and integrate the National One Health Mission into its 2047 development agenda.

Noun
/ɒz'mɒtɪk 'enədʒi/

OSMOTIC

energy

Definition

Osmotic energy is the energy derived from the process of osmosis, i.e., the natural force generated when freshwater moves towards saltwater through a semipermeable membrane. The hydraulic pressure generated during osmosis is used to move turbines, which generate electricity. Osmotic energy is a form of renewable and sustainable energy, typically generated in estuaries, i.e., where rivers meet the sea.

Relevance for future India

In 2016, there was a breakthrough in research on osmotic energy. Following a pilot by Norway in 2009, a team of scientists generated considerable energy through a refined technological apparatus. This team included Indian scientist Dr Vishal Nandigana, a PhD student at the time.⁴⁶ Dr Nandigana, now a professor at IIT Madras, is leading India's research on this new source of 'blue energy.'

While osmotic energy is still in the nascent stages of research, it holds immense potential as a renewable source, given India's massive coastline. Utilising perennial rivers, osmotic energy can provide uninterrupted electricity, unlike wind energy, which requires steady wind speeds, or solar panels, which require direct sunlight.

Noun
/ˌfɑːməkə(ʊ)dʒɪˈnəʊmɪks/

PHARMA COGENOMICS

Definition

Pharmacogenomics is a portmanteau of pharmacology (study of medicines) and genomics (study of genes). It refers to the study of genes and their response to different drug treatments.

Relevance for future India

Pharmacogenomics can help in developing personalised medicine recommendations that can best support patient health.⁴⁷

Additionally, it can lead to breakthroughs in addressing concerns over superbugs and antimicrobial resistance. Through pharmacogenomics, researchers can gain valuable insights into the role of genetic variations in drug-resistant pathogens. Furthermore, they can identify specific human genetic markers that indicate resistance to certain antibiotics.

The Government of India has had a Task Force on Pharmacogenomics since 2012 to actively fund, identify, and support research in this field.⁴⁸

Noun
/'plæstɪvɔː(r)/



Definition

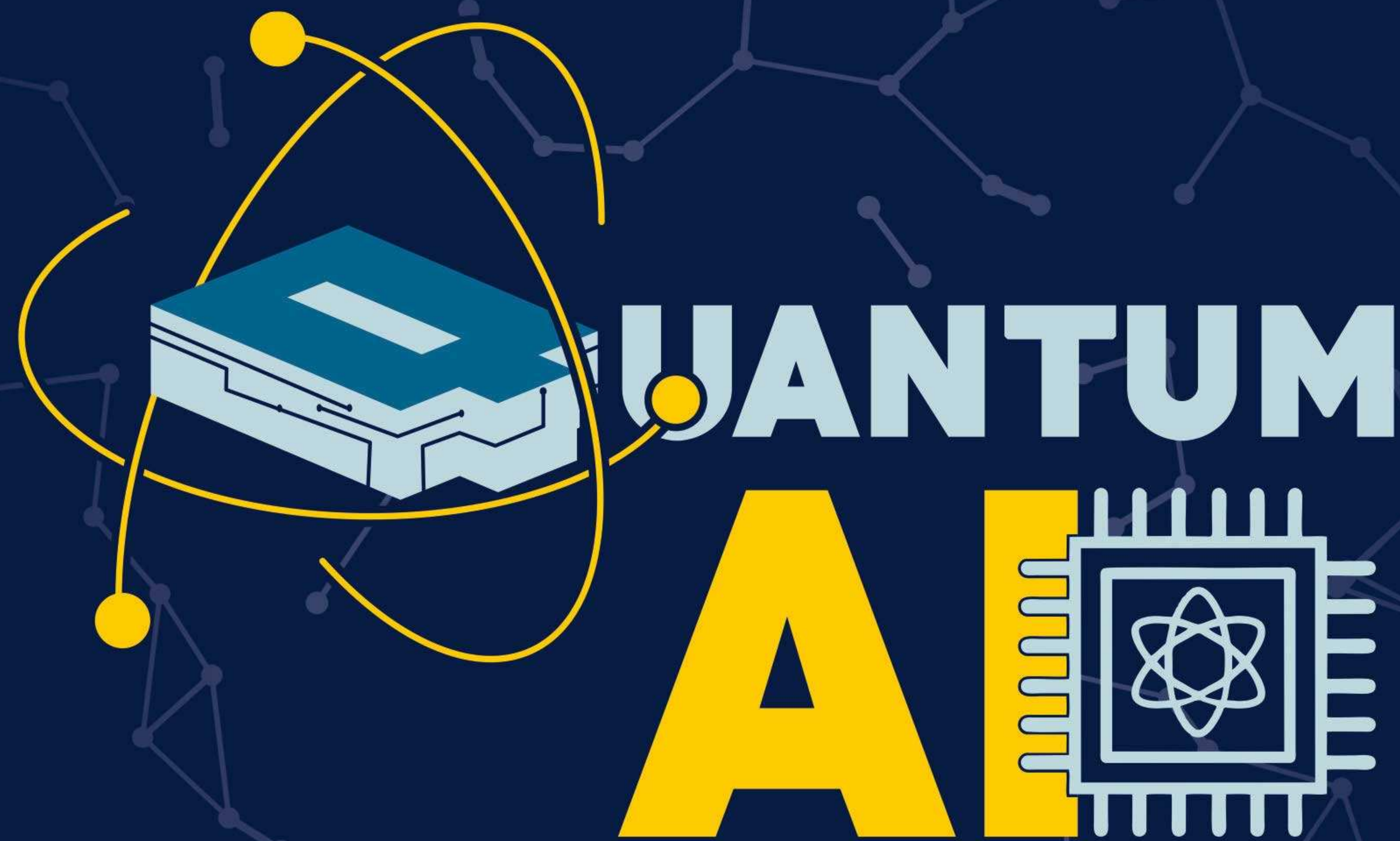
Plastivore is an organism designed to consume and decompose plastic waste, aiding in the fight against pollution and helping to restore ecosystems.⁴⁹

Relevance for future India

33 billion pounds of plastic enter the marine environment every year. By 2050, plastics are projected to outweigh all fish in the sea. India is the biggest polluter worldwide with a staggering 126.5 millions kg each year that ends up in the ocean.⁵⁰ Plastivores could be a solution to this problem.

By investing in plastivore technology, India can limit its plastic emissions while pioneering a climate-saving technology.

Noun
/'kwɒntəm ,eɪ 'aɪ/

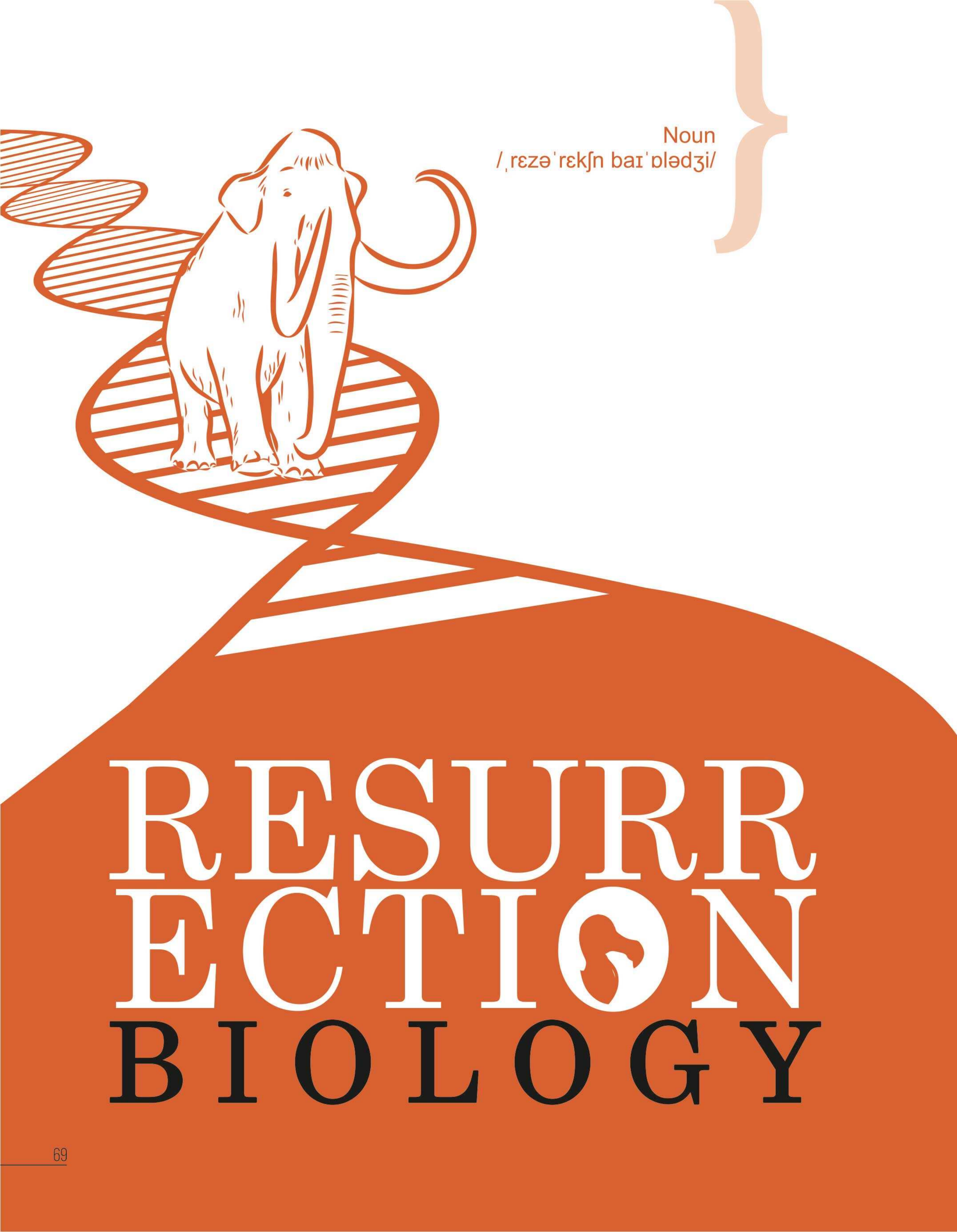


Definition

Quantum AI represents the merger of quantum computing and AI. Moreover, it involves investigating how AI can be integrated into quantum computers.

Relevance for future India

In 2020, India initiated the National Quantum Mission with the goal of advancing scientific and industrial R&D, while cultivating a thriving ecosystem for innovation in quantum technology (QT).⁵¹ This can boost economic growth driven by QT and strengthen the country's technological ecosystem. There are various benefits to expanding the mission and investing in its sustained growth including Quantum AI's impact on drug discovery, optimised financial services and more efficient technology. As India positions itself as a global leader in technology and health, investment in Quantum AI can propel this vision.



Noun
/ ,rezə'rekʃn baɪ'plədʒi/

RESURRECTION BIOLOGY

Definition

Resurrection biology seeks to revive molecular or larger organisms that were once extinct, essentially bringing them back to life.⁵²

Relevance for future India

Scientists anticipate the emergence of potentially harmful pathogens that have been extinct or trapped under layers of permafrost for centuries. These 'zombie viruses,' including anthrax, and influenza, have the potential to trigger future pandemics. Resurrection biology can provide a solution by developing cures. This can act as an opportunity for knowledge-sharing and international cooperation. By pooling resources, expertise and data, diverse communities can collaborate to ensure the speedy innovation of vaccines.

The process of resurrection biology also inherently calls for a joint effort. For example, to de-extinct the woolly mammoth, researchers would require tissues preserved in the permafrost of the Siberian Tundra while using the genetic template of the Indian elephant.⁵³ By leading such cross-collaboration efforts, India can position itself as a global leader in biodiversity conservation.

Noun
/'rəʊbəʊkɜː/



Definition

RoboCare includes advanced robotics and AI that provide personalised care and assistance to older adults and people with disabilities.

Relevance for future India

RoboCare has the potential to enhance the quality of life for ageing populations and individuals with disabilities by offering affordable, reliable care, reducing the burden on healthcare systems, and supporting independent living.

Investing in automated or AI-supported technologies for care functions could revolutionise India's “hidden” care economy and help build essential care infrastructure, especially as India's population begins to age. Ageing trends are already evident in the southern states of India with Kerala mimicking the patterns of countries in Europe and Japan.

Noun
/'si:.stedz/



Definition

Seasteads are floating, self-sustaining townships designed to adapt to rising sea levels. They provide alternative homes that can use the ocean's resources for sustenance.⁵⁴

Relevance for future India

According to an analysis by RMSI, “critical properties and road networks in Mumbai, Kochi, Mangalore, Chennai, Visakhapatnam, and Thiruvananthapuram could be submerged by 2050 because of sea-level rise”.⁵⁵

Seasteads can help India's coastal regions that are vulnerable to rising sea levels. Beyond addressing displacement, seasteads could help alleviate population density issues by creating new living spaces without further straining land-based resources. India is uniquely positioned for pioneering seasteading considering its prowess in the shipbuilding and maritime sectors.

However, seasteading initiatives will require fundamental changes in maritime law that is currently focused on territorial waters and specific economic zones. Reforming this legislation can be an act of global cooperation wherein India could be at the forefront of defining new legal frameworks.

Noun
/ʃiˈkɒnəmi/



Definition

Sheconomy refers to the impact and potential of women's participation in the economy, recognising women as powerful drivers of growth and innovation. This concept highlights the need to include women in all aspects of economic activity to harness their potential, which can lead to substantial gains for businesses and societies alike.

Relevance for future India

In India, sheconomy represents a critical opportunity for economic advancement, with women poised to contribute over \$700 billion to the economy by 2030 if barriers to their participation are addressed.⁵⁶ In fact, research shows that global companies taking a gender-diverse perspective outperform the firms that do not.

India shifted its focus from 'women development' to 'women-led development' by adopting the idea of *Nari Shakti* (women's power) during its G20 presidency. This symbolises India's active efforts to contribute to the sheconomy.⁵⁷ India's G20 presidency also saw the creation of a separate working group on women's empowerment, which, among other objectives, aimed to address the gender pay gap.

The push for a sheconomy aligns with global trends that recognise women's role in catalysing economic recovery and resilience, making it imperative for policymakers to prioritise gender-inclusive strategies.

Noun
/speɪs dɪˈpləʊməsi/



Definition

Space diplomacy involves fostering strong relationships, creating knowledge frameworks, and advancing space capabilities between nations. From a TWAIL (Third World Approaches to International Law) perspective, space diplomacy can transform space into a shared domain for building consensus on previously exclusive global commons.⁵⁸

Relevance for future India

India is emerging as a key player in space diplomacy among its neighbours, by investing in resources and building consensus on shared space technologies for exploration. India's ability to offer cost-effective and dependable launch services, such as those for Chandrayaan and the Mars Orbiter Mission, has positioned it as essential to the Global South.

India also leads in regional space collaborations and negotiations, exemplified by the South Asia Satellite Project, which has strengthened regional cooperation.

Synthfood



Noun
/'sɪnθfuːd/

Definition

Synthfood refers to lab-grown, genetically modified food products that can offer healthier and more sustainable alternatives to conventional agricultural and livestock-based foods. Such products can address global food security challenges.⁵⁹

Relevance for future India

By 2050, there will be an additional three billion people to feed. Current levels of food availability will not be able to meet the needs of this growing population.⁶⁰

Countries like Singapore, the US, and Israel are leading in innovation and investment in lab-grown food. The Kochi-based research centre, Indian Council of Agricultural Research–Central Marine Fisheries Research Institute, has also thrown its hat into the ring by developing lab-grown fish meat.

While research is still underway, synthfoods can address food scarcity, reduce the environmental impact of conventional farming, and offer personalised nutrition options for diverse populations in India and globally. The Food Safety and Standards Authority of India will soon be reviewing whether synthfood, specifically artificial meat, is to be allowed in the Indian market.⁶¹ They are developing a regulatory framework for its production and distribution. Based on these decisions, the future of synthfoods in India could grow exponentially, leading to greater job opportunities in food technology and sustainability sectors besides aiding in the food scarcity challenge.

Noun
/'tɪpɪŋ 'kæskeɪd/



Definition

The Intergovernmental Panel on Climate Change (IPCC) defines tipping points as “critical thresholds in a system that, when exceeded, can lead to a significant change in the state of the system, often with an understanding that the change is irreversible”.⁶² Crossing a single tipping point can trigger additional tipping points, leading to a chain reaction – the **tipping cascade**.⁶³

Relevance for future India

Climate tipping points will have repercussions around the globe, but especially on the most marginalised communities in the majority world. If crossed, and with global temperatures expected to exceed the 1.5-degree Celsius threshold soon, the resulting tipping cascade could have a widespread impact on agriculture and food security. It would also affect the ice cover in the Himalayas, causing subsequent flooding.⁶⁴

To mitigate these risks, a bottom-up approach begins with empowering citizens to initiate community-based adaptations. Nationally, India can focus on mitigation strategies such as enhancing carbon sequestration, expanding renewable energy and improving climate-resilient infrastructure. Additionally, establishing an international emergency platform will enhance coordinated responses and ensure adherence to climate agreements like the Paris Accord. The recently concluded Summit of the Future has outlined a blueprint for such an internationally coordinated platform.

Noun
/'ə:b(ə)n 'ɛ: mə(ʊ)bɪlɪti/



URBAN Air MOBILITY

Definition

Urban air mobility involves transportation of people and cargo using small aerial systems like drones, aiming to reduce travel time and alleviate congestion in urban areas.

Relevance for future India

The mobility sector has seen a shift towards electric and autonomous vehicles. Companies like Amazon are piloting the use of drones for deliveries and potentially for passenger transport in the future.

Indian companies such as Zomato and Swiggy are leading the way in drone delivery services, collaborating with tech firms to innovate in this space. Although the full rollout will take time, India's gig economy is well-equipped to take on this emerging challenge.

Noun
/'ə:b(ə)n 'mɪnɪŋ/



Definition

Urban mining is the practice of extracting and repurposing materials from waste generated in cities. This process reduces the dependence on traditional mining and supports the development of a circular economy within urban environments.

Relevance for future India

One of the many uses of urban mining is its utilisation in recovering resources from urban waste.

For example, the Bhalswa landfill in Delhi, which started operating in 1994 and was declared full in 2006, continues to receive 2,000 tons of waste daily.⁶⁵ Implementing efficient resource recovery methods like urban mining could potentially transform the Bhalswa landfill. Despite adopting such techniques to revamp Delhi's longstanding dumpsites, progress is slow.

Noun
/'və:tʃ(ə)l ðə'kɒnəmi/



Definition

A **virtual economy** is a digital system where individuals can create, trade, and exchange goods, services, and currencies online. This economy operates through platforms, including e-commerce websites, digital marketplaces, and social media, facilitating transactions that range from virtual goods to cryptocurrencies.

Relevance for future India

By 2030, India is expected to lead the e-commerce landscape with 500 million buyers interacting and actively transacting in the virtual economy.⁶⁶

Digital India, launched in 2015, has taken steps to create regulatory frameworks for data protection, digital infrastructure and cybersecurity. For example, the National Digital Communications Policy (NDCP) 2018, helped in the deployment of 5G technologies across India whereas the Digital Personal Data Protection (DPDP) Act 2023, placed important requirements on the kind of data collected and its usage.⁶⁷

However, the policy measures fall short on protecting economically-disadvantaged citizens like food delivery workers who face inconsistent payment and job insecurity. As the multiverse community expands, India will need to further strengthen its digital policy infrastructure to safeguard citizens when they participate in its growing virtual economy.

Noun
/'waɪ.fɑːrm/



Definition

WiFarms or e-agriculture incorporates information technology to enhance agricultural productivity with an emphasis on strengthening farmers' livelihoods, expanding access to information and resources, and increasing yield.

Relevance for future India

Over two-thirds of the Indian population resides in rural areas and depends on farming for its livelihood. This means that any development strategy must include innovations and creative incentives to support farming as a viable source of income and dignified livelihood.

With India making significant advances in digital technologies and emerging as a global leader in digital public infrastructure, WiFarms are the next logical step in transforming its rural economy. The Food and Agricultural Organization (FAO) acknowledges the need for a national 'e-agriculture' strategy – a guideline for leveraging ICT advances to address agricultural challenges.⁶⁸ Leading with a robust e-agricultural strategy in the form of WiFarms, India could inspire the world to transform the narrative on rural economies and their role in development.

Noun
/'zɛnəbɒt

XENOBOT



Definition

Xenobots are a new type of living, programmable robots created from the cells of the African clawed frog, *Xenopus laevis*. These miniature organisms are computer-designed and capable of self-replication.

Relevance for future India

The first xenobot was engineered in 2020 by scientists from the University of Vermont, Tufts University, and the Wyss Institute for Biologically Inspired Engineering at Harvard University.⁶⁹ These xenobots, measuring less than a millimetre, can be programmed to perform a range of complex tasks, including repairing damaged tissue, conducting environmental monitoring, and even assembling small structures. If produced at scale, xenobots would help tackle a range of developmental issues.

Consumption of unclean water is connected to public health, agriculture, contamination and generational impacts. Xenobots and other bioremediation techniques can improve water quality in India, particularly in rural India where access to clean water is a frequent challenge.

Noun
/'jɒtəbaɪt 'ɪərə/



Definition

The **yottabyte era** begins when global data usage reaches one yottabyte.⁷⁰

One yottabyte is equivalent to 1,000 zettabytes, which is 1 million exabytes (EB). 1 EB = 1 billion petabytes (PB), and 1 PB = 1 trillion terabytes (TB).

Relevance for future India

In 2016, global internet traffic reached one zettabyte, ushering in the zettabyte era. Projections now indicate that the Yottabyte era will arrive within the next one to two decades.

India alone is expected to touch 1.5 billion internet users by 2029.⁷¹ Exponential growth in the number of internet users will entail challenges regarding energy consumption, data and privacy, supporting infrastructure, widening digital divide, and more.

Noun
/juːθ ˈɡærəntɪz/



Definition

Youth guarantees refer to policies aimed at ensuring that all young people have access to employment, education, and training opportunities within a specified timeframe, facilitating their transition into the workforce.⁷² This framework focuses on government skilling initiatives at the grassroots level and emphasises local authority involvement in youth skill development.

Relevance for future India

Implementing a youth guarantee in India would ensure that individuals under 30 years of age receive skill development opportunities, such as apprenticeships or training, within four months of registration.

This model not only supports the transition from education to economic engagement but also consolidates various government efforts, like Skill India, Startup India, and the PM Internship Scheme, into a cohesive framework. By prioritising youth engagement and skill development, India can effectively leverage its demographic dividend, preparing a workforce ready for the modern economy.

Noun
/ˌzuːəˈneɪsɪz/



ZOONOSSES

Definition

Zoonoses are infectious diseases that affect humans, with an origin in animals. They can be transmitted through direct contact, contaminated food or water, or environmental sources.⁷³ Zoonoses is a significant global public health issue because it can lead to widespread pandemics. HIV, Ebola and the COVID-19 pandemic have zoonotic genesis.

Relevance for future India

The global temperature increase caused by climate change raises the likelihood of zoonotic outbreaks, as viruses and bacteria trapped in glaciers and permafrost may resurface and infect the global population.⁷⁴

India is especially at risk for zoonotic outbreaks due to its geography and topography - rich biodiversity, large mountain ranges, and livestock populations. Strengthening public health systems, with a focus on preventive measures to address potential pandemics, is crucial for the future.

END NOTES

1. Ministry of External Affairs, Government of India. G20 New Delhi Leaders' Declaration. <https://www.mea.gov.in/Images/CPV/G20-New-Delhi-Leaders-Declaration.pdf>
2. Mobaraki, Mohammadmahdi, Maryam Ghaffari, Abolfazl Yazdanpanah, Yangyang Luo, and D.K. Mills. 2020. "Bioinks and Bioprinting: A Focused Review." *Bioprinting* 18: E00080. <https://doi.org/10.1016/j.bprint.2020.e00080>.
3. "3D Bioprinting Market Size Worth USD 8.64 Billion by 2032." Emergen Research, May 4, 2023. <https://www.emergenresearch.com/press-release/global-3d-bioprinting-market>.
4. NOAA. n.d. "What Is Blue Carbon." National Oceanic and Atmospheric Administration. <https://oceanservice.noaa.gov/facts/bluecarbon.html>.
5. Jena, Labanya P., and Prasad Ashok Thakur. 2022. "Blue Carbon: India's Time to Create Some Waves." Observer Research Foundation. <https://www.orfonline.org/expert-speak/blue-carbon-indias-time-to-create-some-waves>.
6. NOAA. n.d. "Blue Carbon." National Oceanic and Atmospheric Administration. Last modified 18 June 2024. <https://coast.noaa.gov/states/fast-facts/blue-carbon.html>.
7. McQuone, Eoin. n.d. "What Is a Carbon Handprint." Go Positive. <https://go-positive.co.uk/what-is-a-carbon-handprint>.
8. Ministry of Coal. 2024. "Mission LiFE: Environmental Sustainability and Just Transition in Coal Sector." PIB Delhi, Government of India. <https://pib.gov.in/PressReleasePage.aspx?PRID=2010082>.
9. MOEFCC. 2023. "Paris Agreement to Curb Greenhouse Gas Emissions." Rajya Sabha Unstarred Question No. 844. Ministry of Environment, Forest and Climate Change, Government of India. <https://sansad.in/getFile/annex/260/AU844.pdf>.
10. Drishti IAS. n.d. "India's Care Economy." <https://www.drishtias.com/daily-updates/daily-news-editorials/india-s-care-economy#:~:text=Presently%2C%20India%27s%20public%20spending%20on,which%20will%20>
11. Karmannya Counsel, Confederation of Indian Industry, and Nikore Associates. 2024. *Formulating a Strategy for India's Care Economy: Unlocking Opportunities*. New Delhi: Press Information Bureau, Government of India. <https://static.pib.gov.in/WriteReadData/specificdocs/documents/2024/mar/doc202435319501.pdf>.
12. Forbes. 2023. "Understanding the Rise of the Creator Economy." *Forbes*, 27 April. <https://www.forbes.com/sites/quora/2023/04/27/understanding-the-rise-of-the-creator-economy/>.
13. Edgar, Joseph. 2023. "Council Post: The Creator Economy: A Powerful Tool for Small Businesses." *Forbes*, 13 December. <https://www.forbes.com/sites/forbesbusinesscouncil/2023/12/13/the-creator-economy-a-powerful-tool-for-small-businesses/>.
14. Bagchi, Sohini. 2023. "India to Have Largest Content Creator Base." *Live Mint*, 15 January. <https://www.livemint.com/companies/start-ups/india-to-have-largest-content-creator-base-11673796202856.html>.
15. Duarte, Fabio. 2024. "Countries with the Highest Number of Internet Users (2024)." *Exploding Topics*. <https://explodingtopics.com/blog/countries-internet-users>.
16. Jaishankar, Dhruva. "India Rising: Soft Power and the World's Largest Democracy." *Brookings*, March 9, 2022. <https://www.brookings.edu/articles/india-rising-soft-power-and-the-worlds-largest-democracy/>.
17. Puri, Lakshmi. "What Made India's G20 Presidency so Successful? -A Deep Dive into the New Delhi Leaders' Declaration." *orfonline.org*, December 7, 2023. <https://www.orfonline.org/expert-speak/what-made-india-s-g20-presidency-so-successful-a-deep-dive-into-the-new-delhi-leaders-declaration>.
18. Koningstein, Manon. 2024. "Digital Nomad vs Remote Working: What's in a Word." *TheNonMad*, 8 February. <https://www.thenonmad.com/2024/02/08/digital-nomad-vs-remote-working-whats-in-a-word/>.
19. Makimot, Tsugio, and David Manners. 1997. *Digital Nomad*. New York: Wiley. Bednorz, Jan. 2024. "Digital Nomads: A Benefit or Burden for Local Communities?" *The Conversation*, 13 March. <https://theconversation.com/digital-nomads-a-benefit-or-burden-for-local-communities-223107>.
20. Henry, Anesta. "Welcome Fees Reach \$8 Million." *Barbados Today*, July 22, 2021. <https://barbadostoday.bb/2021/07/22/welcome-fees-reach-8-million/>.
21. PTI. 2024. "Digital Public Infrastructure Has Emerged as a Fundamental Driver of Social Transformation and Progress, Says UNGA President." *The Hindu*, 26 April. <https://www.thehindu.com/news/national/digital-public-infrastructure-has-emerged-as-a-fundamental-driver-of-social-transformation-and-progress-says-unga-president/article68108848.ece>.

- 22 Demirgüç-Kunt, Asli, Leora Klapper, Dorothe Singer, and Saniya Ansar. 2022. The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19. Washington, D. C.: World Bank. <https://doi.org/10.1596/978-1-4648-1897-4>.
- 23 Banerjee, Amber. “26 Solar-Powered 'green Expressways' in India Soon: Nitin Gadkari - Times of India.” The Times of India, September 13, 2022. <https://timesofindia.indiatimes.com/auto/policy-and-industry/26-solar-powered-green-expressways-in-india-soon-nitin-gadkari/articleshow/94168737.cms>.
- 24 Sarkar, Brinda. 2024. “An Average Indian Spent 59 Minutes to Commute One Way to Work in 2023: Report.” The Economic Times, 29 January. https://economictimes.indiatimes.com/industry/transportation/roadways/a-n-average-indian-spent-59-minutes-to-commute-one-way-to-work-in-2023-report/articleshow/107240005.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst.
- 25 Agarwal, Madhuri, Ruchi, Farheen Alam Fakhr, and Kusum Choudhary. “A Sustainable Model of Urbanization for Indian Cities, A Case Study of New Delhi.” International Journal of Engineering Research and Technology 10, no. 3 (March 2021). <https://doi.org/10.17577/IJERTV10IS030022>.
- 26 Bhattacharyya, Kamal. “Gamification: Physical, Digital and Phygital and Its Importance in Education for Equitable and Life Long Learning.” Times of India Blog, June 27, 2022. <https://timesofindia.indiatimes.com/readersblog/herbinger/gamification-physical-digital-and-phygital-and-its-importance-in-education-for-equitable-and-life-long-learning-43542/>
- 27 Sablok, Avni. “India's Contribution to the G20 Process: Focus on Women-Led Development.” Indian Council of World Affairs (Government of India), April 24, 2024. https://www.icwa.in/show_content.php?lang=1&level=3&ls_id=10778&lid=6852#:~:text=Under%20India's%20G20%20Presidency%2C%20member,under%20the%20Brazilian%20G20%20Presidency.
- 28 “Heritage Hubs.” International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM). <https://www.iccrom.org/projects/heritage-hubs>.
- 29 Specimen. n.d. “What is Hyperspectral Imaging: A Comprehensive Guide”. <https://www.specim.com/technology/what-is-hyperspectral-imaging/#:~:text=Hyperspectral%20imaging%20is%20a%20technique,analyzing%20their%20unique%20spectral%20signatures>.

- 30 Ministry of Agriculture. 2009. “Loss of Crop Yield due to Pest Attacks.” Rajya Sabha Question No. 04.12.2009. Ministry of Agriculture, Government of India. <https://sansad.in/getFile/annex/218/Au1696.pdf?source=pqars>.
- 31 Pixxel. n.d. “Monitor Crop Health. Detect Variations. Improve Yield.” <https://www.pixxel.space/solutions/agriculture>
- 32 Parikka, Jussi. “Middle East and Other Futurisms: Imaginary Temporalities in Contemporary Art and Visual Culture.” Culture, Theory and Critique 59, no. 1 (December 28, 2017): 40–58. <https://doi.org/10.1080/14735784.2017.1410439>.
- 33 Jishnu, Latha. 2024. “Making Jugaad a Global Success.” Down To Earth, 15 February. <https://www.downtoearth.org.in/economy/making-jugaad-a-global-success-94467>.
- 34 Bhargava, Rakesh. “The Jaipur Foot and the 'Jaipur Prosthesis.’” Indian Journal of Orthopaedics 53, no. 1 (February 2019): 5–7. https://doi.org/10.4103/ortho.ijortho_162_18.
- 35 Shukla, Nishant. “Solar Panel Lights: An Eco-Friendly Lighting Solution for Every Indian Home.” Fenice Energy, April 25, 2024. <https://blog.feniceenergy.com/solar-panel-lights-an-eco-friendly-lighting-solution-for-every-indian-home/>.
- 36 Rajeev, Gautam, and Vijeeth Srinivas. “Leveraging Artificial Intelligence to Deliver Advisory to Farmers.” Samagra, March 31, 2023. <https://samagragovernance.in/blog/2023-03-31-leveraging-artificial-intelligence-to-deliver-advisory-to-farmers/>.
- 37 Sri, Shreya. “Do You Know about the Agricultural Robots in India.” Medium, August 1, 2023. <https://medium.com/@shreyasri1525/do-you-know-about-the-agricultural-robots-in-india-7745235e798a>.
- 38 Cyrill, Melissa. “India Wants to Establish a Living Wage Standard by 2025.” India Briefing News, March 28, 2024. <https://www.india-briefing.com/news/india-hopes-to-replace-minimum-wage-with-living-wage-standard-by-2025-what-we-know-31701.html/>.
- 39 World Economic Forum. n.d. “Longevity Economy: Financial Resilience for Every Generation.” <https://initiatives.weforum.org/financial-resilience-for-every-generation/home>.
- 40 Chabinsky, Hana. 2023. “Navigating Nuclear: Microreactors, SMRs, and Traditional Plants.” Last Energy. <https://www.lastenergy.com/blog/microreactors-smrs-and-traditional-plants>.

- 41 Department of Atomic Energy. 2024. "India's Statement at Nuclear Energy Summit Brussels 2024." Department of Atomic Energy, Government of India. <https://dae.gov.in/indias-statement-at-nuclear-energy-summit-brussels-2024/>.
- 42 Sharma, Samrat. 2024. "Why Nuclear Microreactors Are Way Ahead for Climate-Friendly Electricity in India." India Today, 12 January. <https://www.indiatoday.in/diu/story/why-nuclear-microreactors-are-way-ahead-for-climate-friendly-electricity-in-india-2488062-2024-01-12>.
- 43 Rakshit, Devrupa. "The Link between Neurodivergence and Queerness, Explained." The Swaddle, April 28, 2023. <https://www.theswaddle.com/why-theres-more-gender-and-sexuality-diversity-in-the-neurodivergent-community>.
- 44 Deepika, C.K. 2022. "Karnataka Among two States to Host One Health Pilot With Focus on Zoonotic Diseases." The Hindu, 16 June. <https://www.thehindu.com/news/national/karnataka/karnataka-among-two-states-to-host-one-health-pilot-with-focus-on-zoonotic-diseases/article65533164.ece>.
- 45 Principal Scientific Advisor to the Government of India. n.d. "National One Health Mission." <https://www.psa.gov.in/innerPage/psa-initiatives-covid/national-one-health-mission/4053/4053>
- 46 "IIT Madras Faculty Works on Breakthrough Technology to Derive Power from Estuaries." Hindustan Times, August 16, 2019. <https://www.hindustantimes.com/education/iit-madras-faculty-works-on-breakthrough-technology-to-derive-power-from-estuaries/story-YMGC014NzHvtDcOy9Nt1QJ.html>.
- 47 Sandhir, Sachin. 2023. "From Medical Treatment to Therapies: The Power of Personalised Genomics". Economic Times, 27 December. <https://economictimes.indiatimes.com/small-biz/sme-sector/from-medical-treatment-to-therapies-the-power-of-personalised-genomics/articleshow/106308499.cms?from=mdr>.
- 48 Department of Health Research, Ministry of Health and Family Welfare. 2017. "Genomic Research." Lok Sabha Unstarred Question No. 4963. Government of India. <https://sansad.in/getFile/loksabhaquestions/annex/11/AU4963.pdf?source=pqals>.
- 49 Gyanwali, Vaskar, Sukanya Punthambaker, George Church, and Don Ingber. n.d. "Plastivores: Plastic-Degrading Super-Microbes and Enzymes." WYSS Institute. <https://wyss.harvard.edu/technology/plastivores-plastic-degrading-super-microbes-and-enzymes/>.
- 50 Zuylen, Marc van. "World's Biggest Plastic Polluters." AquaBlu, 2023. <https://www.aquablu.com/stories/world-8217-s-biggest-plastic-polluters>.
- 51 Department of Science and Technology, Ministry of Science and Technology, Government of India. n.d. "Cabinet Approves National Quantum Mission to Scale Up Scientific, Industrial R&D in Quantum Technologies." <https://dst.gov.in/cabinet-approves-national-quantum-mission-scale-scientific-industrial-rd-quantum-technologies>.
- 52 Hunt, Katie. 2023. "Why 'Resurrection Biology' is Gaining Traction Around the World." CNN, 26 December. <https://edition.cnn.com/2023/12/26/world/resurrection-biology-extinct-species-virus-scn/index.html>.
- 53 Siipi, Helena, and Leonard Finkelman. "The Extinction and De-Extinction of Species." Philosophy & Technology 30, no. 4 (November 19, 2016): 427–41. <https://doi.org/10.1007/s13347-016-0244-0>.
- 54 Chhotray, Shilpi. 2015. "Seasteading: The Answer to Sustainably Feeding 9 Billion People?" Our World, 6 April. <https://ourworld.unu.edu/en/seasteading-the-answer-to-sustainably-feeding-9-billion-people>.
- 55 Bhavsar, Karishma P. 2023. "These 2 Indian Cities Are at Risk due to Sea Level Rise." Live Mint, March 5. <https://www.livemint.com/news/india/these-2-indian-cities-are-at-risk-due-to-sea-level-rise-11677996856707.html>.
- 56 "Is 2020 the Year of the Sheconomy?" Morgan Stanley, September 23, 2019. <https://www.morganstanley.com/ideas/womens-impact-on-the-economy>.
- 57 Sablok, Avni. "India's Contribution to the G20 Process: Focus on Women-Led Development." Indian Council of World Affairs (Government of India), April 24, 2024. https://www.icwa.in/show_content.php?lang=1&level=3&ls_id=10778&lid=6852#:~:text=This%20paper%20explores%20how%20India's,key%20pillar%20of%20foreign%20policy.
- 58 Varait, Adithy A. and Khooshi Mukhi. 2023. "Indian Space Policy 2023: India's Space Diplomacy in the Global South." The GeoPolitics, 27 May. <https://thegeopolitics.com/indian-space-policy-2023-indias-space-diplomacy-in-the-global-south/>.
- 59 Gill, Kerrie. 2024. "An Overview of Synthetic Food." It's All Goods, 19 March. <https://www.itsallgoodsinc.com/insights/an-overview-of-synthetic-food>.

- 60 Searchinger, Tim, Richard Waite, Craig Hanson, and Janet Ranganathan. 2019. *Creating a Sustainable Food Future*. Washington, DC: World Resource Institute. <https://research.wri.org/wrr-food>.
- 61 Dhar, Pawan K. “Opinion: Can Lab-Grown Meat Satisfy India's Growing Food Needs?” NDTV.com, August 17, 2023. <https://www.ndtv.com/opinion/can-lab-grown-meat-satisfy-indias-growing-food-needs-4305348>.
- 62 Igini, Martina. “Explainer: The Tipping Points of Climate Change.” Earth.Org, January 11, 2024. <https://earth.org/tipping-points-of-climate-change/#:~:text=The%20Intergovernmental%20Panel%20on%20Climate,Tipping%20Points%20of%20Climate%20Change>.
- 63 Wunderling, Nico, Ricarda Winkelmann, Johan Rockström, Sina Loriani, David I. Armstrong McKay, Paul D. Ritchie, Boris Sakschewski, and Jonathan F. Donges. “Global Warming Overshoots Increase Risks of Climate Tipping Cascades in a Network Model.” *Nature Climate Change* 13, no. 1 (December 22, 2022): 75–82. <https://doi.org/10.1038/s41558-022-01545-9>.
- 64 ESA. 2023. “Understanding Climate Tipping Points.” The European Space Agency. https://www.esa.int/Applications/Observing_the_Earth/Space_for_our_climate/Understanding_climate_tipping_points.
- 65 PTI. 2023. “45 Lakh Tonne of Waste at Bhalswa Landfill Expected to be Reduced by May 2024: Arvind Kejriwal.” *Economic Times*, 2 October. <https://economictimes.indiatimes.com/news/india/45-lakh-tonne-of-waste-at-bhalswa-landfill-expected-to-be-reduced-by-may-2024-arvind-kejriwal/articleshow/104065700.cms>.
- 66 FE Online. 2024. “Indian Ecommerce Market to Grow to \$325 Billion; Digital Economy to Reach \$800 Billion by 2030.” *Financial Express*, 27 April. <https://www.financialexpress.com/business/industry-indian-ecommerce-market-to-grow-to-325-billion-digital-economy-to-reach-800-billion-by-2030-3470164/>.
- 67 Burman, Anirudh. “Understanding India's New Data Protection Law.” Carnegie Endowment for International Peace, October 3, 2023. <https://carnegieendowment.org/research/2023/10/understanding-indias-new-data-protection-law?lang=en>.
- 68 “E-Agriculture Strategy Guide.” Food and Agriculture Organization of the United Nations. <https://www.fao.org/in-action/e-agriculture-strategy-guide/en/>.
- 69 Brown, Joshua. 2021. “Team Builds First Living Robots That Can Reproduce.” Wyss Institute for Biologically Inspired Engineering at Harvard University. <https://wyss.harvard.edu/news/team-builds-first-living-robots-that-can-reproduce/>.
- 70 Bonderud, Doug. 2020. “Zipping Past the Zettabyte Era: What's Next for the Internet and Digital Technology?” Northrop Grumman. <https://now.northropgrumman.com/zipping-past-the-zettabyte-era-whats-next-for-the-internet>
- 71 Degenhard, J. 2024. “Internet Users in India 2014–2029.” Statista. <https://www.statista.com/forecasts/1144044/internet-users-in-india#:~:text=The%20number%20of%20internet%20users,a%20new%20peak%20in%202029>.
- 72 Manuswamy, Balasubramanian. “Time for India to Follow EU's Effective 'Youth Guarantee' Programme Now.” *YourStory*, June 26, 2019. <https://yourstory.com/2019/06/time-india-follow-eu-youth-guarantee-programme>.
- 73 WHO. 2020. “Zoonoses.” World Health Organization. <https://www.who.int/news-room/fact-sheets/detail/zoonoses>.
- 74 Geddes, Linda. 2022. “Next Pandemic May Come from Melting Glaciers, New Data Shows.” *The Guardian*, 19 October. <https://www.theguardian.com/science/2022/oct/19/next-pandemic-may-come-from-melting-glaciers-new-data-shows>

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