

8th Oct, 2024

1. microRNA: A Nobel Prize-Winning Discovery

Recent events of importance

- **Why in News:** The **Nobel Prize in Medicine** was awarded to two US scientists, **Victor Ambros and Gary Ruvkun**, for their groundbreaking discovery of **microRNA**—a previously **unknown type of genetic switch**. This discovery holds promise for developing new medical treatments, although none are currently available to patients.
- **What is microRNA?**
 - Each cell in the human body contains the same genetic instructions, known as **DNA**.
 - However, different cells (like brain cells and muscle cells) interpret these instructions differently.
 - This process is called **gene regulation**, where certain parts of the DNA are activated or deactivated.
 - **Role of RNA:** Ribonucleic acid (RNA) typically acts as a messenger, conveying instructions from DNA to proteins, which are essential for building and maintaining cells.
 - An example of this is the **messenger RNA (mRNA)** used in COVID-19 vaccines, which instructs cells to produce proteins that fight the virus.
 - **MicroRNA (miRNA)** is a **small, non-coding RNA molecule** that plays a key role in regulating gene expression.
 - Unlike **messenger RNA (Mrna)**, which carries instructions to make proteins, microRNA works by binding to specific mRNA molecules and preventing them from being translated into proteins or by degrading the mRNA altogether.
- **The Discovery of microRNA**
 - Ambros and Ruvkun discovered microRNA while studying the interactions of genes in a tiny roundworm known as *Caenorhabditis elegans* in the 1980s.
 - Their research led to the identification of microRNA as a new type of gene regulator, distinct from traditional RNA.
 - **Function of microRNA:**
 - Unlike messenger RNA, microRNA acts as a switch that can turn other genes on or off.
 - This adds a new layer of complexity to gene regulation, revealing that areas of DNA previously thought to be non-coding actually play significant roles in controlling gene expression.
 - There are more than 1,000 genes in the human body that respond to microRNA.
- **Potential Applications of microRNA**
 - MicroRNA has the potential to revolutionize medical treatments, particularly in the following areas:
 - **Cancer Treatment:** Some microRNAs function as tumor suppressors, helping to prevent cells from dividing uncontrollably, while others can promote cell division, potentially leading to cancer. Understanding these mechanisms could lead to new cancer therapies.
 - **Antiviral Drugs:** Many viruses utilize microRNAs for their lifecycle, leading researchers to develop antiviral drugs targeting these interactions. Treatments for hepatitis C are among the ongoing developments.
 - **Biomarkers:** Scientists hope to use microRNA as biomarkers to detect specific types of cancer, aiding in diagnosis and treatment strategies.

Medicine Nobel 2024:

Victor Ambros and Gary Ruvkun get the call for discovery of microRNA

The finding revealed what biologists believed they knew about gene regulation to be incomplete

■ Victor Ambros and Gary Ruvkun have been jointly awarded the Nobel Prize for Physiology or Medicine for 2024, the Nobel Academy at the Karolinska Institutet announced on Monday

■ They were awarded the prestigious prize for the discovery of microRNA and its role in post-transcriptional gene regulation

■ "Victor Ambros and Gary Ruvkun were interested in how different cell types develop. They discovered microRNA, a new class of tiny RNA molecules that play a crucial role in gene regulation," the Nobel Assembly said in a statement

■ Ambros and Ruvkun's work revealed a then previously unknown principle of gene regulation that turned out to be essential for multicellular organisms, including humans

■ The duo made their finding by studying the 1-mm-long

roundworm *Caenorhabditis elegans*

■ The body makes proteins in a complex process with two broad steps: transcription and translation

■ During transcription, a cell copies a DNA sequence into messenger RNA (mRNA) in the nucleus. The mRNA moves from the nucleus, through the cell fluid, and attaches itself to the ribosome

■ During translation, another type of RNA called transfer RNA (tRNA) 'brings' amino acids to the ribosome, where they are linked together in the order specified by the mRNA to make a protein

■ MicroRNA, or miRNA, regulates the production of proteins by bonding with and subsequently silencing the mRNA at an appropriate juncture. The process is called post-transcriptional gene regulation

■ Ambros and Ruvkun found the first miRNA gene in *C. elegans* in 1993. It was called lin-4. They confirmed its role by modifying the miRNA to result in different parts of the worm's developmental process to be thrown out of sync

■ By studying a second miRNA gene they found seven years later, called let-7, they confirmed miRNAs are actually present across the animal kingdom

■ "miRNAs are proving to be fundamentally important for how organisms develop and function," the Assembly added in its statement

MORE ON WORLD PAGE

2. World Association of Zoos and Aquariums (WAZA) GS 3 (Environment)

- **Why in News:** The **World Association of Zoos and Aquariums (WAZA)** — an alliance of global zoo and aquarium associations suspended the membership of the National Zoological Park, informally known as the Delhi zoo, over concerns about the poor condition in which the lone African elephant at the facility has been housed.

About WAZA

- **Founded:** 1935
- WAZA is the global alliance of regional associations, national federations, zoos and aquariums, dedicated to the care and conservation of animals and their habitats around the world.
- The membership consists of nearly 400 leading institutions and organisations around the world, and this number continues to grow.
- WAZA promotes cooperation between leading zoos, aquariums, national and regional associations, as well as with leading wildlife experts, academics, and universities.
- **Central Zoo Authority (CZA)** is India's statutory zoo regulatory body.

African savanna elephants

- African savanna elephants are the largest species of elephant and the biggest terrestrial animal on Earth.
- There are two subspecies of African elephant:
 - Savanna elephant (*Loxodonta africana*)
 - Forest elephant (*Loxodonta cyclotis*)
- They have large ears—which allow them to radiate excess heat—and front legs which are noticeably longer than the hind legs.
- The largest populations are in Southern and Eastern African countries, including **Botswana, Zimbabwe, Tanzania, Kenya, Namibia, Zambia, and South Africa.**
- African elephants are listed as endangered by the IUCN.

3. A re-balancing of India's great power relations GS 2 (International Relations)

- **Why in News:** Prime Minister Narendra Modi's participation in the **sixth Quad Leaders' Summit** and National Security Adviser Ajit Doval's diplomatic efforts, including meetings with Russian President Vladimir Putin, highlight **India's balancing act in a complex geopolitical landscape**. As India navigates its relationships with both Western powers and traditional allies like Russia, the implications for its foreign policy and regional stability are significant.
- **Strategic Balancing**
 - **Quad Cooperation:** India's engagement in the Quad represents an effort to strengthen security collaboration among major maritime democracies, aimed at countering threats to a rules-based order in the Indo-Pacific.
 - **Bargaining with China:** Doval's meetings with Putin and Chinese Foreign Minister Wang Yi signify India's commitment to resolving tensions along the Line of Actual Control (LAC) with China while maintaining its strategic autonomy.
 - **Complex Diplomacy:** India's security managers face the challenge of aligning its foreign policy to protect national interests amidst rising geopolitical tensions, particularly regarding its relations with Russia and the West.
- **Role of Mediator**

A re-balancing of India's great power relations



As reports of ongoing the military advantages the center with this relationship, that since the war in Ukraine has erupted Russia's great power status with the West, Moscow's great power status has become even more pronounced. Forcing Russia to be more open to the great power of China, Russia has been struggling to preserve its partnership with India since its foreign policy is heavily tilted towards the West. From an Indian perspective, this needs to be seen in the context of India's foreign policy, which is heavily tilted towards the West. India's foreign policy is heavily tilted towards the West, and this is a key factor in its foreign policy. India's foreign policy is heavily tilted towards the West, and this is a key factor in its foreign policy. India's foreign policy is heavily tilted towards the West, and this is a key factor in its foreign policy.

- **Peace Initiatives:** Doval's discussions, including India's peace plan for Ukraine, indicate New Delhi's aspiration to position itself as a global mediator, despite criticism from various quarters.
- **Historical Relations:** India's long-standing ties with Russia have historically provided military advantages, but Russia's pivot toward China complicates this relationship as New Delhi seeks to assert its strategic autonomy.
- **Western Perceptions:** India's independent stance in foreign policy, such as its purchase of Russian oil, has been viewed by the West with skepticism, emphasizing the normative costs of maintaining such relationships.

● **Russia-China Dynamics**

- **Deepening Ties:** Russia's growing partnership with China poses challenges for India, particularly as China continues to support Pakistan and exacerbate security issues for India.
- **Shift in Focus:** As Russia prioritizes its relationship with China amidst global tensions, India's reliance on Moscow is diminishing, leading to a reevaluation of its strategic partnerships.
- **Need for Rebalancing:** India's diplomatic approach must now account for the Russia-China nexus, focusing on balancing its historical ties with Russia while enhancing relations with the U.S. and other partners.

4. **Unpacking the Centre's affidavit on Marital Rape GS 2 (Governance)**

- **Why in News:** The **Marital Rape Exception (MRE)**, as outlined in the **Bharatiya Nyaya Sanhita, 2023**, continues to be contested in the Supreme Court of India. The Centre has filed an affidavit supporting the MRE, which has sparked significant legal and social debate regarding its implications for women's rights and the institution of marriage.

● **Expectation of Sexual Access**

- **Legal Ambiguity:** The Centre argues that marriage creates an 'expectation of reasonable sexual access,' but fails to define what constitutes this expectation, raising concerns about its vagueness as a legal standard.
- **Subjective vs. Objective:** The distinction between subjective (individual perception) and objective (uniform standard) definitions of this expectation remains unclear, complicating its legal applicability.
- **Gender Norms:** The assertion that marriage creates specific expectations ignores that other intimate relationships, like live-in arrangements, can also foster similar expectations, questioning the rationale behind differential treatment.

● **Sanctity of Marriage**

- **Institutional Integrity:** The Centre claims that recognizing marital rape could undermine the institution of marriage. However, no evidence links the strength of marriage to the impunity of husbands who commit marital rape.
- **Misuse Concerns:** The argument concerning potential misuse of marital rape allegations is misleading, as all criminal offenses can be misused; thus, proving guilt or innocence is a judicial responsibility.
- **Reform Necessity:** If marital impunity is essential for marriage, it raises questions about the institution's value and necessitates reevaluation and potential reform rather than protection under law.

● **Jurisdictional Arguments**

- **Social vs. Legal Issues:** The Centre contends that marital rape is a social issue beyond judicial jurisdiction. However, law governs all aspects of life, making it challenging to separate social from legal concerns.

Global body suspends Delhi zoo membership over welfare of elephant



Jumbo trouble: African elephant Shankar was gifted in 1996 to the then President Shankar Dayal Sharma by Zimbabwe. FILE PHOTO

The Hindu Bureau NEW DELHI

World Association of Zoo and Aquarium, on Monday suspended the membership of Delhi's National Zoological Park for six months, over concerns related to the welfare of an African elephant, Shankar, who has been kept chained in his enclosure.

The CEO of WAZA had visited the zoo and met officials of the Central Zoo Authority (CZA), a statutory body of the Government of India, and had raised concerns about the mistreatment of animals. Sanjay Shukla, member secretary of the CZA, told *The Hindu*.

"The issue of the African elephant Shankar being in chains was brought up. The elephant was shackled because it was in 'musty' (a biological state in male elephants marked by increased aggression) and had broken a wall," Mr. Shukla said.

"Secondly, Shankar is without a mate and we have entered into a deal with Botswana to ship a female elephant from there. We expect the matter to be resolved soon," he added.

WAZA is a non-governmental organisation and sets accreditation standards that member-zoos across the world adhere to which gives the latter prestige. A zoo being suspended means it cannot attend conferences or activities organised by WAZA, said Mr. Shukla.

6-month suspension
The WAZA did not respond to questions about the situation.

They told *The Hindu* that the Delhi Zoo is under a six-month suspension due to a breach of the WAZA Code of Ethics.

Shankar, the African elephant, was gifted in 1996 to the then President of India Shankar Dayal Sharma by Zimbabwe. His companion, Bambi, another African elephant, died in 2005.

The Marital Rape Exception (MRE), in Section 2 of the Bharatiya Nyaya Sanhita, 2023 (Section 375, Exception 2 of the Indian Penal Code, 1860) states that "sexual intercourse or sexual acts by a man with his own wife, the wife not being under eighteen years of age, is not rape". The provision is under challenge before the Supreme Court of India and the Centre has filed an affidavit in support of MRE which needs unpacking.

The issue of 'expectation'
Most of the arguments made by the Centre will, by now, be familiar to those acquainted with the debate around marital rape. It is stated that the differential treatment of married and unmarried women by MRE does not violate Article 14 of the Constitution of India (the right to equality) because married and unmarried women are not equally placed. The factum of marriage, it is argued, creates a continuing expectation of reasonable sexual access, which is absent in case of a stranger or of another intimate relationship. This, the affidavit contends, is a sufficient basis for the legislature to make a distinction between an incident of rape within and outside marriage.

Who gets to define what "reasonable sexual access" means? And on what parameter is it a subjective definition the person who has the expectation decided or an objective one there is one standard for everyone? Does it encompass questions of different sexual acts or frequency or both? That marriage creates a continuing expectation of reasonable sexual access is, at the outset, a dubious claim. More importantly, however, it is established that it is a sound legal argument against striking down MRE. Going by



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It is very much within the jurisdiction of the judiciary to determine whether marital rape exception violates a fundamental

continuing expectation that a husband will provide for his wife. Surely that cannot be grounds for saying that if a wife takes her husband's car and sells them as scrap metal without his consent (perhaps even by force), she has not committed theft. It is also unclear why marriage creates such an expectation but other intimate relationships (for instance, live-in relationships) do not. Ordinarily, an expectation (a hope or belief that something will happen) is personal. It can arise as much in one kind of relationship as it can in another, depending on the person and the relationship. Perhaps the subject of this claim is that the expectation of sexual access in a marriage is socially sanctioned and acceptable in a way that a similar expectation in a live-in relationship is not. Even if that were the case, it remains to be argued that the right to be legally relevant in a jurisdiction where individual autonomy (including sexual autonomy) and the dignity of the individual are constitutionally protected.

'Institution' and 'misuse'
Other familiar arguments found in the Centre's affidavit are that the recognition of marital rape as a criminal offence would affect the sanctity of the institution of marriage and potentially lead to false allegations of marital rape which would be difficult to disprove. As I have argued in this space, there is no evidence to suggest that the recognition of marital rape has a causal link with the strength of the institution of marriage. In any case, if the institution of marriage is so dependent on the impunity of a husband who rapes his wife, perhaps that is a reason to question its value and consider reforming it. The argument grounded in concerns of 'misuse' is a red herring. Any criminal offence may be

is to determine whether an alleged offence was committed usually, to a standard beyond reasonable doubt. Moreover, statistics show that sexual offences are generally under-reported, and the real challenge is in proving, rather than disproving, an allegation of rape.

Arguments on jurisdiction
The Centre's affidavit also makes the claim that marital rape is a social, not a legal issue, and, therefore, not within the Court's jurisdiction. (Given that law regulates (nearly) every aspect of human life and society, it is not clear whether and how there can be such a watertight distinction between a social and a legal issue. In any case, the fact that the Centre has addressed arguments on Articles 14 and 21 (the right to life) in its affidavit indicates that there is a legal issue at stake here. A related argument is that the decision on what should or should not be a criminal offence is a matter of legislative, rather than judicial, competence. There is some merit to this claim. It may, however, prove largely irrelevant. The Court is not required, in this matter, to declare marital rape a criminal offence though the issue may colloquially be framed as whether MRE violates a fundamental right, and to strike it down if it does.

Thus, the Centre's affidavit rubs many familiar arguments in favour of MRE, but the legal merit of these arguments is questionable. [from PREE Tapan Chaudhary <https://www.thehindu.com/2023/09/04/ncsc-ias-current-affairs-oct-c-a/>]

- **Legislative Competence:** While the Centre argues that defining criminal offenses lies within legislative power, the Court's role is to assess whether existing laws, like the MRE, violate fundamental rights under the Constitution.
- **Constitutionality Assessment:** The Supreme Court's task is to evaluate the constitutionality of MRE, focusing on its alignment with Articles 14 and 21 of the Constitution, rather than debating the necessity of criminalizing marital rape.

5. High-Performance Buildings and Their Impact on Sustainability in India

GS 3 (Infrastructure)

- **Why in News:** The conversation around sustainability in the building sector is increasingly crucial as buildings are significant contributors to global emissions. With urbanization accelerating, especially in countries like India, improving energy efficiency and reducing carbon footprints in construction is vital for achieving climate goals.
- **The Challenge of Building Emissions**
 - Buildings account for nearly 40% of total final energy consumption globally, primarily for operational needs like heating, ventilation, and lighting.
 - This energy usage results in approximately 28% of energy-related carbon emissions.
 - In India, buildings contribute over 30% of national energy consumption and 20% of carbon emissions.
 - As India's urban population is projected to reach 600 million by 2030, addressing these issues becomes increasingly urgent.
- **What Are High-Performance Buildings (HPBs)?**
 - High-Performance Buildings (HPBs) and green buildings are terms often used interchangeably, but they have distinct objectives:
 - **Green Buildings:** Green buildings focus on reducing environmental impacts and energy consumption, often certified through established programs that assess sustainability across various categories, such as energy efficiency and water conservation.
 - **High-Performance Buildings:** HPBs aim for exceptional efficiency in all aspects, from energy and water use to occupant health and comfort. They utilize advanced technologies and smart design strategies to achieve results beyond local regulations, continuously tracking performance metrics.
 - **Key Features of High-Performance Buildings**
 - **Site-Specific Design:** HPBs employ natural lighting, ventilation, and sustainable materials to maximize thermal efficiency and reduce energy demand.
 - **Advanced Technologies:** These include energy-efficient HVAC systems, greywater recycling, rainwater harvesting, smart lighting controls, and sophisticated building management systems (BMS) that optimize resource use in real-time.
- **Benefits of High-Performance Buildings**
 - HPBs provide numerous advantages that extend beyond environmental impact:
 - **Operational Longevity:** Smart systems help ensure that building infrastructure lasts longer, reducing the need for frequent upgrades.
 - **Economic Gains:** HPBs typically have higher property values and lower maintenance costs, leading to better returns on investment.
 - **Intelligent Ecosystems:** By using automation and artificial intelligence, HPBs can adjust conditions based on occupancy and environmental factors, optimizing energy use.

How high-performance buildings are the next step towards a sustainable future

As urbanisation accelerates, India risks surpassing global benchmarks for energy efficiency and carbon emissions in buildings. In such a scenario, HPBs offer resilience through adaptive, self-sufficient structures. They promote social well-being by nurturing healthier indoor environments

Sandhya Paul

The conversation around sustainability in the building sector has often centred on climate change, resource use, and energy efficiency. Buildings are significant contributors to global emissions, especially in fast-growing cities, so improving their energy and carbon efficiency is vital. Failing to act could result in higher energy consumption, greater dependence on fossil fuels, and missed climate targets, all of which will further strain urban infrastructure.

Globally, buildings account for nearly 40% of total final energy consumption over their lifespan, primarily for operational needs such as running HVAC systems and lighting. This significant energy use leads to approximately 28% of energy-related carbon emissions arising from both on-site energy consumption and indirect emissions from power plants and other off-site sources. In India, buildings account for more than 30% of the national energy use and 20% of its carbon emissions, according to the Bureau of Energy Efficiency.

As urbanisation accelerates, India risks surpassing global benchmarks for energy efficiency and carbon emissions in buildings. In such a scenario, HPBs offer resilience through adaptive, self-sufficient structures. They promote social well-being by nurturing healthier indoor environments, including air quality.

What are high-performance buildings?

Terms like "green buildings" and "high-performance buildings" (HPBs) are often used interchangeably in the field of sustainable construction. Both concepts aim to reduce environmental impact and energy consumption and improve occupant comfort, but differ significantly in their methods and outcomes.

Green buildings are often seen as a foundational step toward sustainable development, with certification programmes playing a crucial role in their creation. These programmes assess the design intent and the final outcomes across various categories, using established benchmarks to ensure the builder is meeting essential sustainability goals. Their key areas of concern are energy efficiency, water conservation, and material sourcing.

HPBs elevate these ideas by striving for peak efficiency in every aspect of their form and function. From energy and water use to occupant health and comfort, HPBs are designed with specific, measurable goals to achieve results beyond what the local government requires. They use advanced technologies and smart design strategies to continuously track their performance metrics, ideally in real-time. Specifically, HPBs leverage site-specific design approaches, such as natural lighting, ventilation, and terrain water management, using sustainable materials, insulation, and low U-value windows to maximise thermal efficiency and reduce energy demand.

Advanced technologies include energy-efficient HVAC systems, greywater recycling, rainwater harvesting, smart lighting controls, and advanced metering. A building management system (BMS) allows operators to monitor an HPB's performance, including sharing real-time analytics to optimise resource use. Some HPBs already exist in India. One notable example is Utsav in Gurgaon

Noida, which features a facade designed according to the Sun path in the local sky to improve thermal comfort and reduce glare. This is complemented by high-performance glass with a low solar heat gain coefficient, which improves energy efficiency and indoor environmental quality.

Similarly, India Parvatham Bhawan in New Delhi utilises an advanced HVAC system featuring a unit where chilled water circulates through beams in the ceiling, taking advantage of natural convection and reducing energy consumption. These building designs have paved the way for net-zero buildings, structures that generate as much energy and water as they consume and grid interactive buildings, which actively participate in energy demand management. Both push the boundaries of sustainability.

Benefits of HPBs HPBs offer environmental benefits and address long-term operational challenges that building owners and occupants often face. Rather than focusing solely on saving energy, HPBs create a holistic environment where technology, design, and sustainability intersect to enhance building performance.

For example, their use of smart systems to dynamically manage resource use ensures building systems last longer and don't need frequent upgrades. The Infosys campus in Bengaluru has a facility that monitors the entire building's performance using a BMS and makes the requisite changes as and when to maintain peak performance. These buildings often achieve higher returns on investment due to higher property value and lower maintenance costs. Similar examples include the Atal Akshay Urja Bhawan in New Delhi and the Infosys campus in Hyderabad. HPBs that take advantage of automation and artificial intelligence in addition to existing features can even

create intelligent ecosystems. For example, computers in buildings can adjust lighting, temperature, and ventilation based on occupancy patterns or weather conditions to create a more personalised, energy-efficient milieu. From a market perspective, HPBs are becoming a symbol of forward-thinking development. Beyond their immediate benefits, they signal a shift toward buildings that prioritise the well-being of occupants with superior air filtration systems, maximal natural light, and optimal thermal comfort.

How can HPBs help India's cities? Life in India is guided by resource scarcity, fluctuating energy markets, and rising temperatures. HPBs offer resilience through adaptive, self-sufficient structures. They promote social well-being by nurturing healthier indoor environments, including air quality.

For example, T32 Banyan Park in Mumbai incorporates extensive green spaces and water features and a daytime lighting strategy includes well-placed windows and skylights to reduce artificial lighting. Such projects consume fewer resources while elevating the quality of the workplace.

For India, where rapid urbanisation can and does strain public infrastructure, HPBs offer a proactive solution that positions the built environment as a driver of the country's transition to a low-carbon, more sustainable economy. In sum, in a rapidly changing real estate landscape, where adaptability is key, HPBs stand out as future-proof investments capable of weathering evolving environmental and economic pressures while delivering value.

Sandhya Paul is a sustainability expert with the Indian Institute for Human Settlements (IIHS) and an author of technical assistance for ASHRAE. The author does not have any financial interests vested with any company or organisation that would benefit from this article.

6. Visit of President of Maldives to India GS 2 (International Relations)

- **Why in News:** PM Modi and the visiting President of Maldives Mohamed Muizzu met on 7 October 2024. They comprehensively reviewed the entire gamut of bilateral ties while noting the progress made by both countries in deepening their historically close and special relationship.
- **Key outcomes of the bilateral meeting**
 - **Vision Document released to transform the bilateral relationship**
 - Both sides agreed to transform the bilateral relationship to a **Comprehensive Economic and Maritime Security Partnership**.
 - In this regard, a Vision Document was released which has detailed sections on various aspects of the bilateral relations between the two countries.
 - It is a blueprint for relations that has been charted out for the next several years and provides a framework for the ongoing visit.
 - The document also aims to bring together the objectives for India's own development as have been set out under the Viksit Bharat 2047 plan and **Maldives' own action plan and objectives to become a developed country by 2040.**
 - **Economic and Financial Support**
 - India has extended financial support to Maldives, **offering INR 30 billion and USD 400 million through a bilateral currency swap agreement.**
 - This assistance aims to alleviate Maldives' financial struggles, as the country's foreign exchange reserves have dropped to dangerous levels
 - The two sides have also initiated negotiations for a Free Trade Agreement (FTA) to boost economic cooperation and Indian investments in various sectors of Maldives
 - The two sides also agreed to settle trade transactions in local currencies.
 - **Political Exchanges**
 - Both countries agreed to intensify political exchanges, including among parliamentarians and local government representatives.
 - A Memorandum of Understanding (MoU) will institutionalize cooperation between the two Parliaments.
 - **Reviving Defence and Security Cooperation**
 - India and Maldives agreed to bolster their defence and security cooperation, which had suffered after President Muizzu ordered Indian military personnel out of the country earlier this year.
 - India will **refit and repair a Maldivian Coast Guard vessel**, and both nations will collaborate on maritime security, disaster response, and defence capacity building.
 - Several initiatives have been launched to strengthen Maldives' maritime capabilities, including the provision of radar systems, defence platforms, and infrastructure support.
 - **Defence and Maritime Security Initiatives**
 - Both countries recognized the importance of collaboration in defence and maritime security, agreeing to:
 - Enhance Maldives' surveillance and monitoring capabilities.
 - Support the Maldives National Defence Force (MNDF) with equipment and infrastructure.
 - Strengthen disaster response, risk mitigation, and information-sharing capabilities.
 - Inaugurate the Maldivian Ministry of Defence building constructed with India's assistance.

FIVE PACTS INKED, AGREEMENT ON FTA NEGOTIATIONS

Economic aid to defence: India, Maldives reset ties after talks



Prime Minister Narendra Modi with Maldives President Mohamed Muizzu at Hyderabad House in New Delhi. Anil Sharma

Will remain a friend committed to our shared vision: Muizzu; Modi calls India first responder to any crisis in the Maldives

SHUBHAJIT ROY
NEW DELHI, OCTOBER 7

MOVING TO stem the slide in ties ever since President Mohamed Muizzu came to power on an anti-India election plank last year, India and Maldives agreed Monday to transform their bilateral relationship to a "Comprehensive Economic and Maritime Security Partnership".

As Prime Minister Narendra Modi met President Muizzu in New Delhi, India decided to extend support of INR 30 billion and USD 400 million as part of a bilateral currency swap agreement to help tackle the financial challenges that the Maldives faces. Hoping to revive defence and security cooperation — it came under severe strain after the Muizzu government ordered Indian military personnel out of

the island country earlier this year — India said it would repair and refit Maldivian Coast Guard Ship Huzavee on gratis basis (free of charge). It had been gifted by India some years ago. The two sides agreed to launch negotiations for a Free Trade Agreement and signed five pacts including the currency swap agreement, training of judicial officers, prevention of

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- **Key Agreements Signed**
 - Five pacts were signed during the meeting, including agreements on a bilateral currency swap, training of judicial officers, prevention of corruption, law enforcement training, and youth and sports cooperation.
 - Additionally, the two leaders inaugurated **700 social housing units and a new runway at the Hanimaadhoo International Airport was launched in the Maldives.**
 - The two sides also **launched the RuPay card in Maldives**, which will enhance ease of payments for Indian tourists visiting Maldives
- **Development cooperation**
 - India and Maldives will collaborate on multiple infrastructure projects, including ports, airports, roads, and housing. Key projects include:
 - The timely completion of the Greater Malé Connectivity Project (GMCP).
 - Feasibility studies for island connections and a commercial port at Thilafushi.
 - Joint development of an Agriculture Economic Zone and fish processing facilities.
- **Digital Cooperation**
 - India will assist Maldives in developing its digital and financial infrastructure, including launching services like UPI and RuPay for better e-governance and payment ease for tourists.
- **Health Cooperation**
 - India will help in establishing Jan Aushadhi Kendras and enhancing emergency medical evacuation capacity.
- **Capacity Building and Training**
 - India will continue to provide customized training for civil servants and launch a program for women-led development.
 - They also plan to establish a Start-up Incubator-Accelerator in the Maldives to support youth innovation.
- **Strengthened People-to-People Ties**
 - The two nations also agreed to expand their people-to-people connections.
 - Plans were announced to **establish a consulate of Maldives in Bengaluru and a consulate of India in Addu City.**
 - Both countries acknowledged the strong ties formed through tourism, education, and healthcare, with India being a key source market for tourists visiting Maldives.
 - India will support the establishment of higher education institutions and skilling centers in Maldives.
 - An ICCR Chair will be established at Maldives National University to foster academic exchange.
- **Analysis of this visit**
 - **Background: Strained Relations Between India and Maldives**
 - Maldivian President's visit to India comes after a period of tension between the two countries.
 - Muizzu, who assumed office in November 2023, had campaigned on an 'India Out' platform, calling for the withdrawal of Indian military personnel from the Maldives.
 - This led to strained relations, as Muizzu was perceived to be closer to China, evident from his official visits to Turkey and China soon after taking office, bypassing India.
 - Traditionally, India had been the first destination for Maldivian presidents.
 - Relations worsened when Maldivian officials made derogatory comments about Indian PM Modi, which sparked a social media conflict between Maldivians and Indians.
 - The tensions earlier this year **affected tourism, with Indian tourist numbers to the Maldives dropping by 50,000, causing a loss of \$150 million.**
 - India was the biggest source market for tourism to the Maldives in 2023, accounting for over 11% of the 1.8 million tourist arrivals.
 - **Muizzu's Shift in Stance**
 - Muizzu's softened approach toward India reflects his realization of the Maldives' domestic and economic challenges.

- Despite his earlier rhetoric, Muizzu emphasized that the Maldives would not compromise India's security and stressed the importance of maintaining a balanced relationship with both India and other countries, including China.
- Facing a looming economic crisis, including debt repayments and downgraded credit ratings by Moody's, Muizzu's visit is seen as an attempt to seek financial assistance from India.

7. The Republic of Languages

GS 1 (Art and Culture)

- **Why in News:** The recent decision by the Union Cabinet to recognize Bangla, Assamese, and Marathi as classical languages has reignited discussions about linguistic categorization in India. This move is viewed through the lens of India's historical "divide and rule" policy and raises concerns about the potential for vertical fragmentation within Indian society based on language, caste, and religion.
- **Historical Perspective**
 - **Colonial Legacy:** The British colonial regime employed a "divide and rule" strategy, fostering divisions among social segments. This historical approach has evolved in post-colonial India into a practice of vertical division, primarily for electoral gain.
 - **Concept of Classical Languages:** The term "classical" is historically significant and reflects societal hierarchies. It denotes languages with a rich literary heritage but has also been used to marginalize non-classical languages, perpetuating discrimination and inequality.
 - **Linguistic Hierarchies:** Historically recognized classical languages include Sanskrit, Pali, and Tamil, which produced extensive literary works. In contrast, the Prakrit languages represent regional variations but lack equal recognition, raising questions about their classification.
- **Linguistic Fragmentation**
 - **Classical Languages List:** The official recognition of classical languages creates a hierarchy among languages, with some languages viewed as superior to others. This categorization can exacerbate existing linguistic divisions and lead to societal fragmentation.
 - **Census Data Insights:** The reduction in recognized "mother tongues" from 1,652 in 1961 to 1,369 in 2011 indicates a trend toward homogenization. However, the administrative classification of languages as "superior" or "inferior" complicates this landscape, with majoritarian languages gaining prominence.
 - **Societal Implications:** As linguistic diversity is diminished, majoritarian pride can manifest as a tool for political gain, paralleling divisions based on caste and religion. This trend threatens to undermine the unique identities and worldviews represented by less-recognized languages.
- **Consequences and Concerns**
 - **Vertical Division of Society:** Broadening the list of classical languages can result in a vertical fragmentation of society, creating a hierarchy reminiscent of historical caste divisions. This fragmentation risks elevating certain languages while marginalizing others.
 - **Impact on Language Survival:** As numerous languages edge toward extinction, the state's selective recognition undermines the inherent value of all languages. Such practices may lead to a society where only certain languages are honored, akin to Orwell's critique of equality.
 - **Call for Inclusivity:** Every language represents a unique worldview deserving respect. An inclusive approach is essential for fostering linguistic diversity and preventing the emergence of a linguistic elite within the Indian Republic.

8. Indian Wild Ass (*Equus hemionus khur*) GS 3 (Environment)

- Why in News:** The population of Indian Wild Ass (*Equus hemionus khur*), found only in Gujarat, has risen from 6,082 in 2020 to 7,672 in 2024, an increase of about 26.14%, according to 10th Wild Ass Population Estimation – 2024.

- About Asiatic wild ass (*Equus hemionus*)**

- The Asiatic wild ass (*Equus hemionus*), also called the **onager**, has five subspecies ((*Equus hemionus hemionus*, *E. h. kulan*, *E. h. onager* and *E. h. hemippus*), of which the **khur**(*Equus hemionus khur*), or **ghorkhad** as it is called in Gujarat, is one.
- It is an **odd toed ungulate of the family Equidae**.
- They are primarily found in the Little Rann of Kutch (LRK) in Gujarat, in a protected area called the Wild Ass Sanctuary.
- The LRK has dual characteristics — that of a wetland and a desert.
- Khurs are generalist herbivores, i.e., they consume a wide variety of plants for their nutrition.
- It is solitary and shy animal, present in low densities across its distribution range.
- Conservation status:**
 - It was classified as **endangered** by the **International Union for Conservation of Nature (IUCN)** in its **2008 report**.
 - It is also listed under **Schedule I of the Wildlife Protection Act, 1972**.

Number of Indian wild asses in Gujarat up by 26%: Govt

EXPRESS NEWS SERVICE
GANDHINAGAR, OCTOBER 7

THE POPULATION of Indian wild ass, an endangered animal now found only in the Little Rann of Kutch and Coastal Rann of Kutch, has gone up by 26.14% in the last four years, according to the 10th Wild Ass Population Estimation (WAPPE) 2024, conducted by Gujarat government earlier this year.

The population of the species in Gujarat has been estimated at 7,672, as compared to the figure of 6,082 recorded in the last WAPPE carried out in 2020.

Indian Wild Ass species are protected under Schedule I of the Wildlife Protection Act. As per a report of International Union for Conservation of Nature (IUCN) in 2008, the animal is found in very few numbers. In the IUCN list of threatened species, it has been put under the endangered species list. Earlier found in North West India, Pakistan and even Central Asia, the population of Indian wild ass species is now confined to a specific region in Gujarat.

The latest figures were declared by Gujarat Forest and Environment Minister Mahubhai Bera in a press release on Monday. Quoting Bera, the release stated that when the current survey was conducted in Wildlife Week between October 2 and 8, these figures are an achievement for the state in terms of wildlife conservation.

Giving further details of WAPPE 2024, Bera said that the maximum number of the species, 2,705, have been found in Somnath district. It has been followed by Kutch (1,093), Patan (1,155), Banaskantha (710), Morbi (642), and Ahmedabad (7).

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Further, giving region-wise breakdown of the population of the species in the state, a government release stated that in the forest and sanctuary areas, there are 2,568 females, 1,114 males, 584 foals (babies), and 2,206 unclassified. In the reserve areas, there are 558 females, 100 males, 168 foals, and 203 unclassified.

Minister of State for Forest and Environment Mahesh Patel said that along with the WAPPE 2024, enumerations of other wild animals like Asian antelope, Indian gazelle, blackbuck, wild boar, Indian jackal, Indian desert fox etc., was also carried out.

As per the latest survey, 2,794 Asian antelopes, 915 wild boars, 222 Indian foxes, 214 Indian gazelles, and 153 Indian jackals, the government release stated.

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The 10th Wild Ass Population Estimation (WAPPE) 2024, conducted by Gujarat government earlier this year, is...

The latest data suggest that Patan, Kutch and Somnath districts have recorded a rising trend in the number of wild ass species, if compared to the figures of 2020.

9. Growth of India's Agricultural Sector GS 3 (Agriculture)

- Why in News:** India's agricultural sector has shown notable growth over the past two decades, especially in the last ten years. This growth has been analyzed in a recent paper published by **NITI Aayog**, focusing on the performance of the sector in terms of **Gross Value Added (GVA)**.

- Key Findings on Agricultural Growth**

- Growth Rates Over Time:**
 - 1984-85 to 1993-94:** The average annual growth rate for agriculture was 9%.
 - 1994-95 to 2003-04:** The growth rate remained the same at 9%.
 - 2004-05 to 2013-14:** This period saw an increase in the growth rate to 5%.
 - 2014-15 to 2023-24:** The growth rate further accelerated to 7%.
- The increase in growth rates challenges the perception that the agricultural sector is in crisis, highlighting significant improvements over the last decade.
- Production Estimates:** Government estimates indicate that cereal production rose from 185.2 million tonnes in 2004-05 to 303.6 million tonnes in 2022-23
- However, household cereal consumption has remained relatively flat at around 153-156 million tonnes. This has raised questions about the accuracy of production estimates, with the gap between production and consumption widening significantly.

Agri sector report card

Has agriculture performed better under the Narendra Modi government? Yes, says a new study by NITI Aayog — but the growth has come more from livestock, horticulture and fisheries than from crops



HARISH DAMODARAN

INDIA'S FARM sector has registered improved growth performance over the last two decades relative to the preceding two — and even more so during the 10 years of the Narendra Modi government — according to a recent NITI Aayog paper.

The annual growth rate for agriculture, based on gross value added (GVA), by the three major sectors, namely, crop, livestock and fisheries, averaged 2.1% during 1984-85 to 1993-94 and 2.0% during 1994-95 to 2003-04.

The paper, by NITI Aayog member Harish Damodaran and co-author Anurag Singh, says growth picked up significantly thereafter.

Between 2004-05 and 2013-14, the annual growth rate for agriculture, based on GVA, was 2.1%.

The average growth rate for crop production, however, was 1.1%.

During 2014-15 to 2023-24, the annual growth rate for agriculture, based on GVA, was 2.1%.

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TABLE 1: TOP AGRICULTURAL GROWTH STATES: 2014-15 TO 2022-23*

State	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Andhra Pradesh	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Assam	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Bihar	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Chhattisgarh	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Goa	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Gujarat	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Haryana	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
India	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Karnataka	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Kerala	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Madhya Pradesh	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Maharashtra	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Manipur	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Mizoram	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Nagaland	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Nararnia Pradesh	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Odisa	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Punjab	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Rajasthan	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Sikkim	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Tamil Nadu	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Telangana	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Uttar Pradesh	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Uttarakhand	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
West Bengal	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Yarnia Pradesh	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Andhra Pradesh	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Assam	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Bihar	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Chhattisgarh	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Goa	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Gujarat	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Haryana	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
India	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Karnataka	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Kerala	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Madhya Pradesh	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Maharashtra	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Manipur	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Mizoram	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Nagaland	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Nararnia Pradesh	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Odisa	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Punjab	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Rajasthan	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Sikkim	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Tamil Nadu	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Telangana	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Uttar Pradesh	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Uttarakhand	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
West Bengal	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Yarnia Pradesh	1.27	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45

*Source: Ministry of Agriculture and Farmers Welfare, Government of India

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- **Subsector Performance:**
 - **Crops Subsector:** The crops subsector grew at an average rate of 3% from 2014-15 to 2022-23, lower than the previous period's growth of 3.4%.
 - **Livestock and Fisheries:** These subsectors performed much better, with livestock growth at 8% and fisheries at 9.2% during the same period. This indicates a shift towards non-crop agricultural activities.
- **State-Level Insights:**
 - **Top Performing States:** Thirteen states recorded an average agricultural growth of 4% or more from 2014-15 to 2022-23.
 - **Underperforming States:** Punjab, Haryana, and West Bengal showed much lower growth rates of 2%, 4%, and 2.8%, respectively, primarily driven by poor crop growth.
- **Key Drivers of Growth**
 - **Market Demand:** The increase in agricultural growth is largely driven by growing consumer demand for diverse products like fruits, vegetables, milk, meat, and fish.
 - **Diversification:** Farmers have diversified into horticulture, livestock, and fisheries. This shift is supported by advancements in agricultural technology, such as:
 - High-yielding crop varieties.
 - Improved irrigation methods (e.g., drip irrigation).
 - Enhanced breeding techniques in livestock.
 - **Consumption Patterns:** There has been a noticeable shift in household consumption from basic caloric foods to those rich in proteins and micronutrients, indicating a changing diet among consumers.
- **Challenges Faced**
 - Despite the positive growth trends, challenges remain:
 - **Income Disparities:** Not all farmers are involved in high-growth areas like livestock and horticulture. According to the NSSO's 2018-19 survey:
 - 53% of farmers earned income from livestock.
 - Only 5% were engaged in horticulture.
 - 2% of agricultural households relied primarily on traditional crops (cereals, pulses, oilseeds).
 - **Low Yield in Certain Crops:** Certain traditional crops like oilseeds and pulses still have low yields, leading to reliance on imports to meet domestic demand. In cotton, production levels have not improved significantly, remaining below previous highs.
 - **Support Price Impact:** The existence of a minimum support price for crops like rice and wheat has not translated into improved growth for these sectors, indicating that demand-side factors and technological advancements may be more effective in driving agricultural growth.

MCQ Current Affairs
8th Oct, 2024**1. Consider the following statements regarding the World Association of Zoos and Aquariums (WAZA):**

- A. It was established as a consequence of 1992 Rio Earth Summit.
- B. It is the only organisation representing zoos and aquariums at the global level.

Which of the statements given above is/are correct?

- a) A only
- b) B only
- c) A and B
- d) Neither of two

2. Which one of the following organizations publishes the annual "State of Global Water Resources Report"?

- a) World Health Organization (WHO)
- b) United Nations Environment Programme (UNEP)
- c) World Meteorological Organization (WMO)
- d) International Water Management Institute (IWMI)

3. Consider the following statements regarding the World Telecommunication Standardization Assembly:

- A. It is one of the three world conferences organized by the International Telecommunication Union.
- B. It is held once in every four years and plays a pivotal role in setting global telecommunication standards.

Which of the statements given above is/are correct?

- a) A only
- b) B only
- c) A and B
- d) Neither of two

4. Consider the following statements regarding MicroRNA:

- A. It helps in fine-tuning the expression of genes in different cell types and under varying conditions.
- B. It is a small and non-coding molecule of RNA.

Which of the statements given above is/are correct?

- a) A only
- b) B only
- c) A and B
- d) Neither of two

5. With reference to Indian Wild Ass, consider the following statements:

- A. It is mainly found in the Little Rann of Kutch in Gujarat.
- B. It is placed under Schedule- IV of the Wildlife Protection Act (1972).
- C. It helps in seed dispersal and promotion of vegetation growth in its habitat.

How many of the above statements are correct?

- a) One only
- b) Two only
- c) All three
- d) None

Answers Current Affairs
8th Oct, 2024

1. b
2. c
3. c
4. c
5. b

