DAILY CURRENT AFFAIRS

4th December, 2023

S.NO.	TOPIC
1.	INTERNATIONAL DAY OF PERSONS WITH DISABILITIES
2.	COP28 CLIMATE SUMMIT
3.	PRELIMS POINTERS

INTERNATIONAL DAY OF PERSONS WITH DISABILITIES

SOURCE: THE HINDU , INDIAN EXPRESS

WHY IN NEWS?

➤ *Overview:*
  - ✓ *Chennai-based T M N Deepak, a **disability political activist**, leads the December 3 Movement, a **disability rights association** in Tamil Nadu.*
  - ✓ *The movement, named after **the International Day of Persons with Disabilities (IDPD) on December 3,** emphasizes **substantive recognition** and **rights for the disability community.***

➤ *Global Disability Scenario:*
  - ✓ *Approximately **1.3 billion people** globally **live with disabilities**, with **80% residing in developing countries**, and **70% in rural areas.***
  - ✓ *Current systems often exclude persons with disabilities, leading to **higher instances of poverty**, **limited education access**, and **social discrimination**.*

INTERNATIONAL DAY OF PERSONS WITH DISABILITIES (IDPD):

➤ **International Day of Persons with Disabilities (IDPD):**
  - ✓ Observed annually on December 3, IDPD aims to raise awareness and garner support for the rights and well-being of people with disabilities worldwide.

➤ **Theme:**
  - ✓ Theme of IDPD 2023 **- *"United in Action to Rescue and Achieve the SDGs"***
  - ✓ The **17 SDGs of the 2030 Agenda** explicitly mention **'disability' and 'persons with disabilities' 11 times,** according to the UN.
  - ✓ The theme **underscores the collective effort** needed to address challenges faced by persons with disabilities and **to achieve the Sustainable Development Goals (SDGs).**
  - ✓ Emphasizes collaboration **"for, with, and by" persons with disabilities**, promoting **unity in action for inclusive development.**
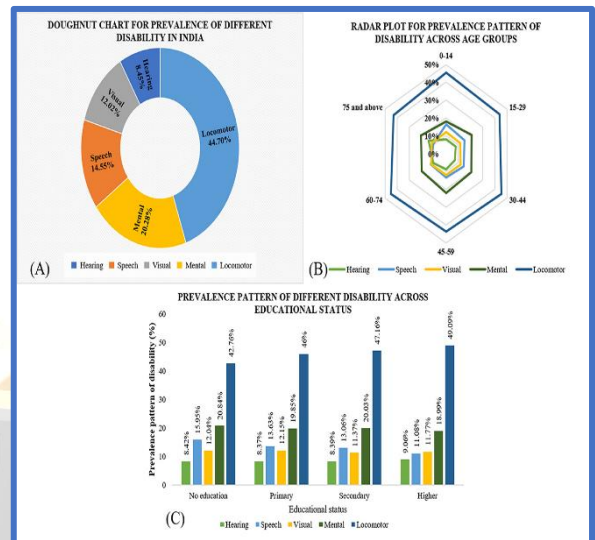
Objectives of IDPD Celebration:

➤ **Foster an Inclusive and Accessible Society:**
  - ✓ Encourage the creation of **an inclusive and accessible society** where individuals with disabilities can **actively participate in all aspects of life.**
  - ✓ Advocate for **breaking down barriers that hinder full participation**, ensuring **everyone can live with dignity and equality.**

➤ **Encourage Efforts to Break Down Barriers:**
  - ✓ **Motivate individuals and communities** to actively work towards **dismantling barriers** that **hinder the integration of persons** with disabilities into society.

- ✓ **Promote a collective commitment** to creating an environment where everyone, regardless of ability, can thrive.
- ➢ **Raise Awareness of Challenges Faced by Persons with Disabilities:**
    - ✓ Use events, discussions, and **initiatives to increase awareness of the unique challenges** faced by persons with disabilities.
    - ✓ Highlight the importance of respecting the **rights and dignity of individuals with disabilities** and fostering a supportive environment.

DISABILITY IN INDIA:

- ➢ **UN CRPD Definition:**
    - ✓ Persons with disabilities are **individuals with long-term physical, mental, intellectual, or sensory impairments.**
    - ✓ Interaction with various barriers may impede their **full and effective participation in society** on an equal basis.
- ➢ **Persons with Disability Act, 1995:**
    - ✓ Despite being **built on equal opportunity and rights,** the Act adopts the **medical model for defining disability.**
    - ✓ "Person with disability" is defined as **someone with not less than forty percent disability certified by a medical authority.**
    - ✓ The Act identifies disabilities, including **blindness, low vision, leprosy-cured, hearing impairment, locomotor disability, mental retardation, and mental illness**.

- ➢ **Rights of Persons with Disabilities Act, 2016:**
    - ✓ Adopts the UN CRPD definition.
    - ✓ Introduces the **term "Person with Benchmark Disability"** as someone **with not less than 40% of a specified disability.**
    - ✓ **Expands disability types from 7 (1995 Act) to 21**, with provisions for the **Union Government to include more.**
- ➢ **Statistics on Disabilities in India:**
    - ✓ **Highlights India's 2.68 crore** people with **disabilities (as per Census 2011),** constituting about 2.2% of the population.
    - ✓ Refers to the National Statistics Office report on disability released in 2019.
- ➢ **Corporate Inclusivity in India:**
    - ✓ Growing awareness among companies and employers about the importance of inclusivity.
    - ✓ A notable increase in **permanent employment of people with disabilities** in leading Indian companies **(10% rise from FY 2021 to FY 2022).**

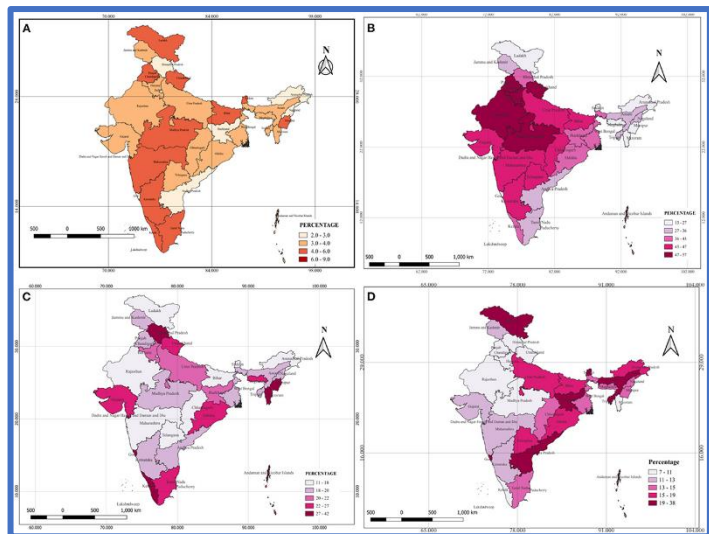| Demographics of Disabled Persons in India (2011 Census)	
Population and Disability Breakdown	
Total Population	121.08 Cr
Disabled Persons	2.68 Cr (Males: 1.5 Cr, Females: 1.18 Cr)
Gender Distribution	

Males	56% (1.5 Cr)
Females	44% (1.18 Cr)
Rural-Urban Distribution	
Rural	69% (1.86 Cr)
Urban	31% (0.81 Cr)
Decadal Changes (2001-2011)	
Increase in Disabled Population	22.4%
Disabled Percentage (to total population)	2.13% (2001) to 2.21% (2011)
Types of Disabilities	
Movement Disability	20%
Seeing Disability	19%
Hearing Disability	19%
Multiple Disabilities	8%
Age Group Insights	
Highest Disabled Population (Age Group)	10-19 years (46.2 lakhs)
Elderly Disabled (60+ years)	21% of total disabled
Children (0-6 years)	
Disabled Children Percentage	1.24% of total children
Gender Disparity	Higher proportion of disabled males in all age groups
Education Attendance	
Disabled Children (5-19 years) in Education	61% attend educational institutions
Urban School Attendance Rate	65%
Households and Literacy	
Households with Disabled Persons	8.3% of total households
Literacy Rate Among Disabled	55%
Gender and Education	
Male Disabled Literacy	62%
Female Disabled Literacy	45%
Urban Disabled Literacy Rate	67%

CHALLENGES FACED BY PERSONS WITH DISABILITIES (PWD) IN INDIA:

- **Mental Disability Assessment Scale:**
  - ✓ The need for an **accurate, easily administered**, and **time-efficient mental disability** assessment scale.
  - ✓ The **adaptation of WHO Disability Assessment Schedule (WHO-DAS 2.0)** to Indian context resulted in the **Indian Disability Evaluation and Assessment Scale (IDEAS).**
  - ✓ IDEAS, while practical, has shortcomings such as lack of comprehensiveness and coverage for all mental disorders.
- **Psychiatric Disability Certification:**
  - ✓ **Controversies arise over certifying disabilities** for certain mental disorders like substance use disorders.

- ✓ **The RPWD Act, 2016**, allows certification for **all mental illnesses**, focusing on the impact of disability rather than specific diagnoses.
- ➢ **Temporary vs. Permanent Disability Certification:**
  - ✓ Psychiatric illnesses being **episodic poses challenges** in determining whether **to issue temporary or permanent disability certificates.**
  - ✓ The difficulty in **predicting the extent of improvement in mental health** conditions contributes to certification challenges.
- ➢ **Quantification of Disability:**
  - ✓ Guidelines for **assessing the extent of specified disability** have been established.
  - ✓ The **Indian Disability Evaluation and Assessment Scale (IDEAS)** offers a range-based disability score, but administrators often demand specific percentages.
- ➢ **Certification of Multiple Disabilities:**
  - ✓ Certification complexities arise **when an individual has both mental illness and intellectual disability (mental retardation).**
- ➢ **Certification of Autism:**
  - ✓ Autism assessment is yet to be **officially notified under the RPWD Act, 2016**.
  - ✓ Specific professionals are **named for certification, limiting accessibility and choice**.
- ➢ **Reservation in Higher Education and Employment:**
  - ✓ The RPWD Act, 2016, **mandates 1% reservation for persons with benchmark disabilities**, including mental illnesses.
  - ✓ **Stereotypes and doubts about the professional competence of persons** with mental illnesses persist, impacting their job prospects.
  - ✓ The need to **identify suitable jobs for persons** with mental illnesses.
- ➢ **Synchronization of Legislation:**
  - ✓ **The RPWD Act, 2016**, and **Mental Healthcare Act (MHCA) 2017** both address mental health concerns, leading to resource duplication.
  - ✓ Synchronizing both acts would **enhance resource efficiency and improve implementation**.
- ➢ **Challenges in Rural Areas:**
  - ✓ Rural areas face unique challenges, with **limited access to education and employment opportunities for persons with disabilities.**
  - ✓ Developmental schemes **often overlook rural populations**, and **stereotypes perpetuate** barriers to their inclusion.

GOVERNMENT INITIATIVES FOR PERSONS WITH DISABILITIES (PWD) IN INDIA:

- ➢ **Government Initiatives in India:**
  - ✓ India has various **schemes and a Unique ID for Persons with Disabilities (UDID)** card under the **Rights of Persons with Disabilities Act (2016).**
  - ✓ Awareness and capacity-building initiatives, especially in rural areas, are crucial for the effective implementation of government benefits.
- ➢ **SPARK Project: A Model for Inclusion:**
  - ✓ The **SPARK project, by ILO and IFAD** in collaboration with the **Women's Development Corporation in Maharashtra,** focuses on **Disability Inclusive Rural Transformation**.
  - ✓ **Disability Inclusion Facilitators (DIFs)** are identified and trained from the villages, engaging with the community **to raise awareness and identify women with disabilities for economic development.**
- ➢ **Other Initiatives and welfare schemes:**

Scheme	Objective	Key Features

Scheme		
Deendayal Disabled Rehabilitation Scheme (DDRS)	✓ **Funds for NGOs'** disability projects.	✓ Supports **special schools, vocational training**, and rehabilitation.
Assistance to Disabled Persons for Purchase/Fitting of Aids and Appliances (ADIP)	✓ **Distribute aids/appliances** to persons with disabilities.	✓ Enhances the **quality of life through essential aids/appliances**.
National Institutions (NIs)	✓ Supports seven **autonomous National Institutes.**	✓ Provides rehabilitation **services for various disabilities.**
National Handicapped Finance and Development Corporation (NHFDC)	✓ Concessional **credit for self-employment.**	✓ **Empowers economic self-sufficiency** for persons with disabilities.
Scheme for Implementation of Persons with Disabilities Act, 1995 (SIPDA)	✓ Assists in **implementing the Disabilities Act.**	✓ Focuses on **creating a barrier-free** environment and equal opportunities.
Scheme of Incentives to Employees in the Private Sector for Providing Employment to Persons with Disabilities	✓ **Reimburses employers'** EPF/ESI contributions.	✓ Encourages **private sector employment** for persons with disabilities.
DISHA (Early Intervention and School Readiness Scheme)	✓ Early **intervention and school readiness** for children (0-10 years).	✓ **Establishes Disha Centers for therapies** and family support.
VIKAAS (Day Care)	✓ Day care for **interpersonal/vocational skills**.	✓ Provides day-care facilities for **at least 6 hours,** supporting family members.
SAMARTH (Respite Care)	✓ Provides **respite home for crisis** situations.	✓ **Offers group home facilities** and respite for family members.
GHARAUNDA (Group Home for Adults)	✓ **Assured home and care** for life.	✓ **Provides vocational activities** and assistance for further training.
NIRAMAYA (Health Insurance Scheme)	✓ Affordable **health insurance.**	✓ Health coverage for various **medical needs, including therapies** and surgeries.
SAHYOGI (Caregiver Training Scheme)	✓ Sets up **Caregiver Cells for training.**	✓ Provides caregiver training through **primary and advanced courses**.

GYAN PRABHA (Educational Support)	✓ Encourages pursuit of educational/vocational courses.	✓ **Financial support per course for fees**, transportation, and books.
PRERNA (Marketing Assistance)	✓ Aids in **marketing products/services**.	✓ Funds for event participation, incentives based on sales turnover.
SAMBHAV (Aids and Assisted Devices)	✓ Sets up **resource centres** for assistive devices.	✓ Provides **information and easy access to aids** and devices.
BADHTE KADAM (Awareness and Community Interaction)	✓ Supports **ROs in awareness activities.**	✓ **National Trust sponsors** events for community awareness.

WAY FORWARD:

➢ **For vs. By Approach in Disability Inclusion:**
  ✓ The distinction between "for" and "by" is **crucial in disability inclusion**.
  ✓ Inclusion efforts should **involve persons with disabilities actively**, **ensuring their participation** in the process **rather than actions** done solely for them.

➢ **Economic Impact and Inclusion**:
  ✓ Inclusion of persons with disabilities in the **economy can boost global GDP by 3% to 7%,** according to the **International Labour Organization (ILO).**
  ✓ The **economic benefits underscore** the importance of **recognizing and addressing barriers** to inclusion.

➢ **Private Sector Role:**
  ✓ The private sector **plays a key role in promoting employment** for persons with disabilities.
  ✓ **Engaging employers' federations and trade unions** is essential for **building confidence** in hiring and retaining workers with disabilities.

➢ **Link to Social Justice and Sustainable Development Goals:**
  ✓ **Achieving social justice** requires the **inclusion of persons with disabilities** in all aspects of development.
  ✓ There is a **bi-directional link between poverty, nutrition, hunger, and disability**, necessitating inclusive opportunities and employment in rural areas.

➢ **Call for Global Commitment:**
  ✓ Given **historical marginalization and challenges in meeting Sustainable Development Goals**, a fundamental shift in **commitment, solidarity, financing, and action is imperative**.
  ✓ **Prioritizing the voices and needs of persons with disabilities** is crucial for a more inclusive global development agenda.

COP28 CLIMATE SUMMIT

WHY IN NEWS?

➢ *Overview:*
  ✓ *Governments, business leaders*, climate scientists, Indigenous Peoples, journalists, and experts from around *200 nations gather at COP28 in Dubai*, occurring in the *warmest year on record*.
➢ *Historic Climate Summit:*
  ✓ The *COP28 climate summit in Dubai gains significance* as it marks the *first time in 28 years* of *climate change* negotiations that the *climate-health nexus takes center stage*.
➢ *Global Stocktake Significance:*
  ✓ COP28 initiates the Global Stocktake, a *crucial assessment of progress* in curbing global warming *since the 2015 Paris Agreement*.
  ✓ The outcomes will *guide future actions, policies, and international cooperation*.

2023 UN CLIMATE CHANGE CONFERENCE (COP28) OVERVIEW:

➢ **Conference Duration:**
  ✓ The 2023 UN Climate Change Conference is scheduled to take place from **November 30 to December 12, 2023, in Dubai, UAE.**
➢ **Key Components:**
  ✓ The conference encompasses several crucial meetings, **including the 28th Conference of the Parties (COP 28),** the **fifth meeting of the COP serving as the Meeting of the Parties to the Paris Agreement (CMA 5)**, and the **18th meeting of the COP serving as the Meeting of the Parties to the Kyoto Protocol (CMP 18)**.
  ✓ Additionally, it **includes the 59th meetings of the Subsidiary Body for Implementation (SBI 59)** and the **Subsidiary Body for Scientific and Technological Advice (SBSTA 59).**
➢ **Presidency Designate:**
  ✓ **Sultan Ahmed Al Jaber**, the Minister of Industry and Advanced Technology and UAE Special Envoy for Climate Change, has been **appointed as the President-Designate for COP 28**.
➢ **Objectives of COP 28:**
  ✓ The overarching goals of **COP 28 include driving global transformation** towards a **low-emission and climate-resilient world.**
  ✓ The conference aims **to foster ambitious climate action and facilitate the effective implementation of climate-related initiatives**, with a focus on providing necessary support.

UNSG	UNFCCC Global Climate Action	LGMA	COP28 Presidency & BP	Others
UN Climate Ambition Summit	High Level Champions/ Marrakech Partnership	COP28 Position	2 Dec, Local Action Summit	NDCP Dialogue
Accountability Checklist	• Breakthrough/Adaptation Agenda	COP/SB/ Intersessional Statements	6 Dec, Multilevel Action, Urbanization and Built Environment/Transport Day	UNH/UNDP/SDU
	• Race-To-Zero/Resilience	Multilevel Action Pavilion		NDC Urban Component
	• Thematic Pathways	Stocktake4ClimateEmergency	COP28 Presidency Teams on Subnationals, HLC, Youth and Mayor Abigail Binay at COP28 Advisory Committee	G7 Subnational Roundtable with U7
	• Solutions Pathways			Regional Urban Forums
	Regional Climate Weeks			National /Regional/ Global Urban and Subnational Initiatives
	Track2			
		SURGe/Urban-Climate Ministerial - UNFCCC Friends of Multilevel Action		

➢ **Global Collaboration:**
  ✓ The conference provides a **platform for global collaboration**, bringing together nations, leaders, and experts to address climate challenges collectively.

➢ **Midpoint in 2030 Agenda:**
  ✓ COP 28's significance is heightened as **it aligns with the mid-point in the implementation of the 2030 Agenda for Sustainable Development,** reflecting on progress made toward sustainable development goals, including climate action.

KEY HIGHLIGHTS OF THE COP28: INITIAL REPORT

➢ **Adoption of Agenda and Early Decisions:**
  ✓ **Successful adoption of the agenda**, early decisions **on loss and damage,** and immediate fund **capitalization set the stage** for collaborative action.

➢ **Sectoral Commitments to Reduce Emissions:**
  ✓ Countries pledged **new sectoral commitments**, addressing **methane, non-CO$_2$ gases, and coal,** aligning with IPCC Sixth Assessment Report.

➢ **Global Stocktake (GST) Progress:**
  ✓ Call for an **ambitious GST decision beyond COP28**, with leaders contributing to assessing global **climate goals in high-level GST events**.

➢ **Global Goal for Adaptation:**
  ✓ Leaders highlighted the need for an impactful Global Goal for Adaptation, **prioritizing adaptation focus alongside mitigation efforts.**

➢ **Climate Finance Prioritization:**
  ✓ Emphasis on making climate finance **more available, accessible, and affordable**, recognizing its crucial role in meeting Paris Agreement goals**.**

➢ **New Climate Finance Framework:**
  ✓ COP28 UAE **Declaration outlined 10 principles for a Global Climate Finance Framework**, transforming the architecture for an equitable transition**.**

AGENDA FOR COP28, UAE

The first Global Stocktake of the implementation of the 2021 Paris Agreement will conclude at COP28. Each stocktake is a two-year process that happens every five years to assess the world's collective progress towards achieving climate goals

The 2023 UN Climate Change Conference will convene from **November 30 to December 12 in Dubai, United Arab Emirates**

The COP28 presidency aims to fast-track energy transition and slash planet-warming emissions before 2030. This could include agreement to triple global renewable energy capacity by 2030

The summit will try to transform climate finance by delivering on old promises and setting the framework for a new deal on finance

COP28 is expected to put forward a plan to operationalize the loss and damage fund

The presidency has promised putting nature, people, lives and livelihoods at the heart of climate action

money control

➢ **Global Decarbonization Accelerator (GDA):**
  ✓ Comprehensive **COP28 energy package launch**, including GDA, with **strong commitments** for a just and **equitable energy transition**.

➢ **Private Sector Engagement:**
  ✓ Leaders focused on **unlocking private sector potential**, announcing bold steps and incentives, including the **$30BN ALTERRA climate fund by the UAE**.

➢ **Sustainable Agriculture and Climate-Health Declarations:**
  ✓ **137 countries committed to food systems transformation**, and **125 endorsed the COP28 UAE Declaration on Climate and Health**, with **$1BN for solutions**.

➢ **Nature and Biodiversity Protection:**
  ✓ I**ncreased political will for climate action on nature and biodiversity**, with landmark investment plans from forest-rich and ocean-rich countries.

➢ **Business and Philanthropy Engagement:**
  ✓ **Over 850 businesses and philanthropies announced $5BN** in new funding to accelerate the climate transition, demonstrating strong private sector support.

➢ **Continued Collaboration and Momentum:**
  ✓ Outcomes built on **Marrakech Partnership for Global Climate Action**, setting the direction for **continued collaboration toward COP28 in Dubai.**

➢ **Multilateral Unity for 1.5°C:**
  ✓ COP28 Presidency committed to transparency and inclusivity, building on momentum for a successful outcome in Dubai and **upholding multilateral unity for the 1.5°C goal.**

India's Stance at COP28:

➢ **COP33 Hosting Offer:**
  ✓ PM Modi **proposes India to host COP33 in 2028**, urging developed nations to **vacate carbon space before 2050.**
  ✓ Approval from **UNFCCC signatories** is required for **India's second hosting, the first being in 2002.**

➢ **Green Credit Initiative:**
  ✓ Introduces India's **"Green Credit initiative"** as a **non-commercial effort** to **create a carbon sink.**
  ✓ Aims to **incentivize voluntary environmental actions**, generating credits for plantations on **waste lands.**

➢ **Reiteration of COP-26 Commitments:**
  ✓ Reiterates **India's commitments from COP-26**, including **reducing emissions intensity** and **achieving net-zero by 2070**.

➢ **Approval of Loss and Damage Fund:**
  ✓ Welcomes COP-28's approval of the **Loss and Damage Fund with over $500 million** in financial commitments.

➢ **Appreciation for UAE's Climate Investment Fund:**
  ✓ Appreciates the **UAE's $30 billion Climate Investment Fund**.

➢ **Call for New Climate Finance Target:**
  ✓ Calls for finalizing a **new target on climate finance (NCQG)** and emphasizes **developed nations' commitments to the Green Climate Fund (GCF)** and Adaptation Fund.

➢ **Elimination of Carbon Footprint by 2050:**
  ✓ Urges developed countries to commit **to carbon footprint elimination by 2050.**

WAY FORWARD: ANTICIPATION OF COP28:

➢ **Assessment and Reporting**:
  ✓ Decision to assess progress **every five years**, **starting in 2023**, to **ensure accountability.**
  ✓ *Paris Agreement goals:* Limit global warming to **below 2 degrees Celsius**, with efforts to stay **below 1.5 degrees Celsius**.

➢ **First Global Stocktake (GST) Results:**
  ✓ UN publishes a **technical report in September 2023** on the **initial GST findings.**
  ✓ Acknowledgment of global efforts but **emphasis on the need for accelerated implementation across all sectors.**

➢ **Climate Crisis Response:**
  ✓ Emphasis on the **urgency to respond to the climate crisis** and the **importance of collective action**.

➢ **Average Global Temperature Increase:**
  ✓ Noting the alarming rise in the **average global temperature by almost 1.2 degrees Celsius** since **pre-industrial times.**

➢ **Accelerating Implementation:**
  ✓ Expectation for COP28 to **address the need for accelerated implementation of climate goals.**

- ➢ **Ambition Increase Across All Fronts:**
  - ✓ Anticipation of discussions focusing on **increasing ambition across various sectors and regions**.
- ➢ **Inclusive All-of-Society Approach:**
  - ✓ Emphasis on the importance of an **all-of-society approach**, considering the **diverse range of stakeholders.**
- ➢ **Bridge Existing Gaps:**
  - ✓ Look forward to **proposals and initiatives that bridge existing gaps** and drive progress.

PRELIMS POINTERS:

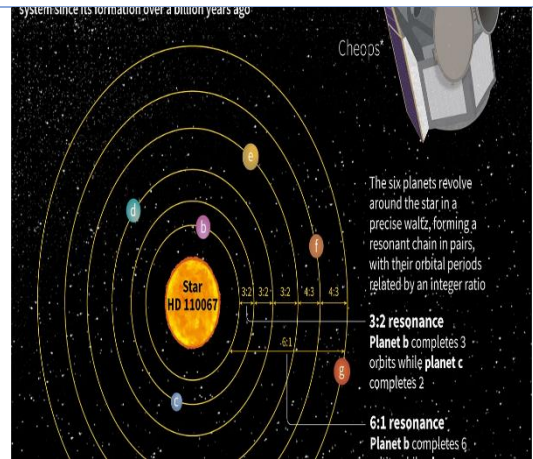| TOPIC	DISCRIPTION

Chinstrap Penguins	**WHY IN NEWS?**
	❖ Published in Science, the study remotely measures sleeping patterns of chinstrap penguins in their natural habitat.
	
	ABOUT CHINSTRAP PENGUINS
	❖ **Appearance:**
	  ☞ **Medium-sized** with a **black head**, white face.
	  ☞ Distinguished by a **black stripe under the chin**.
	❖ **Size and Weight:**
	  ☞ Size: **46–61 cm (18–24 in).**
	❖ **Reproduction:**
	  ☞ Incubation: **33-35 days**.
	  ☞ After hatching, parents brood chicks for an **additional 20–30 days.**
	❖ **Life Span:**
	  ☞ 15-20 years.
	❖ **Range and Habitat:**
	  ☞ Circumpolar in **subantarctic and Antarctic waters**.
	  ☞ Avoids pack ice and continental coasts, stays near breeding islands.
	❖ **Population and Status:**
	  ☞ Global: 6**.5 million breeding pairs**.
	  ☞ IUCN: Not listed.
	  ☞ CITES: Not listed.
	  ☞ USFWS: Not listed.
	
	FEATURES
	❖ **Most sleep** studies conducted in **labs might be influenced by artificial surroundings.**
	❖ Nesting penguins **protecting eggs take over 10,000 micro naps daily**.
	❖ Short **naps average four seconds each**, accumulating to **more than 11 hours** of sleep daily.
	❖ Similar to some other birds, **penguins exhibit half-brain sleep.**
	❖ Allows for certain **brain functions to stay active while resting**.

Six exoplanets found orbiting a nearby bright star	**WHY IN NEWS?**
	❖ The recent discovery of **six exoplanets orbiting the bright star HD 110067** in the **Coma Berenices constellation** is making headlines due **to its significant contributions to our understanding of planetary systems** beyond our solar system.
	
	NEW EXOPLANETARY SYSTEM DISCOVERY
	❖ **Star and Constellation:**
	  ☞ Star: **HD 110067.**
	  ☞ Constellation: **Coma Berenices.**

- ❖ **Planetary Details:**
  - ☞ Six exoplanets discovered.
  - ☞ **Radii between Earth and Neptune**.
- ❖ **Observations and Discoveries:**
  - ☞ **NASA's TESS observed dips** in star brightness.
  - ☞ **CHEOPS** provided additional observations.
  - ☞ Planets' existence confirmed.
- ❖ **Orbit and Characteristics**:
  - ☞ Orbits calculated for **all six planets**.
  - ☞ Orbital **periods range from nine to 54 days**.
  - ☞ **Low densities** suggest large, **hydrogen-rich atmospheres**.
- ❖ **Resonant Orbits:**
  - ☞ All six planets in resonant orbits.
  - ☞ Suggests system **stability over at least four billion years**.
- ❖ **Significance of HD 110067:**
  - ☞ Brightest star **hosting more than four transiting exoplanets**.
  - ☞ Potential for further discoveries within or **beyond the temperate zone.**
- ❖ **Research Conclusions:**
  - ☞ **Opportunity to study sub-Neptunes** and understand system formation.
  - ☞ HD 110067 system provides **valuable insights into planetary configurations and evolution.**

The six planets revolve around the star in a precise waltz, forming a resonant chain in pairs, with their orbital periods related by an integer ratio

3:2 resonance
Planet b completes 3 orbits while **planet c** completes 2

6:1 resonance
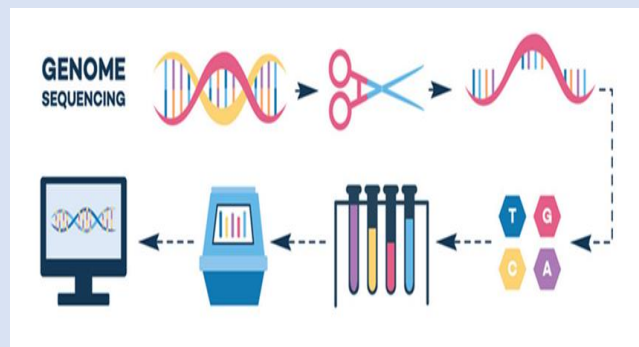**Planet b** completes 6

Genome Sequencing

WHY IN NEWS?
- ❖ Genomic Revolution Decade witnesses significant advancements.
- ❖ Population-scale sequencing programs decode genetic makeup for large populations.
- ❖ **UK achieves milestone with 500,000** whole-genome sequences.
- ❖ The **deCODE initiative in Iceland pioneers large-scale genetic studies**.
- ❖ Global initiatives include the **UK's '100K Genome,' U.S. 'All of Us,' and EU's '1+ Million Genomes.'**

ABOUT GENOME SEQUENCING
*All organisms **(bacteria, vegetable, mammal)** have a **unique genetic code,** or genome, that is composed of **nucleotide bases (A, T, C, and G).***
- ❖ **DNA Shearing:**
  - ☞ **Molecular scissors** cut the DNA into **smaller pieces.**

- ☞ Enables **sequencing machine readability**.
- ❖ **DNA Bar Coding:**
  - ☞ **Small DNA tags (bar codes)** are added to identify each DNA piece.
  - ☞ Similar to bar codes on products in a grocery store.
- ❖ **DNA Sequencing:**
  - ☞ Bar-coded DNA from multiple organisms is combined.
  - ☞ DNA sequencer **identifies bases (A, C, T, G)** in each bacterial sequence.
  - ☞ Bar codes help track **bases belonging to specific bacteria**.

RECENT STUDY ABOUT GENOME SEQUENCING
- ❖ Population-scale **efforts diverse in objectives**, from disease understanding to public health initiatives.
- ❖ **Falling costs make genome sequencing** globally accessible.
- ❖ **Genomic programs in India**, like **Genome-Asia and Genome-India**, contribute to understanding genetic landscapes.
- ❖ **Long-term impact extends beyond individual health**, shaping human evolution, migration understanding.
- ❖ Population-scale genomics stands **at the forefront of a revolution** in healthcare and biological understanding.
- ❖ **Anticipation of sequencing a billion genomes** and emphasis on individual access to their genome sequence.