

## UPSC Daily Current Affairs | Prelim Bits 29-08-2024

### National Industrial Corridor Development Programme

The Cabinet Committee on Economic Affairs has approved 12 new project proposals under the National Industrial Corridor Development Programme (NICDP).

- **NICDP** - It is India's most ambitious infrastructure programme.
- **Aim**- To transform the industrial landscape by creating a network of industrial nodes & new industrial cities as "Smart Cities" and to converge next generation technologies.
- **Mission** - To make India, a global manufacturing and investment destination using a high-capacity transportation network.
- **Vision** - Creation of state-of-the-art world class infrastructure to promote local commerce, enhance investment, generate employment and attain sustainable development.
- **Budgetary allocation** - It is estimated about **₹28,602 crore**.
- **Coverage** - It spans across **10 states** and strategically planned along **6 major corridors**.
- **Implementation** - It is monitored by Apex monitoring Authority with Finance Minister as Chairperson.
- National Industrial Corridor Development Corporation Limited (NICDC), a special purpose vehicle is the implementing agency.
- National Industrial Corridor Development and Implementation Trust (NICDIT) to carry out the project development and implementation activities.
- **Projects** - It has already seen the completion of four projects, with another four currently under implementation.
- **Importance** - Attracts investments from large industries and MSMEs, towards achieving \$2 trillion in exports by 2030.
- The New industrial cities will be developed as green field smart cities with features like 'plug-n-play' and 'walk-to-work' concepts.
- It will integrate with the PM Gati Shakti programme and align with the vision of 'Viksit Bharat' and will bolster India's position in Global Value Chains.

***PM Gati Shakti***, a National Master Plan for Multi-modal Connectivity for seamless movement of people, goods, and services.

- It is expected to generate *approximately 1 million direct jobs* and up to 3 million indirect jobs through planned industrialization.
- They *prioritize sustainability*, using ICT-enabled utilities and green technologies to reduce environmental impact.

<b>12 new projects under NICDP</b>	
<b>Location</b>	<b>State</b>
Khurpia	Uttarakhand
Rajpura- Patiala,	Punjab
Dighi	Maharashtra
Palakkad	Kerala
Agra and Prayagraj	Uttar Pradesh
Gaya	Bihar
Zaheerabad	Telangana
Orvakal and Kopparthi	Andhra Pradesh
Jodhpur-Pali	Rajasthan

## References

1. [PIB| 12 new projects under NICDC](#)
2. [NICDC| National Industrial Corridor Development Programme](#)

## Security alert system based on Piezo-electric polymer nanocomposite

Recently, the researchers from Centre for Nano and Soft Matter Sciences (CeNS) and National Chemical Laboratory (CSIR-NCL) have developed a security alert system based on piezoelectric polymer nanocomposite.

- **Piezoelectricity** - It is a property of certain materials that induces an electric current when mechanically stressed.
- These materials can ***convert mechanical energy into electrical energy*** and vice versa.
- **Piezoelectric polymer nanocomposite material** - It is a type of composite material that combines a piezoelectric polymer with nanoparticles or nanomaterials to enhance its piezoelectric properties.
- **Polymer nanocomposites** - These are materials composed of polymer matrices and small amounts of nanometer-sized additives.

- Producing polymer nanocomposites ***improves*** the properties of polymers, including mechanical, thermal, and electrical.
- **Recent Findings** - It lies in the use of ***metal oxide nanomaterials as fillers***, which enhance the piezoelectric response of the polymer composite.
- The research involved synthesizing ***zirconia-based metal-organic frameworks*** (UiO-66 and UiO-67), converted to zirconia nanoparticles.

*Zirconia is the most durable monolithic ceramic, which is a ceramic made without added materials.*

- The nanoparticles were integrated into poly (vinylidene difluoride) (PVDF) to create nanocomposite films.
- Polymer nanocomposite with monoclinic zirconia nanoparticles produced from UiO-66 outperformed other derivatives and had greater piezoelectric output performance ***than pure polymer***.
- **Application in security alert systems-** A laboratory-scale security alert system was demonstrated using the piezoelectric nanocomposite.
- The system employed a Bluetooth-based wireless communication module activated by footsteps on the piezoelectric pavement.
- The prototype demonstrated both security alert functionality and energy generation capabilities.

## References

1. [PIB | Piezoelectric polymer nanocomposite](#)
2. [Science Direct | Piezoelectricity](#)

## Ancient Glacier Viruses in Tibet

*A team of American and Chinese scientists has discovered as many as 1,705 genomes of viruses beneath the ice sheets in Tibet's Gulya Glacier.*

- **Glacier-preserved ancient viruses** - Glacier ice is an important reservoir for bacteria and viruses.
- Some of these microorganisms were trapped in the ice for hundreds or thousands of years and are now being released into the environment as a result of ongoing climate change.
- **Novel Virus** - Many of these viruses are novel that their existence hasn't

been recorded in science so far.

- **Stability** - These viruses haven't disintegrated biochemically even after major shifts in Earth's climate over millennia.
- **Glaciers Climate** - Glaciers, formed from the gradual accumulation of snow, can be continuous records representing past environments and recognized as a time capsule of our planetary evolution.
- They archive time-structured information on climates and ecosystems.
- **Guliya Glacier** - It is located above 20,000 feet in the northwestern Tibetan Plateau and has historically been an active site for paleoclimate research.
- **Evolution of Earth Climate** - Discovery of unrecorded viruses can shed light on evolution of Earth's climate over millennia.
- **Colder/Warmer era Viruses** - Viruses differed significantly between colder and warmer eras.
- A distinct community of viruses formed during these climatic shifts, at the end of the last ice age some 11,500 years ago.
- **Virus & Climate Change** - This indicates the potential connection between viruses and climate change.
- **Potential health threat** - Long-dormant viruses mostly infected other microbes rather than animals.
- Hence, excavating prehistoric ice sheets usually don't pose hazards for present-day human populations.
- Adaptations of these viruses could have compromised their hosts' ability to survive harsh weather conditions.

## Reference

[Down-to-earth | Ghosts of the past](#)

## Joint Russian- Indian Commission meeting

*The 2<sup>nd</sup> meeting of the Joint Russian-Indian Commission on Cooperation in the Field of Emergency Management was held recently.*

- **Origin** - India and Russia had signed the Agreement for cooperation in the field of ***Emergency Management*** during the 11<sup>th</sup> Indo-Russian Annual Summit held *in 2010 in New Delhi*.
- **Main areas of co-operation** - Exchange of information, early warning, and assessment of risks.
- *Conducting joint conferences, seminars, workshops and training.*

- Providing *mutual assistance* in technical facilities and equipment.
- Enhancing *capacity building* in emergency preparedness, prevention and response etc.
- **Regulations** - It was designed in 2013 to determine the structure and procedure of the meeting.
- **1st meeting** - It was held ***in 2016 in New Delhi*** where, Joint Implementation Plan on cooperation in the field of prevention and elimination of emergencies for 2016-2017 was signed.
- **Joint Implementation Plan 2018-2019** - It was signed in 2017.

## 2<sup>nd</sup> Joint Russian- India Commission Meeting

- It held in Moscow, Russia in 2024.
- **Key agreement-** A working ***plan for 2025-2026*** was signed, focusing on cooperation in emergency management.
- **Main areas of cooperation**
  - Use of *space monitoring technologies* for risk forecasting and emergency response.
  - *Exchange of experiences* in responding to large-scale disasters.
  - *Training* of fire and rescue specialists.
- **Agreements-** To intensify joint efforts in emergency management and to extend cooperation between educational & research institutions.
- **3rd meeting** - They agreed to conduct the next meeting of the Indo-Russian Joint Commission in India in 2026.

*India reaffirmed its commitment to the [Sendai Framework](#) for Disaster Risk Reduction and Prime Minister 10-point agenda on Disaster Risk Reduction.*

## References

1. [PIB | Meeting of Joint Russian- Indian Commission](#)
2. [NDMI| Indo-Russia collaboration in Emergency Management](#)