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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.

12 new projects under NICDP	
Location	**State**
Khurpia	Uttarakhand
Rajpura- Patiala,	Punjab
Dighi	Maharashtra
Palakkad	Kerala
Agra and Prayagraj	Uttar Pradesh
Gaya	Bihar
Zaheerabad	Telangana
Orvakal and Kopparthy	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 2nd 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 11th 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.

2nd 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