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National Infrastructure Pipeline

The Central Government has constituted **a task force** to draw up a **National Infrastructure Pipeline** for each of the financial years from **2019-20 to 2024-25**.

The Task Force is **chaired by the Secretary, Department of Economic Affairs, Ministry of Finance**.

National Infrastructure Pipeline

- This in line with the Prime Minister's Independence day speech that Rs.100 lakh crore (\$1.4 trillion) would be invested in infrastructure over the next five years.
- National Infrastructure Pipeline will ensure that infrastructure **projects are adequately prepared and launched**.
 - Infrastructure projects will include both **social and economic** infrastructure projects.
 - It would include **greenfield and brownfield projects** costing **above Rs 100 crore** each.
- Each Ministry/ Department would be responsible for the monitoring of projects so as to ensure their timely and within-cost implementation.
- It will help in stepping-up annual infrastructure investment **to achieve the Gross Domestic Product (GDP) of \$5 trillion by 2024-25**.

In the past decade (2008-17), India invested about \$1.1 trillion on infrastructure.

Terms of Reference of the Task Force

- To **identify technically feasible and economically viable infrastructure projects** that can be initiated in the Financial Year (FY) 2019-20.
- To list the projects that can be included in the pipeline for each of the remaining 5 years between FY 2021-25.
- To estimate annual infrastructure investment/capital costs.

- To guide the Ministries in identifying appropriate sources of financing.
- To suggest **measures to monitor the projects** so that cost and time overrun is minimized.
- To enable robust **marketing of the pipeline of projects** requiring private investment through the **India Investment Grid (IIG), National Investment & Infrastructure Fund (NIIF)**, etc.

India Investment Grid

- **India Investment Grid (IIG)** is an initiative of the **Department for Promotion of Industry & Internal Trade (DPIIT)** Ministry of Commerce and **Invest India**, the National Investment Promotion and Facilitation Agency.
- It showcases a menu of investment options across India on **a single online interactive platform**. It connects potential investors to project promoters across India.

National Investment & Infrastructure Fund

- **National Investment & Infrastructure Fund (NIIF)** is an Indian-government backed entity established to provide **long-term capital to the country's infrastructure sector**.
- The Indian government has a 49% stake in NIIF with the rest held by foreign and domestic investors.
- With the Centre's significant stake, NIIF is considered India's **quasi-sovereign wealth fund**.
- Across its three funds- Master Fund, Fund of Funds, and Strategic Fund - it manages over \$3 billion of capital.
- Its registered office is in **New Delhi**.

Source: PIB

Time-Bank in Madhya Pradesh

Recently, the Madhya Pradesh government's Happiness department has planned to set up a **TimeBank**.

- TimeBank would lend **currency in exchange for an hour**.
- This earned hour could be used to **learn a new skill**, without the need to pay any paper money.

The Underlying Idea

- The core value behind this idea is that we all are assets that are driven by reciprocity.

Giving focused attention to each & every voice will help **promote the equality and dignity of labour.**

- It is a new way to link **untapped social capacity to unmet social needs.**
- Whenever a bank member needs a service or wants to acquire a skill, for e.g, gardening or playing the guitar, the member could exchange a credit worth an hour with another member knowing that particular skill.
- In the beginning, the **50,000** volunteers registered with the department through local networks will form **community-level banks** and list skills they could impart or services they could offer. This will help in building the trust factor as known individuals will interact with one another.
- Later, an experienced volunteer will induct new members and keep a record of all the transactions.
- It can be considered as a **modern barter system.**

History

- The idea of Timebank was conceived in 1827. But the concept gained popularity with the setting up of the **first Time Bank in Japan in 1973.**
- Later, the CEO of TimeBanks U.S.A popularized the idea of **Time Dollars.**
- Today, there are more than **500** such communities across **32** countries.
- It can also be noted that earlier in October 2018 a panel of **National Human Rights Commission (NHRC)** on disability and elderly persons had **recommended the “time bank” scheme** to take care of senior citizens who are living alone without any support from their family.
- Madhya Pradesh is the **first state** in the country that created the **Happiness Department** in 2016.
- The state government also prepared a **happiness calendar** for helping its citizens to remain happy and dedicated to the right causes.

Source- TH

Imported Inflation

The **weakening of the domestic currency** in the past two months i.e. July and August 2019 may lead to **imported inflation** in the country.

Imported Inflation

- When the **general price level rises in a country because of the rise in prices of imported commodities**, inflation is termed as imported.
 - Two key contributors to India’s imports are: **Crude Oil and Gold.** Rise in prices of

- these two products lead to rise in the import bill of the country.
- It is expected that dull global growth prospects would keep crude prices benign. But, higher demand for gold can push prices higher.
 - However, **inflation may also rise due to the depreciation of the domestic currency**, which pushes up the rupee cost of imported items.
 - For example, if the rupee depreciates by 20% against the US dollar in a particular period, the landed rupee cost of an imported product will also go up by the same proportion and will affect the price levels and inflation readings.
 - **Current Causes Behind Depreciation:**
 - Growing risk aversion amongst investors has resulted in broad losses in the currencies of the Emerging Markets (EM).
 - The rupee has been further impacted by escalating tensions in Kashmir and a slightly **larger-than-expected repo rate cut from the RBI**.

Depreciation of the Currency

- Depreciation of a country's currency refers to a **decrease in the value of that country's currency** with respect to **one or more foreign reference currencies**, typically in a floating **exchange rate system**.
 - In a **floating exchange rate system**, market forces (based on demand and supply of a currency) determine the value of a currency.
- **Example:** \$1 used to equal to Rs.60, now \$1 is equal to Rs. 72, implying that the rupee has depreciated relative to the dollar i.e. it takes more rupees to purchase a dollar.
- It happens **due to supply and demand-side factors**.
- It makes **exports more competitive and imports more expensive**.
- It is **different from devaluation** wherein the **government of a country makes a conscious decision** to lower its exchange rate, basically in a fixed or semi-fixed exchange rate.
 - **Fixed exchange rate:** This occurs when the government seeks to keep the value of a currency fixed against another currency.
 - **Semi-Fixed Exchange Rate.** This occurs when the government seeks to keep the value of currency between a band of the exchange rate. In other words, the exchange rate can fluctuate within a narrow band.

Source: Mint

Hydrogels with Tunable Bactericidal Activities

Recently, researchers at the **Indian Association for the Cultivation of Science (IACS), Kolkata** has fabricated Hydrogels which can be tuned with different bacteria-killing properties.

- These hydrogels were fabricated when the naturally occurring nucleoside molecule cytidine was self-assembled into a hydrogel in the presence of **silver acetate and phenylboronic acid**.
This hydrogel was found to exhibit antibacterial activity against Gram-negative bacterial strains such as E.coli.
- **Silver Acetate**
 - Silver is known to have **antibacterial property** but it may not be used due to its **toxicity**.
 - However, when silver acetate was incorporated in the hydrogel the toxicity was reduced and thus suitable for treating bacterial infections.
 - The hydrogel with the presence of silver reduces the cell size of the E.coli and disrupts its cell membrane, leading to leakage of cellular contents.
 - The **hydrogel containing silver acetate** was found to be **non-toxic** to normal kidney epithelial cells and red blood cells.
- **Boronic Acid**
By changing the Boronic Acid component in Hydrogel, a large number of hydrogels with different bacteria-killing properties can be created.

Unique Physical Properties of the Hydrogel

Thixotropic property

- It is an ability to **change a gel to a sol phase** when subjected to **mechanical shaking or stirring**. When allowed to stand, it returns to its original gel phase.
- The property of certain gels or fluids that are thick or viscous under static conditions and becomes fluid (become thin, less viscous) over time when shaken, agitated, sheared or otherwise stressed is **termed as Thixotropy**. E.g. Paint, the fluidity vanishes quickly and the surface sets permanent as water (or oil) evaporates.

Sol

- Sol is a **colloid** (aggregate of very fine particles dispersed in a continuous medium) in which the particles are solid and the dispersion medium is fluid.
- If the dispersion medium is water, the colloid may be called a hydrosol and if air, an aerosol.
- They do **not settle** or separate over time
- They display the **Tyndall effect**.
 - Tyndall effect is a phenomenon of scattering of a beam of light by a medium containing small suspended particles—e.g., smoke or dust in a room, which makes visible a light beam entering a window.
 - This effect is exhibited by all colloidal solutions and some very fine suspensions. Therefore, it can be used to **verify if a given solution is a colloid**.

pH-Responsive

- The hydrogel is stable between pH 3 and 6, whereas it becomes unstable at more acidic or alkaline pH.
- The low pH helps to increase intrinsic antibacterial activities as well as changing the pH would act as an external stimulus for drug delivery through hydrogels.

Uses of Hydrogel

- It can be used for drug delivery applications.
- Intrinsic antibacterial activities.
- Cancer drug chemotherapy

Indian Association for the Cultivation of Science (IACS)

- Indian Association for the Cultivation of Science (ICAS) is the **oldest institute** in India devoted for research in frontier **areas of basic sciences**.
- It was founded in 1876.
- It is here that Professor **C V Raman discovered the celebrated Ram Effect for which he was awarded the Nobel Prize in Physics in 1930.**

The Raman Effect is a change in the wavelength of light that occurs when a light beam is deflected by molecules.

E.Coli Bacteria:

- It is a **Gram-negative**, anaerobic, rod-shaped bacteria.
- It is commonly found in the lower intestine of warm-blooded organisms.
- Most E. coli strains are harmless, but some serotypes can cause serious food poisoning in their hosts.

Source: TH

National Genomic Grid

Recently, the government has announced to set up a **National Genomic Grid (NGG)**, which will **study genomic data of cancer patients from India**.

- NGG will **collect samples from cancer patients**, through a **network of pan-India collection centres** by bringing all cancer treatment institutions on board.
- The grid to be formed will be in line with the **National Cancer Tissue Biobank (NCTB)** set up at the Indian Indian Institute of Technology, Madras.
 - National Cancer Tissue Biobank (NCTB), is a **joint initiative** of the Department of Science and Technology (DST), Government of India and Indian Institute of Technology, Madras.

- **The biobank collects cancer tissue samples with consent from patients diagnosed with cancer.**
- The aim is to provide researchers with high quality of cancer tissues and the patient data in order to facilitate cancer research that will lead to improvements in cancer diagnosis and treatment.
- This research is carried out through the **technique of Genome Sequencing**.
- Moreover, under **Genome India Initiative**, the government plans to scan 20,000 Indian genomes (in the next five years) in order to develop **diagnostic tests** and effective therapies for **treating diseases** such as cancer.

Application

- Through the National Genomic Grid, the government **seeks to boost cancer research** and make treatment viable for people of different economic classes.
- NGG will help to **study genomic factors** influencing cancer and identifying the right treatment modalities for the Indian population.

Source:TH

Nilgiri Tahr

Recently, Nilgiri tahr's population has increased from 568 in 2018 to 612 in 2019 in the **Mukurthi National Park, Tamil Nadu.**

- The recent increase has favoured a healthy sex ratio i.e.slightly skewed in favour of female goats.
- There has been almost **27% increase in the population of the tahr in the Nilgiris over the last three years.**
- Factors responsible for maintaining an increase in the population of Nilgiri Tahr are:
 - Keeping the national park closed to tourists and free from poaching
 - Fighting the spread of invasive flora.



Nilgiri Tahr

- Nilgiri Tahr is also known as Nilgiri Ibex.
- It has been listed as **"Endangered"** by IUCN.

- It has been listed under **Schedule 1 of the Wildlife (Protection) Act, 1972** which provides absolute protection and offences under these are prescribed the highest penalties
- The **Adult males of Nilgiri Tahr** species develop a light grey area or **“saddle” on their backs** and are hence called **“Saddlebacks”**
- It is the **state animal of Tamil Nadu**.
- It is found in **open montane grassland** habitat of rain forests ecoregion.
- It is **endemic to the Nilgiri Hills and the southern portion of the Western Ghats** in
 - Tamil Nadu
 - Kerala
- Threats:
 - Habitat loss (mainly from domestic livestock and spread of invasive plants)
 - Poaching,
 - Populations of these animals are small and isolated, making them vulnerable to local extinction,
 - **Climate Change**

Mukurthi National Park

- It is a protected area located in the northwest corner of Tamil Nadu in the Western Ghats.
- The park was created to protect its **keystone species**, the Nilgiri Tahr.
- The park is characterised by montane grasslands and shrublands interspersed with sholas in a high altitude area of high rainfall, near-freezing temperatures and high winds.
- It is also home to an array of endangered wildlife, including royal Bengal tiger and Asian elephant, but its main mammal attraction is the Nilgiri tahr.
- The park was previously known as Nilgiri Tahr National Park.
- It is part of **Nilgiri Biosphere Reserve** along with Mudumalai Wildlife Sanctuary, Bandipur National Park, Nagarhole National Park, Wayanad Wildlife Sanctuary and Silent Valley.

Source:TH

Biocatalysts Cutting Effluent Discharge

Recently, the researchers at the Central Leather Research Institute (**CSIR-CLRI**), Chennai, developed a new **amylase-based biocatalyst**.

- This biocatalyst helps in processing leather in an **eco-friendly** manner.
- It drastically **reduces** the **time taken** to process the skin at the **pre-tanning stage** (or the soaking stage). The pre-tanning process generates 60-70% of total pollution during

processing.

- When this biocatalyst is used, the quantum of **effluent discharge** is considerably **reduced** as there is a **threefold reduction in water usage**.
- Since **no** chemicals are used in the process, the **chemical oxygen demand** also drops by about 35%.
- The biocatalyst is stable at a high temperature (approx. 90° C) and pH, because of which up to 95% of the enzyme can be **recovered** and **reused**, after a single process.

Biocatalyst

- It is an **enzyme or a protein** that increases or catalyzes the rate of a biochemical reaction.
- An amylase-based biocatalyst is like a protein that **breaks down** the starch into simple sugar molecules increasing the rate of a biochemical reaction.

Chemical Oxygen Demand (COD)

- Chemical oxygen demand (COD) is the **amount of oxygen required** to oxidize all of the organic carbon completely **into CO₂ and H₂O**.
- It is a method of determining the amount of oxygen that gets consumed by a body as a result of bacterial action in the water.

Council of Scientific and Industrial Research- Central Leather Research Institute (CSIR-CLRI)

- It was founded in 1948.
- The purpose behind its establishment was to develop an internal strength in the country to generate, assimilate and innovate technologies for the leather sector.

Source: TH

China Funding NGOs Against Hydro Projects

According to Government officials, China is trying to fund certain civil society organizations to incite **protests against hydropower projects in Arunachal Pradesh**.

- NGOs are protesting on India's **efforts to revive work on the long-pending hydro projects**, including the 2,000 megawatts (MW) Lower Subansiri and 2,880MW Dibang projects by state-run NHPC Ltd.
 - Government is also trying to expedite the completion of **600MW Tawang-I and 800MW Tawang-II** projects in Arunachal Pradesh.
 - NGO are protesting. for **protection of the Forest Rights Act and ecological importance of the region**. The region is home to exotic species like barking

deer, sambar, wild yak, serow, goral, wild boar, red panda, clouded leopard, snow leopard and musk deer.

- **The hydropower potential of Arunachal Pradesh:** There are 103 private hydropower projects in the state (still to take off) with a total capacity of **35 gigawatts (GW)**.
- **Framework on Transboundary River between India and China**

There is **no bilateral water treaty** between India and China, **except** only a **Memorandum of Understanding (MoU)** on the Brahmaputra and Sutlej for sharing hydrological data related to floods and emergencies exists.
- **Reason for the revival of hydropower projects in Arunachal Pradesh**
 - China is working on an ambitious **\$62-billion south-north water diversion scheme** for the Yarlung Tsangpo, the upper stream of the Brahmaputra river.
 - China seeks to implement the Brahmaputra project to **address its water woes** arising from the demographic explosion, industrial upsurge, the rapid expansion of cities, and greater demand for irrigated agriculture farming.
 - According to China: **90 % of Tibetan runoff flows downstream to South Asia and Southeast Asia.**
 - Thereby, China is aggressively **working for its priority rights** and is actively building dams on the Yarlung Tsangpo (Brahmaputra), to claim it's right under **Principle of Prior Appropriation.**
 - India fears that if China builds dam projects in the Tibetan plateau, it would **threaten to reduce the flow of river water into India.**
 - Therefore, in response to that India is of the view that **any delay in building hydropower projects** in Arunachal Pradesh on rivers originating in China will **affect India's strategy of establishing its prior-use claim over the waters.**

The Principle of Prior Appropriation

The principle of prior appropriation favours neither upstream or downstream State but the one that puts the water to first use, thereby protecting the right to first use of water as in the past.

However, according to some experts, **80 % of the waters of the Brahmaputra are added to the river after it enters India.** Hence, Chinese building a dam on the Yarlung Tsangpo (Brahmaputra), thus, need not be viewed with alarm.

Source: LiveMint
