Prelim Bits 20-12-2022 | UPSC Daily Current Affairs

Surety Bond Insurance

The Union Minister of Road Transport and Highways launched the country's first-ever surety bond insurance product.

- The Union Budget 2022-23 accepted the use of surety bonds as a substitute for bank guarantees in government procurements.
- Surety bonds are guarantees of payment issued by general insurance companies on behalf of the contractor to the project awarding entity.
- The surety bond gives the principal a contract of guarantee in a mutually agreed terms.
- The bond protects the principal from losses in case the contractor fails to meet its obligations under the contract.
- In such case, the harmed party can raise a claim on the surety bond and recover the losses they have incurred.
- **Collateral** - Unlike a bank guarantee, the Surety Bond Insurance does not require large collateral from the contractor.
- Bank guarantees require a certain percentage of project funds to be locked in as collateral, thus eating into the working capital of the contractor.

Advantages of Surety Bond

- As a risk transfer tool for the Principal, it shields the Principal from the losses.
- The less collateral of surety bond insurance frees up significant funds for the contractor, which can be utilized for the growth of the business.
- The product reduces the contractors' debts to a large extent.
- The product facilitates the growth of upcoming infrastructure projects in the country.

References

1. PIB - First-ever 'Surety Bond Insurance' for infrastructure projects
2. Live Mint - First-ever 'Surety Bond Insurance' launched

Frozen Coral

The scientists successfully froze Australia's Great Barrier Reef coral in world-first trial.

- The Great Barrier Reef has suffered four bleaching events in the last seven years and scientists are scrambling to protect coral reefs.
- In the lab trial, the world's first with Great Barrier Reef coral, scientists used the cryomesh to freeze coral.
- The current process requires sophisticated equipment including lasers and cryomesh

is used as substrate for the coral larva.
- **Significance of Coral Cryopreservation** - Cryogenically frozen coral can be stored and later reintroduced to the wild.
- This could eventually help to rewild reefs threatened by climate change.
- It can build a bigger, more diverse bank of frozen living corals, preserving biodiversity.
- **Cryomesh** - Cryomesh is a specially fabricated mesh used as substrate in cryopreservation.
- The 'cryomesh' is lightweight and can be manufactured cheaply.
- It better preserves coral and has the properties of cryoplates.
- The mesh technology will help store coral larvae at -196°C (-320.8°F).
- This new technology can scale up and support some of the aquaculture and restoration interventions.

References

1. The Hindu - Scientists freeze Great Barrier Reef coral
2. Indian Express - Scientists freeze Great Barrier Reef coral

Toughest-known Alloy

A study shows the toughest known material, CrCoNi alloy further gets tougher in the cold.

- An alloy made from chromium, cobalt and nickel called CrCoNi, has been found to be the toughest material ever recorded.
- The CrCoNi alloy is a subset of High Entropy Alloys (HEAs) which is made by mixing equal amounts of all elements.
- This equal mix makes the alloy exceptionally strong and ductile.
- These materials are expensive to make.
- It can be used to build structures which can withstand extreme cold conditions, such as those in deep space.

> *The toughness of the* CrCoNi *is as high as 500 megapascal square root meters when the temperature is at 20 kelvin or -253.3°C.*

Causes of toughness

- Equal mix of the alloy.
- Obstacles to the dislocation property of the metal.
- Cascading effect in the order of Slip, Nanotwinning and rearrangement of the unit cells.

> *Nanotwinning is phenomena in which portions of the lattice on the edge across imaginary twin plane create a mirror symmetry.*

References

1. The Hindu - The toughest-known alloy gets tougher in the cold
2. Science Alert - the toughest known material gets tougher in the cold

Asian Giant Tortoise

10 captive-bred juvenile Asian Giant tortoises were soft-released inside a protected area in Nagaland.

- The pilot release of Asian Giant Tortoise is an attempt to boost conservation and aimed towards repopulating the species.
- The 10 juvenile (2008 captive bred) tortoises were soft-released into Intanki National Park, inside a protected area in Nagaland

  Soft-released is the gradual return of captive raised individuals to the wild. Released into a large natural enclosure with native habitat for acclimation throughout the winters.



- Asian Giant Tortoises (*Manouria emys*) are the largest tortoises in mainland Asia.
- **Spread** -They are found in Bangladesh, India, Indonesia, and Malaysia among other places.
- **Diet** - Bamboo shoots, tubers and other juicy vegetation and some invertebrates and frogs.
- **Threats** – Hunting for consumption, habitat loss, anthropogenic activities like construction and slash and burn.
- **Conservation Status**
  1. IUCN - Critically Endangered
  2. CITES - Appendix II
  3. Indian Wildlife (Protection) Act of 1972 - Schedule IV

References

1. The Hindu - Asian Giant Tortoise re-wilded in Nagaland
2. IUCN - Asian Giant Tortoise
3. Deccan Herald - Asian giant tortoises released in Nagaland wilds

Oran Land

Villagers of Jaisalmer marched 225 kilometres to get sacred groves listed as 'Oran land'.

- A huge area of Orans are listed as 'wastelands' in the revenue records and the villagers want recategorise the area as 'Oran land' in records.
- The Oran (sacred grove) is an oasis of life with a rich diversity of flora and fauna, and small water bodies.
- Orans are community-conserved sacred spaces which serves as a grazing ground for camels, sheep and goats of local herders.
- Cutting of trees, is strictly prohibited by the locals but grazing of animals is permitted.

- **Significance** - Patches of jungle are preserved in the name of local deities or saints.
- Supports a variety of wildlife and they are hotspots of biodiversity.
- The Orans are among the last natural habitats of the great Indian bustard.
- The pastoral communities depend upon them for livelihood.

In the TN Godavarman vs. Union of India case 2018, the Supreme Court ordered the Orans be recorded as 'deemed forests' in the revenue records and so far not even one Oran has been recorded as a deemed forest.

References

1. Down To Earth - Jaisalmer villagers march to protect 'oran land'

