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News: Enriched Uranium Stockpile by Iran

- Recently, Iran's atomic agency said that its stockpile of 20% enriched uranium has reached over 210 kilograms.
- In April 2021, the International Atomic Energy Agency (IAEA) said Iran had begun the process of enriching uranium to 60% fissile purity at an above-ground nuclear plant at Natanz.
- Under the historic 2015 nuclear deal between Iran and the World Powers, Iran was not meant to enrich uranium above 3.67%. Enriched uranium above 90% can be used for nuclear weapons.

Uranium Enrichment

- Natural uranium consists of two different isotopes - nearly 99% U-238 and only around 0.7% of U-235.
- U-235 is a fissile material that can sustain a chain reaction in a nuclear reactor.
- Enrichment process increases the proportion of U-235 through the process of isotope separation (U-238 is separated from U-235).
- For nuclear weapons, enrichment is required upto 90% or more which is known as weapons-grade uranium.

- Low-enriched uranium, which typically has a 3-5% concentration of U-235, can be used to produce fuel for commercial nuclear power plants.
- Highly enriched uranium has a purity of 20% or more and is used in research reactors.
- The tricky process of enrichment becomes far easier and requires fewer centrifuges as it moves into the higher purities.
- In other words, getting to 90% purity is much easier starting from 20%, and easier still starting from 60%.

2015 Nuclear Deal

- In 2015, Iran with the P5+1 group of world powers - the USA, UK, France, China, Russia, and Germany agreed on a long-term deal on its nuclear programme.
- The deal was named as Joint Comprehensive Plan of Action (JCPOA) and in common parlance as Iran Nuclear Deal.
- Under the deal, Iran agreed to curb its nuclear activity in return for the lifting of sanctions and access to global trade.
- The agreement allowed Iran to accumulate small amounts of uranium for research but it banned the enrichment of uranium, which is used to make reactor fuel and nuclear weapons.

- This agreement also indirectly helped India to purchase crude oil from Iran in return of Indian rupee, which also helped to curb depreciation of Indian rupee. Iran became the second largest oil exporting nation to India within 3 years because of this deal.
- Iran was also required to redesign a heavy-water reactor being built, whose spent fuel would contain plutonium suitable for a bomb and to allow international inspections.
- In May 2018, the USA abandoned the deal criticising it as flawed and reinstated and tightened its sanctions.
- Since sanctions were tightened, Iran has been steadily breaking some of its commitments to pressure the remaining signatories to find a way to provide sanctions relief.
- US also pressurised India to curb its imports from Iran, due to which India zeroed down its imports.
- After months of delays, the European Union, Iran and the US have recently announced that indirect talks to resuscitate the deal would resume on 29th November 2021 in Vienna.

International Atomic Energy Agency (IAEA)

- Widely known as the world's “Atoms for Peace and Development” organization within the United Nations family, the IAEA is the international centre for cooperation in the nuclear field.
- The Agency works with its Member States and multiple partners worldwide to promote safe, secure and peaceful use of nuclear technologies.
- The IAEA was created in 1957 in response to the deep fears and expectations generated by the discoveries and diverse uses of nuclear technology.
- IAEA's headquarters is in Vienna, Austria.
- It is an independent international organization that reports annually to the UN General Assembly and Security Council.
- The IAEA has 173 member states (including India) as of April 2021.
- Most UN members and the Holy See are Member States of the IAEA. The dates of membership are listed below.
- There are thirty five countries including India in the world which generate electricity from nuclear energy.
- According to the data published in March 2017, by Power Reactor Information System (PRIS) of International Atomic Energy Agency (IAEA), India is ranked

at 13th position in terms of power generation. However, it stood at 7th position in terms of number of reactors in operation country- wise, globally.

- The current installed nuclear power capacity is 6780 MWe.
- As India is not a party to Nuclear Non Proliferation Treaty (NNPT), it has classified its nuclear facilities into two types under Separation Plan;
- Unsafeguarded—where domestic uranium can be used anywhere India wants; and safeguarded—where imported uranium would be used for civilian nuclear energy.
- Since India's use of domestic uranium could not anyway be restricted, this was seen as a balance between the benefits of nuclear energy in emission reduction and the risks of increasing India's military capability.
- 26 of Indian nuclear facilities are under the IAEA safeguards.
- IAEA safeguards are a set of technical measures applied by the IAEA on nuclear material and activities, through which the agency seeks to independently verify that nuclear facilities are not misused and nuclear materials are not diverted from peaceful purposes.
- Indian nuclear reactors that use purchased nuclear input from foreign countries are subject to those standards.
- India currently imports uranium from Russia, Kazakhstan and Canada. Plans are also afoot to procure the fuel from Uzbekistan and Australia.

- India has joined the **IAEA Response and Assistance Network (RANET)** in January 2020. RANET is a group of countries that provide assistance to reduce the consequence of nuclear or radiological emergencies.

News: Increased Risk of Extinction: Leopards

- According to a study published in the journal *Global Ecology and Biogeography*, the leopard faces an 83% increased risk of extinction in North India due to roadkill.

Findings

- The leopard population of North India is at highest risk among four animal populations identified as being the most vulnerable to extinction in the next 50 years if observed roadkill levels persist.
- Leopard is followed by the **maned wolf and the little spotted cat**, both of Brazil, and the **brown hyena** of southern Africa.
- At an 83% increased risk, the study estimates the time to the North Indian leopard population's extinction at 33 years.
- Other populations found highly vulnerable include the lion-tailed macaque (*Macaca silenus*) and sloth bear (*Melursus ursinus*) in South India.

- The study brings attention to Sub-Saharan Africa and south-eastern Asia as regions where roads can lead to loss of mammalian biodiversity and thus, areas where future road development and road mitigation need to be carefully considered.

Leopard

- Leopards can be found in Sub-Saharan Africa, in small parts of Western and Central Asia, on Indian Subcontinent to Southeast Asia.
- Leopards are distinguished by their slender and long body and yellowish-brown coats with black spots. They are solitary hunters and nightstalkers and are well known for their ambush attacks when hunting.
- Leopards are excellent climbers. The slender body with short, stocky legs and long tail make them excellent and agile hunters and swimmers.
- Leopards are the smallest of all the big cats it approximately weighs 90 kilograms.
- IUCN Status: Vulnerable.
- Wildlife Protection act: Schedule I.
- CITES: Appendix I.

Status of Leopards, Co-predators and Megaherbivores-2018

- Status of Leopards, Co-predators and Megaherbivores-2018 is a report published by National Tiger Conservation Authority in Global Tiger Day 2021.
- Leopards are found in 13 states in India. Andhra Pradesh, Bihar, Chhattisgarh, Goa, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Tamil Nadu, Uttar Pradesh and Uttarakhand are states where Leopard is found.
- Leopard population has gone up by 62% in 4 years, according to the latest survey and report titled 'Status of Leopards Co-predators and Megaherbivores-2018' published by National Tiger Conservation Authority.
- Madhya Pradesh has the highest number of leopards with 3421 big cats, followed by Karnataka and Maharashtra respectively with 1783 and 1690.
- These three states together account for more than 50% of leopards in country's tiger habitats.
- Leopard count does not include those in non-forested habitats like coffee or tea plantation.

News: Srinagar declared a 'major airport'

- The Union Ministry of Civil Aviation on Saturday declared the Srinagar airport a "major airport" under the Airports Economic Regulatory Authority Act, 2008 (AERA).

- Currently, an airport with annual passenger traffic of 35 lakh or more is defined as a major airport and tariff at such airports are determined by the Airports Economic Regulatory Authority of India (AERA).
- Every other airports are minor airports, run by Airports Authority of India (AAI).

Airports Economic Regulatory Authority of India (AERA)

- Airports Economic Regulatory Authority of India (AERA) is established under Airports Economic Regulatory Authority of India (AERA) Act, 2008.
- It falls under Ministry of Civil Aviation.
- AERA regulates the tariffs charged at major airports.
- Major airports are those airports with annual passenger traffic of 35 lakh or more. Besides that, Central government is entitled to declare any airport as Major airport.
- It also determines the amount of the development fees in respect of major airports.
- The AERA act was amended in 2019 allowing AERA to bid out any new airport at a pre-determined tariff structure.

Airport Authority of India (AAI)

- Airport Authority of India (AAI) is a statutory body created through Airports Authority of India Act of 1994.
- AAI works under Ministry of Civil Aviation, Government of India.
- AAI is responsible for creating, upgrading, maintaining and managing civil aviation infrastructure in India.
- AAI is currently managing a total of 137 airports, including 23 international airports, 10 customs airports, 81 domestic airports and 23 civil enclaves at defence airfields.