

INTERNATIONAL RELATION**India-Nepal Rail Services Agreement (RSA)**

India and Nepal have signed a Letter of Exchange (LoE) to the India-Nepal Rail Services Agreement (RSA) 2004. It will allow all authorized cargo train operators to utilize the Indian railway network to carry Nepal's container and other freight - both bilateral between Indian and Nepal or third country from Indian ports to Nepal.

Key Points**About Rail Services Agreement (RSA), 2004:**

- The Rail Services Agreement was executed in 2004 between the Ministry of Railways, Government of India and the Ministry of Commerce, the Govt. of Nepal for introduction of freight train services between these two countries to and from Birgunj (Nepal) via Raxaul (India).
- The agreement guides movement between India and Nepal by rail.
- The Agreement shall be reviewed every five years and may be modified (through Letters of Exchange) by the Contracting Parties by mutual consent.
- In the past, there have been amendments to RSA through LoE on three occasions.
 1. First such amendment was in 2004.
 2. Second LoE was signed in 2008 at the time of introduction of bilateral cargo between the two countries which required introduction of new customs procedures.
 3. Third LoE was signed in 2016 enabling rail transit traffic to/from Visakhapatnam Port in addition to existing provision of rail transportation through Kolkata/Haldia Port.

Benefits of the Latest Agreement:

- Allow Market Forces to Operate: This liberalization will allow market forces (such as consumers and buyers) to come up in the rail freight segment in Nepal, and is likely to increase efficiency and cost-competitiveness, eventually benefiting the Nepalese consumer.
- Reduce Transportation Cost: The liberalisation will particularly reduce transportation costs for automobiles and certain other products whose carriage takes place in special wagons and will boost rail cargo movement between the two countries.
- Enhance Regional Connectivity: Wagons owned by Nepal Railway Company will also be authorized to carry Nepal-bound freight (inbound and outbound on Kolkata/Haldia to Biratnagar/Birganj routes) over the Indian Railways network as per IR standards and procedures. The signing of this LoE marks another milestone in India's efforts to enhance regional connectivity under the "Neighbourhood First" policy.

Other Connectivity Project:

- Nepal being a landlocked country, it is surrounded by India from three sides and one side is open towards Tibet which has very limited vehicular access.
- India-Nepal has undertaken various connectivity programs to enhance people-to-people linkages and promote economic growth and development.
- MoUs have been signed between both the governments for laying an electric rail track linking Kathmandu with Raxaul in India.
- India is looking to develop the inland waterways for the movement of cargo, within the framework of trade and transit arrangements, providing additional access to sea for Nepal calling it linking Sagarmatha (Mt. Everest) with Sagar (Indian Ocean).
- In 2019, India and Nepal have jointly inaugurated a cross-border petroleum products pipeline.
 1. Pipeline carries petroleum products from Motihari in India to Amlekhgunj in Nepal.
 2. This is South Asia's first cross-border petroleum products pipeline.

Neighbourhood First Policy

- It is part of India's foreign policy that actively focuses on improving ties with India's immediate neighbours which is being termed as Neighbourhood first policy in the media.
- It was started well by inviting all heads of state/heads of government of South Asian countries in the inauguration of PM Narendra Modi first term and later held bilateral talks with all of them individually which was dubbed as a mini SAARC summit.
- In the second swearing-in ceremony in 2019, India had invited the heads of BIMSTEC countries.

Indo-Nepal Relations

- Neighbour: Nepal is an important neighbour of India and occupies special significance in its foreign policy because of the geographic, historical, cultural and economic linkages/ties that span centuries. The India-Nepal Treaty of Peace and Friendship of 1950 forms the bedrock of the special relations that exist between India and Nepal.
- Cultural Ties: India and Nepal share similar ties in terms of Hinduism and Buddhism with Buddha's birthplace Lumbini located in present day Nepal.
- Open Border: The two countries not only share an open border and unhindered movement of people, but they also have close bonds through marriages and familial ties, popularly known as Roti-Beti ka Rishta.
- Common Multilateral Forums: India and Nepal share multiple multilateral forums such as BBIN (Bangladesh, Bhutan, India, and Nepal), BIMSTEC (Bay of Bengal Initiative for Multi Sectoral Technical and Economic Cooperation), Non Aligned Movement, and SAARC (South Asian Association for Regional Cooperation) etc.

Issues:

- In 2017, Nepal signed up to China's Belt and Road Initiative (BRI), which sought to create highways, airports and other infrastructure in the country. BRI was rejected by India and this move of Nepal was seen as an inclination towards China.
- Currently, India and Nepal have border disputes over Kalapani - Limpiyadhura - Lipulekh trijunction between India-Nepal and China and Susta area (West Champaran district, Bihar).

SCIENCE & TECHNOLOGY

Methane in the Moons of Saturn

NASA's (National Aeronautics and Space Administration) Cassini spacecraft had detected an unusually high concentration of methane, along with carbon dioxide and dihydrogen, in the moons (Titan and Enceladus) of Saturn by flying through their plumes (in 2017). It found that Titan has methane in its atmosphere and Enceladus has a liquid ocean with erupting plumes of gas and water. An international research team has used new statistical methods to understand if methanogenesis or methane production by microbes could explain the molecular hydrogen and methane.

Key Points

Findings:

- Cassini found ice particles, salts, hydrogen and organic molecules in the plumes, tentative hints of an ocean that is similar to Earth's oceans in composition.
- There is also evidence for alkaline hydrothermal vents on Enceladus' seafloor, similar to those that support methanogens in Earth's oceans.

About Methanogens:

- Most of the methane on Earth has a biological origin. Microorganisms called methanogens are capable of generating methane as a metabolic byproduct.
- They do not require oxygen to live and are widely distributed in nature.
- They are found in swamps, dead organic matter, and even in the human gut.
- They are known to survive in high temperatures and simulation studies have shown that they can live in Martian conditions.
- Methanogens have been widely studied to understand if they can be a contributor to global warming.

Possibility of Methanogens on Enceladus:

- Methane could be formed by the chemical breakdown of organic matter present in Enceladus' core.
- Hydrothermal processes could help the formation of carbon dioxide and methane.
- Enceladus' hydrothermal vents could be habitable to Earth-like microorganisms (Methanogens).

Saturn

- Saturn is the sixth planet from the Sun and the second largest planet in our solar system.
- Adorned with thousands of beautiful ringlets, Saturn is unique among the planets. It is not the only planet to have rings—made of chunks of ice and rock—but none are as spectacular or as complicated as Saturn's.
- Like fellow gas giant Jupiter, Saturn is a massive ball made mostly of hydrogen and helium.

- Few missions have visited Saturn: Pioneer 11 and Voyagers 1 and 2 flew by; But Cassini orbited Saturn 294 times from 2004 to 2017.

Titan

- Titan is the largest moon of Saturn and the second largest moon in our solar system. Jupiter's moon Ganymede is just a little bit larger.
- It has liquid rivers, lakes, and seas on its surface (though these contain hydrocarbons like methane and ethane, not water).
- Titan's atmosphere is made mostly of nitrogen, like Earth's, but is four times denser.
- Unlike Earth, it has clouds and methane rain.
- Because it is so far from the Sun it's surface temperature is (-179 degree Celsius).

Enceladus

- Enceladus is a small, icy moon which has an abundance of hydrogen molecules in water plumes. 98% of the gas in the plumes was found to be water and 1% is hydrogen and the remaining is a mixture of molecules of carbon dioxide, methane, and ammonia.
- Underwater vents present on Enceladus resemble the vents present on Earth's ocean floors, where microbes and other sea life congregate.

AGRICULTURE**Agriculture Infrastructure Fund**

Recently, the Union Cabinet approved some modifications in the Central Sector Scheme of Financing Facility under 'Agriculture Infrastructure Fund'.

Key Points

- **Launch:** It was launched in 2020 as a part of the Rs. 20 lakh crore stimulus package announced in response to the Covid-19 crisis.
- **Aim:** To provide medium-long term debt financing facility for investment in viable projects for post-harvest management Infrastructure and community farming assets. The funds will be provided for setting up of cold stores and chains, warehousing, grading and packaging units, e-marketing points linked to e-trading platforms, besides PPP (Public Private Partnership) projects for crop aggregation sponsored by central/state/local bodies.
- **Duration:** Extended to 13 years upto 2032-33.
- **Features:**
 1. **Eligible Beneficiaries:**
 - ✓ They are Farmers, Farmer Producer Organizations (FPOs), Primary Agricultural Credit Society (PACS), Marketing Cooperative Societies, Self Help Groups (SHGs), Joint Liability Groups (JLG), Multipurpose Cooperative Societies, Agri-entrepreneurs, Start-ups, and Central/State agency or Local Body sponsored PPP Projects.
 - ✓ Eligibility has been extended to State agencies and Agricultural Produce Marketing Committees (APMCs), as well as federations of cooperative organisations, FPOs and SHGs.
 - **Financial Support:** Rs. 1 Lakh Crore will be provided by banks and financial institutions as loans to eligible beneficiaries. Moratorium for repayment may vary subject to minimum of 6 months and maximum of 2 years.
 - **Interest Subvention:** Loans will have interest subvention of 3% per annum up to a limit of Rs. 2 crore. This subvention will be available for a maximum period of seven years.
 - **CGTMSE Scheme:** A credit guarantee coverage will be available for eligible borrowers from this financing facility under Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) scheme for a loan up to Rs. 2 crore.

Management: The fund will be managed and monitored through an online Management Information System (MIS) platform. It will enable all the qualified entities to apply for loans under the Fund. The National, State and District level monitoring committees will be set up to ensure real-time monitoring and effective feed-back.

BIODIVERSITY & ENVIRONMENT**Human-Wildlife Conflict**

A report 'A Future for All – A Need for Human-Wildlife Coexistence' was recently released by World Wildlife Fund for Nature (WWF) and UNEP. It examined increasing human-wildlife conflict (HWC). HWC-related killing affects more than 75% of the world's wild cat species, as well as many other terrestrial and marine carnivore species such as polar bears and Mediterranean monk seals, and large herbivores such as elephants.

Key Points

About : Human-wildlife conflict (HWC) refers to struggles that arise when the presence or behaviour of wildlife poses actual or perceived direct, recurring threats to human interests or needs, often leading to disagreements between groups of people and negative impacts on people and/or wildlife.

Causes of Human-wildlife Conflict:

- Lack of Protected Area: Marine and terrestrial protected areas only cover 9.67% globally. About 40% of the African lion range and 70% of the African and Asian elephant ranges fall outside protected areas. In India, 35% tiger ranges currently lie outside protected areas.
- Wildlife-borne Infections: Covid-19 pandemic – sparked by a zoonotic disease is driven by the close association of people, their livestock, and wildlife and by the unregulated consumption of wild animals. With closer and more frequent and diverse contact between animals and people, the probability of animal microbes being transferred to people increases.
- Other Reasons:
 1. Urbanization: In modern times rapid urbanization and industrialisation have led to the diversion of forest land to non-forest purposes, as a result, the wildlife habitat is shrinking.
 2. Transport Network: The expansion of road and rail network through forest ranges has resulted in animals getting killed or injured in accidents on roads or railway tracks.
 3. Increasing Human Population: Many human settlements coming up near the peripheries of protected areas and encroachment in the forest lands by local people for cultivation and collection of food and fodder etc. therefore increasing pressure on limited natural resources in the forests.

Impacts:

- Impact on Wildlife And Ecosystems: HWC can have detrimental and permanent impacts on ecosystems and biodiversity. People might kill animals in self-defence, or as pre-emptive or retaliatory killings, which can drive species involved in conflict to extinction.
- Impact on Local Communities: The most evident and direct negative impacts to people from wildlife are injuries and the loss of lives and of livestock, crops, or other property.
- Impact on Equity: The economic and psychological costs of living with wildlife disproportionately fall to those who live near that wildlife, while the benefits of a species' survival are distributed to other communities as well.
- Impact on Social Dynamics: When a HWC event affects a farmer, that farmer may blame the government for protecting the perpetrator that damages crops, while a conservation practitioner may blame industry and farmers for clearing wild habitats and creating the HWC in the first place.
- Impact on Sustainable Development: HWC is the theme in conservation that is strongly linked to the SDGs as biodiversity is primary to sustain the developments, even though it is not explicitly mentioned as one.

Solution:

- Moving From Conflict To Coexistence: The goal of HWC management should be to enhance the safety of people and wildlife and to create mutual benefits of coexistence.
- Integrated and Holistic Practices: Holistic HWC management approaches allow species to survive in areas where they otherwise would have declined or become extinct. All species on our planet also are essential for maintaining ecosystem health and functions.
- Participation: The full participation of local communities can help reduce HWC and lead to coexistence between humans and wildlife.

Indian Scenario

- India faces an increasing challenge of human wildlife conflict, which is driven by development pressures and an increasing population, high demand for land and natural resources, resulting in loss, fragmentation, and degradation of wildlife habitats. These pressures intensify the interactions between people and wildlife because they often share living space without a clear demarcation of boundaries.
- In India, data from the Ministry of Environment, Forests and Climate Change shows that over 500 elephants were killed between 2014-15 and 2018-19, most related to human-elephant conflict.
- During the same period, 2,361 people were killed as a result of conflict with elephants.
- **Some Initiatives:**

1. Advisory for Management of HWC: This has been issued by the Standing Committee of National Board of Wildlife (SC-NBWL).
- ✓ Empower Gram Panchayats: The advisory envisages empowering gram panchayats in dealing with the problematic wild animals as per the WildLife (Protection) Act, 1972.
- ✓ Provide Insurance: Utilising add-on coverage under the Pradhan Mantri Fasal Bima Yojna for crop compensation against crop damage due to HWC.
- ✓ Augmenting Fodder: Envisages augmenting fodder and water sources within the forest areas.
- ✓ Take Proactive Measures: Prescribes inter-departmental committees at local/state level, adoption of early warning systems, creation of barriers, dedicated circle wise Control Rooms with toll free hotline numbers, Identification of hotspots etc.
- ✓ Provide Instant Relief: Payment of a portion of ex-gratia as interim relief within 24 hours of the incident to the victim/family.
- **State-Specific:**
2. In 2018, the Uttar Pradesh government had given its in-principle approval to bring man-animal conflict under listed disasters in the State Disaster Response Fund
3. The Uttarakhand government (2019) carried out bio-fencing by growing various species of plants in the areas.
4. The Supreme Court (2020) affirmed the right of passage of the Elephants and the closure of resorts in the Nilgiris elephant corridor.
5. Odisha's Athagarh Forest Division has started casting seed balls (or bombs) inside different reserve forest areas to enrich food stock for wild elephants to prevent man-elephant conflict.

IMPORTANT FACTS FOR PRELIM

High-Altitude Yak

Recently, the National Research Centre on Yak (NRCY) at Dirang in Arunachal Pradesh's West Kameng district has tied up with the National Insurance Company Ltd. for insuring the high-altitude yak. NRCY is a premier research institute exclusively engaged in research and development of yak in India. It was established in 1989 by the Indian Council of Agricultural Research.

Key Points

About:

- The Yak belong to the Bovini tribe, which also includes bison, buffaloes, and cattle. It can tolerate temperatures as low as -40 degrees Celsius. Adapted for living at high altitudes, they have long hair that hangs off their sides like a curtain, sometimes touching the ground.
- Yaks are highly valued by Himalayan peoples. According to Tibetan legend, the first yaks were domesticated by Tibetan Buddhism founder Guru Rinpoche. They are also known as the lifeline of pastoral nomads in high altitudes of the Indian Himalayan region.

Habitat:

- They are endemic to the Tibetan Plateau and the adjacent high-altitude regions. Yaks are most comfortable above 14,000 feet. They climb to an elevation of 20,000 when foraging and usually don't descend any lower than 12,000 feet.
- The yak-rearing states of India are Arunachal Pradesh, Sikkim, Uttarakhand, Himachal Pradesh and Jammu & Kashmir. The countrywide population trend shows that the yak population has been decreasing at an alarming rate. The total yak population in India is about 58,000.

Threats:

- **Climate Change:** The increasing trend of environmental temperature at high altitudes is resulting in heat stress in yak during warmer months of the year. This, in turn, is affecting the rhythms of physiological responses of the animal.
- **Inbreeding:** As wars and conflicts have led to the closing of borders, the yaks outside borders are thought to be suffering from inbreeding due to the lack of availability of new yak germplasm from the original yak area.

Protection Status of Wild Yak (*Bos mutus*):

- IUCN Red list status: Vulnerable IUCN considers the wild species of yak under *Bos mutus*, while the domestic form is considered under *Bos grunniens*.
- CITES: Appendix I
- Indian WildLife (Protection) Act of 1972: Schedule I

2.dbGENVOC: Database of Genomic Variants of Oral Cancer

Recently, the National Institute of Biomedical Genomics (NIBMG), funded by the Department of Biotechnology, has created the world's first database of genomic variations in oral cancer (dbGENVOC).

Key Points

About dbGENVOC:

- dbGENVOC, a comprehensive, flexible database framework, developed with an aim to allow potential users to access, query, browse and download clinically relevant somatic and germline variation data from Indian oral cancer patients.
- 1. Somatic or acquired genomic variants are the most common cause of cancer, occurring from damage to genes in an individual cell during a person's life.
- 2. A germline variant occurs in gametes and is passed directly from a parent to a child at the time of conception. Cancers caused by germline pathogenic variants are called inherited or hereditary.
- It will be updated annually with variation data from new oral cancer patients from different regions of India and southeast Asia.

Cancer Burden in India:

- According to the World Cancer Report 2020, India had an estimated 1.16 million new cancer cases in 2018.
- 1 in 10 Indians will develop cancer during their lifetime and 1 in 15 will die of the disease.
- The six most common cancer types in India are breast cancer, oral cancer, cervical cancer, lung cancer, stomach cancer, and colorectal cancer. Oral cancer is the most prevalent form of cancer among men in India, largely fuelled by tobacco-chewing.

Other Related Initiatives:

- National Cancer Grid (NCG) is a network of major cancer centers, research institutes, patient groups and charitable institutions across India with the mandate of establishing uniform standards of patient care for prevention, diagnosis, and treatment of cancer, providing specialized training and education in oncology (study of cancer) and facilitating collaborative basic, translational and clinical research in cancer. It was formed in August 2012.
- National Genomic Grid (NGG): NGG will collect samples from cancer patients, through a network of pan-India collection centres by bringing all cancer treatment institutions on board.
- National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) is being implemented under National Health Mission (NHM) for up-to the district level activities.

DAILY ANSWER WRITING PRACTICE

Qns. One Nation One Ration Card scheme is the panacea for India's migrant population. Critically examine. (250 Words)

Ans:

Introduction

One Nation One Ration Card (ONORC) scheme was started as an inter-State portability of ration cards in 2019. It allows the migratory National Food Security Act (NFSA), 2013 beneficiaries to lift their entitled quota of food grains from any Fair Price Shop (FPS) of their choice anywhere in the country. This can be done by using the existing ration card with Aadhaar based authentication.

Body

Benefits Emanating from ONORC

- **Transparency:** It will bring more transparency and efficiency in the distribution of foodgrains.
- **Identification:** It will improve the mechanism to identify fake/duplicate ration cards. It seeks to provide universal access to PDS food grains for migrant workers.
- **Food Security:** The scheme will ensure food security of migrant labourers who move to other states to seek better job opportunities.
- **Achieving SDG:** This will help achieve the target set under SDG 2: Ending hunger by 2030. Also, it will address the poor state of hunger in India, as highlighted by the Global Hunger Index, where India has been ranked 102 out of 117 countries.
- **Empowering Consumers:** ONORC will also give the beneficiaries the opportunity to opt for the dealer of their choice. If any dealer misbehaves or misallocates, the beneficiary can switch to another FPS shop instantly.
- **Reducing Social Discrimination:** ONORC will be particularly beneficial for women and other disadvantaged groups, given how social identity (caste, class and gender) and other contextual factors (including power relations) provide a strong backdrop in accessing PDS.

Issues with the implementation of the scheme

- **Exclusion Error:** The digitisation of this PDS process, through Aadhaar-linked ration cards and smart cards, has been pushed in an effort to reduce leakages. However, there has been a rise of exclusion errors in post-Aadhaar seeding. There are many sections of society who still don't have Aadhar Card, thereby depriving them of food security.
- **Logistical Issues:** An FPS receives the monthly quota of products strictly in accordance with the number of people assigned to it. The ONORC can disrupt this practice, as some FPSs may have to cater to more numbers of cards even as others cater to less, owing to migration of people.
- **Lack of Data:** There is no exact data on the mobility of poor households migrating to work, locating intra- and inter-state destinations and sectors employing the workers.
- **Domicile-Based Social Sector Schemes:** Not only PDS, most of the anti-poverty, rural employment, welfare and food security schemes were historically based on domicile-based access and restricted people to access government social security, welfare and food entitlements at their place of origin.

Way Forward

- Social auditing must be made mandatory to measure the performance of ONORC.
- NFA defines food security as nutritional security. Therefore, portability of Integrated Child Development Services, Mid-Day Meals, immunisation, health care and other facilities for poor migrant households can't be neglected and should be made portable.
- In the longer run, the PDS system may be replaced by a fool-proof food coupon system or direct benefit transfer, targeting the poor, wherein a Below Poverty Line family can buy rice, pulses, sugar and oil from any Kirana store at the market price, by either paying fully through the coupon or by cash.

Conclusion

The current migrant crisis should be seen as an opportunity to develop a national migration policy addressing the challenges faced by migrant workers productivity, living conditions and social security.

DAILY QUIZ

Q1. Consider the following:

1. Nava Vidhan
2. Sadharan Brahmo Samaj
3. Band of Hope

Swami Vivekananda is associated with which of the above organisations?

- a. 1 only
- b. 1 and 2 only
- c. 3 only
- d. 1, 2 and 3**

Q2. Trafficking in humans and forced labour is prohibited and is punishable in accordance with law. Which of the following in the Constitution of India correctly and appropriately imply the above statement?

- a. Article 14 and the provisions under the 32nd Amendment to the Constitution.
- b. Article 17 and the Directive Principles of state Policy in Part IV.
- c. Article 23 and freedom guaranteed in part III.**
- d. Article 24 and provisions under the 44th Amendment to the constitution.

Q3. The Global Gender Gap Report 2021 is released by which of the following?

- a. UN Women
- b. Global Fund for Women
- c. Commission on the Status of Women
- d. World Economic Forum**

Q4. The 'Istanbul Convention' was in news recently, is related to which of the following?

- a. Climate change and poverty
- b. Land use degradation
- c. Cyber terrorism
- d. Tackle violence against women**

Q5. The "Unity 22" mission was in news recently, is associated with which of the following?

- a. Climate change
- b. War against terrorism
- c. Space exploration**
- d. Cryptocurrencies