



Design Linked Incentive for Semiconductors

For Prelims: Design Linked Incentive, Semiconductors, Centre for Development of Advanced Computing

For mains: Semiconductors and their future in India, Components and the importance of the DLI scheme.

Why in News

The Ministry of Electronics and Information (MeitY) is seeking applications from 100 domestic [semiconductor](#) chip design firms, companies, start-ups and [Micro, Small and Medium Enterprises \(MSMEs\)](#) under its **Design Linked Incentive (DLI) Scheme**.

- The DLI scheme is part of the MeitY's [comprehensive Program for the Development of Semiconductors and Display Manufacturing Ecosystems](#) in the country.
- Lately, there has been an abrupt and [cascading shortage of semiconductors worldwide](#).

Semiconductors

- Any of a **class of crystalline solids intermediate in electrical conductivity** between a conductor and an insulator.
- Semiconductors are employed in the manufacture of various kinds of electronic devices, including **diodes, transistors, and integrated circuits**. Such devices have found wide application because of their compactness, reliability, power efficiency, and low cost.
- As discrete components, **they have found use in power devices, optical sensors, and light emitters, including solid-state lasers**.

Key Points

- **About:**
 - Under the DLI Scheme **financial incentives and design infrastructure support will be extended to domestic companies, startups and MSMEs**.
 - The incentives **will be provided across various stages of development and deployment of semiconductor design** for Integrated Circuits (ICs), Chipsets, System on Chips (SoCs), Systems & IP Cores and semiconductor linked design **for over a period of 5 years**.
- **Eligibility:**
 - The approved applicants that claim incentives under the scheme will be encouraged to **retain their domestic status** (i.e., more than 50% of the capital in it is beneficially owned by resident Indian citizens and/ or Indian companies, which are ultimately owned and controlled by resident Indian citizens) for a **period of three years** after claiming incentives under the scheme.
 - An **applicant must meet the Threshold and Ceiling Limits** to be eligible for disbursement of incentives under the Scheme.
 - A dedicated portal has also been made available.

- **Aim:**
 - To **nurture at least 20 domestic companies** involved in semiconductor design and facilitate them to achieve turnover of more than Rs.1500 Crore in the next 5 years.
- **Approach:**
 - The DLI Scheme will also take a **graded and pre-emptive approach** to Identify the Products of national priorities and implement strategies for their complete or near complete indigenisation & deployment thereby taking steps towards the import substitution & value addition in strategic & societal sectors.
- **Nodal Agency:**
 - **C-DAC (Centre for Development of Advanced Computing)**, a scientific society operating under MeitY, will serve as the nodal agency for implementation of the DLI scheme.
- **Components of DLI:** The scheme has three components - Chip Design infrastructure support, Product Design Linked Incentive and Deployment Linked Incentive:
 - **Chip Design Infrastructure Support:** Under this, **C-DAC will set up the India Chip Centre to host the state-of-the-art design infrastructure** (viz. EDA Tools, IP Cores and support for MPW (Multi Project Wafer fabrication) & post-silicon validation) and **facilitate its access to supported companies.**
 - **Product Design Linked Incentive:** Under this, **a reimbursement of up to 50% of the eligible expenditure subject to a ceiling of Rs.15 Crore per application will be provided** as fiscal support to the approved applicants who are engaged in semiconductor design.
 - **Deployment Linked Incentive:** Under this, **an incentive of 6% to 4% of net sales turnover over 5 years subject to a ceiling of Rs.30 Crore per application will be provided** to approved applicants whose semiconductor design for Integrated Circuits (ICs), Chipsets, System on Chips (SoCs), Systems & IP Cores and semiconductor linked design are deployed in electronic products.
- **Related Initiatives:**
 - **For Semiconductor Fabs and Display Fabs:**
 - Government would provide fiscal support of up to 50% of the project cost for setting up semiconductor and display fabrication units.
 - **Semi-conductor Laboratory (SCL):**
 - MeitY will take requisite steps for modernization and commercialization of Semi-conductor Laboratory (SCL).
 - **For Compound Semiconductors:**
 - Government will support fiscal support of 30% of capital expenditure to approved Compound Semiconductors units.
 - **India Semiconductor Mission:**
 - In order to drive the long-term strategies for developing a sustainable semiconductors and display ecosystem, **a specialised and independent India Semiconductor Mission (ISM) will be set up.**
 - **Production Linked Incentives:**
 - Incentive support to the tune of Rs.55,392 crore (7.5 billion USD) have been approved under **Product Linked Incentive (PLI)** for Largest Scale Electronics Manufacturing, PLI for IT Hardware, SPECS Scheme and Modified **Electronics Manufacturing Clusters** (EMC 2.0) Scheme.

Centre for Development of Advanced Computing

- C-DAC is the **premier Research & Development organisation of the Ministry of Electronics and Information Technology (MeitY)** for carrying out R&D in IT, Electronics and associated areas.
- **India's first supercomputer PARAM 8000** was indigenously built (in 1991) by the Centre for Development of Advanced Computing.

Special Marriage Act 1954

For Prelims: Special Marriage Act (SMA), 1954, Fundamental Rights

For Mains: Special Marriage Act (SMA), 1954,, K.S. Puttaswamy v UOI (2017), Right to Privacy, Personal Liberties.

Why in News

Recently, the law that governs inter-faith marriages in the country, the [Special Marriage Act \(SMA\), 1954](#), is being challenged in the Supreme Court.

- In 2021, petitions were filed to strike down several of its provisions.

The Special Marriage Act (SMA), 1954

- It is the legislation made to validate and register interreligious and inter-caste marriages in India.
- It allows two individuals to **solemnise their marriage through a civil contract**.
- No religious formalities are needed to be carried out under the Act.
- This Act includes **Hindus, Muslims, Christians, Sikhs, Jains, and Buddhists marriages**.
- This Act applies not only to Indian citizens who belong to different castes and religions but also to Indian nationals who live abroad.

About the Current Petition

- **Section 5** of the SMA requires a **person marrying** under this law to give a notice of intended marriage.
- **Section 6(2)** says it should be **affixed at a conspicuous place at the office of the marriage officer**.
- **Section 7(1)** allows any person to object to the marriage within 30 days of the publication of the notice, failing which a marriage can be solemnised under **Section 7(2)**.
- Due to these provisions breaching personal liberties, several inter-faith couples approached the Court, **challenging Sections 6 and 7 of the Act**.

Key Points

- **About Interfaith Marriages:**
 - The matrimonial relationship developed between two individuals having different religious faiths.
 - Although marrying into a different religion is a matter of choice for an adult, there are certain issues regarding the same.
- **Issues with Interfaith Marriages:**
 - Interfaith marriages are believed to be a **forced conversion of one of the spouses (mostly women)**.
 - As per the Muslim Personal law, in order to get married to a non-Muslim, **conversion of religion is the only way**.
 - Hindu religion allows **only monogamy** and those **who want to marry a second time take another course**.

- There is no provision regarding **caste determination of children born out of such marriages.**
- The Special Marriage Act, 1954 is **not compatible with backwardness of the society.**
- There is debate over the validity of **Article 226 in the context of annulling the interfaith marriage by the high court.**
 - **Article 226:** Power of high courts to issue certain **writs.**
- **Challenges with Contemplating Laws for Interfaith Marriages:**
 - **Against Fundamental Rights:** Interference of the law in an individual's choice of marriage violates the existing fundamental rights such as:
 - **Right to equality (Article 14),**
 - **Right to Freedom & Personal Liberty (Article 19),**
 - **Freedom of Religion and Right to Life (Article 25 and Article 21).**
 - **Against Secularism:** Indian Constitution enshrines **secularism** as one of the cardinal principles.
 - **Article 25 of the Indian constitution** provides the freedom to practice any religion of one's choice.
 - Hence, in India inter-faith marriages are allowed as the constitution allows one to convert to a different religion from what one was born with and further the personal laws of the religion have provisions.
 - **Asymmetrical With Various Supreme Court's Judgements:**
 - The Supreme Court in ***Shafin Jahan v Ashok KM (2018)***, has upheld the right to marry a person of one's choice as a part of Article 21.
 - According to the Supreme Court, the Constitution protects the ability of each individual to pursue a way of life or faith to which she or he seeks to adhere.
 - Therefore, the right to marry a person of one's choice is integral to Article 21 of the Constitution.
 - Further, Supreme Court in ***K.S. Puttaswamy v UOI (2017)*** judgement held that **"right of choice of a family life" as a fundamental right.**
 - **Patriarchal Roots:** This shows the law has deep-seated patriarchal roots, wherein women are infantilised, placed under parental and community control, and denied the right to take life decisions, should those decisions not be agreeable to their guardians.

Way Forward

- In order to avoid inclusion of any further laws, there should be acceptance of the special marriage act, 1954 at the mental and social level.
- The rights should not be exploited; conversion of religion for marriage only is not at all wise.

[Source: TH](#)

Rare Earth Metals

For Prelims: Rare Earth Metals and its significance

For Mains: Rare Earth Metals, Need to develop capabilities to increase its production in India and steps need to be taken

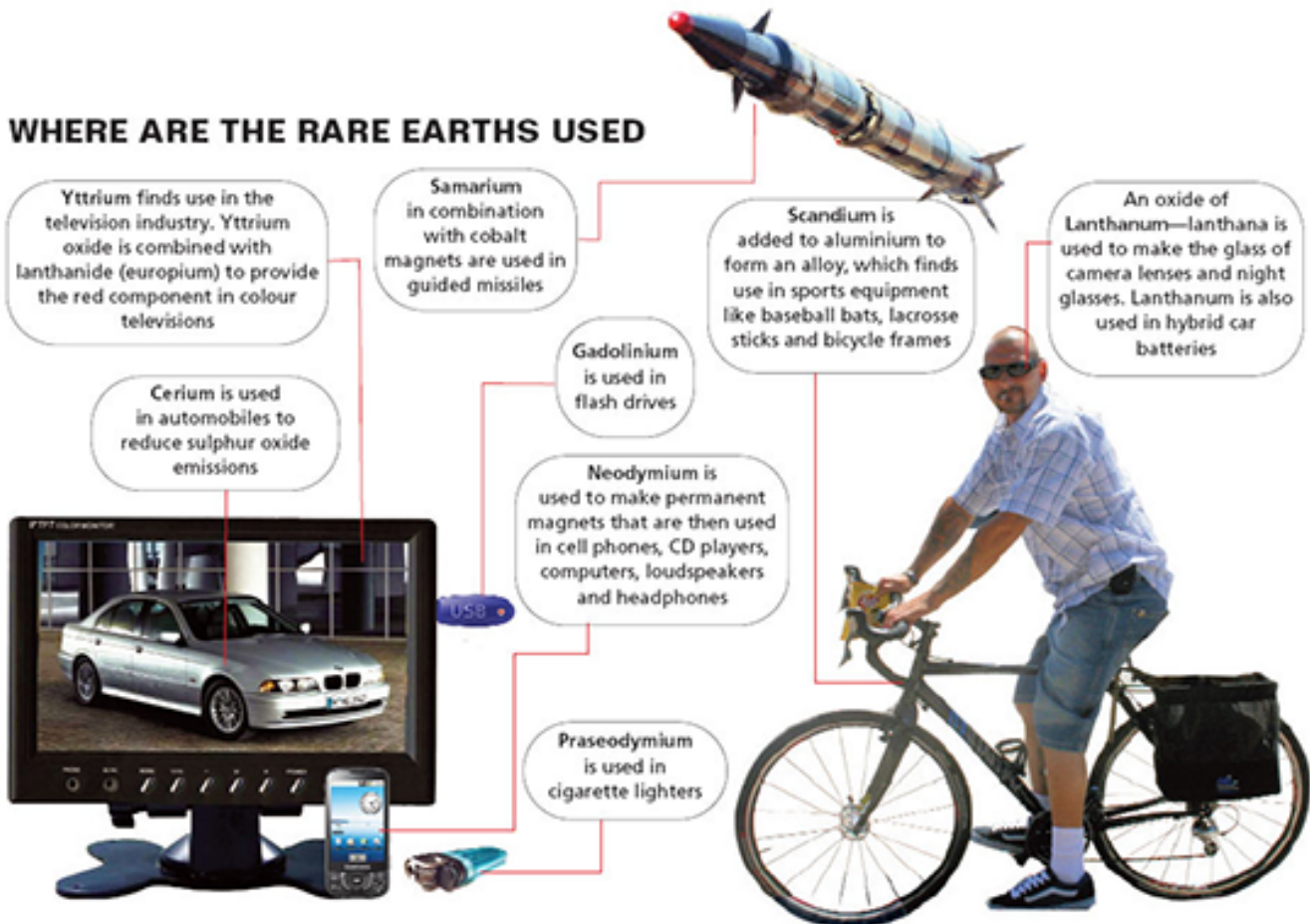
Why in News

Recently, the US has proposed a law aiming to end China's alleged "chokehold" on rare-earth metal

supplies.

- The Bill aims to “protect the US from the threat of rare-earth element supply disruptions, encourage domestic production of those elements, and reduce its reliance on China.
- The law would require the creation of a **“strategic reserve” of rare earth minerals by 2025.**
 - That reserve would be tasked with responding to the needs of the army, the tech sector and other essential infrastructure “for one year in the event of a supply disruption”.

//



Key Points

- **About:**
 - They are a set of **seventeen metallic elements**. These include the **fifteen lanthanides** on the **periodic table** in addition to **scandium and yttrium** that show similar physical and chemical properties to the lanthanides.
 - The **17 Rare Earths** are cerium (Ce), dysprosium (Dy), erbium (Er), europium (Eu), gadolinium (Gd), holmium (Ho), lanthanum (La), lutetium (Lu), neodymium (Nd), praseodymium (Pr), promethium (Pm), samarium (Sm), scandium (Sc), terbium (Tb), thulium (Tm), ytterbium (Yb), and yttrium (Y).
 - These minerals have **unique magnetic, luminescent, and electrochemical properties** and thus are used in many modern technologies, including consumer electronics, computers and networks, communications, health care, national defense, etc.
 - Even **futuristic technologies** need these REEs (For example high-temperature superconductivity, safe storage and transport of hydrogen for a post-hydrocarbon economy, environmental global warming and energy efficiency issues).
 - They are called '**rare earth**' because earlier it was **difficult to extract them from their oxides forms technologically**.
 - They **occur in many minerals** but typically in low concentrations to be refined in an

economical manner.

▪ **India's Current Policy on Rare Earths:**

- Exploration in India has been conducted by the **Bureau of Mines and the Department of Atomic Energy**. Mining and processing has been performed by some minor private players in the past, but is today concentrated in the hands of **IREL (India) Limited** (formerly Indian Rare Earths Limited), a Public Sector Undertaking under the Department of Atomic Energy.
- India has granted government corporations such as **IREL a monopoly** over the primary mineral that contains REEs: monazite beach sand, found in many coastal states.
- IREL produces **rare earth oxides** (low-cost, low-reward “upstream processes”), selling these to foreign firms that extract the metals and manufacture end products (high-cost, high-reward “downstream processes”) elsewhere.
- IREL’s focus is to provide thorium — extracted from monazite — to the Department of Atomic Energy.

▪ **China’s Monopoly:**

- China has over time **acquired global domination of rare earths**, even at one point, it produced 90% of the rare earths the world needs.
- Today, however, it has **come down to 60%** and the remaining is produced by other countries, including the **Quad (Australia, India, Japan and United States)**.
- Since 2010, when **China curbed shipments of Rare Earths** to Japan, the US, and Europe, production units have come up in Australia, and the US along with smaller units in Asia, Africa, and Latin America.
- Even so, the dominant share of processed Rare Earths lies with China.

▪ **Heavy dependence on China (India and the World):**

- India has the **world’s fifth-largest reserves of rare earth elements**, nearly twice as much as Australia, but it imports most of its rare earth needs in finished form from China.
- In 2019, the US imported 80% of its rare earth minerals from China while the European Union gets 98% of its supply from China.

Way Forward

- India needs to create a **new Department for Rare Earths (DRE)**, which would play the role of a regulator and enabler for businesses in this space.
 - Currently, mining and processing has been **largely concentrated in the hands of IREL (India) Limited**, a PSU under the department of atomic energy.
 - Its progress and capacity to produce rare earths, while growing slowly, is nowhere close to **international REE conglomerates**.
- Indian companies can be **encouraged to form such junior exploration businesses** in the **Indian Ocean Region** to prospect for REEs and feed value added products into the Indian market.
 - Most governments in this region have mining and exploration friendly policies and welcome investment. India has strong historical, cultural, business and Diaspora links in this region that has developed over centuries of trade and migration.
- India can also **coordinate with other agencies** to partner directly with groupings such as the Quad, **building up a strategic reserve as a buffer against global supply crises**.

[Source: TH](#)

24th National Conference on e-Governance 2021

For Prelims: National Conference on e-Governance (NCeG).

For Mains: concept of e-Governance and its benefits in governance, different types of interaction in e-

Why in News

Recently, the **24th National Conference on e-Governance (NCeG)** was organised by the Department of Administrative Reforms & Public Grievances (DARPG, Ministry of Personnel, Public Grievances & Pensions) and Ministry of Electronics & Information Technology (MeitY), in association with the State Government of Telangana.

- DARPG is the nodal agency of the Government of India for administrative reforms as well as redressal of public grievances relating to the states in general and those pertaining to Central Government agencies in particular.

Key Points

- **About:**
 - The Conference provides a **platform for constructive exchange of ideas** on some of the latest technologies for promoting **e-Governance**.
 - At the conference, the **'Hyderabad Declaration' on e-Governance** was adopted.
 - The declaration aims to bring citizens and governments closer through digital platforms and transform citizen services through the use of technology.
 - The Conference resolved that Government of India and State Governments shall collaborate to:
 - Transform citizen services through use of technology by leveraging the artifacts of India Stack that include **Aadhaar, UPI, DigiLocker, UMANG, e Sign** and consent framework.
 - **Fast track the implementation** of the national level public digital platforms in key social sectors viz. Health, Education, Agriculture, etc by adopting open interoperable architecture for joined up connected services.
 - **Operationalize the data governance framework** to facilitate data sharing within Government entities as also make available all data on data.gov.in except for a negative list.
 - Foster responsible use of emerging technology such as **Artificial Intelligence, Machine Learning, Blockchain, 5G, Augmented Reality, Virtual Reality**, etc for Social Empowerment.
 - Make India the global hub for emerging technology through creation of a large pool of skilled resources on futuristic technologies.
 - Ensure resilient Government Infrastructure with robust technological solutions to withstand pandemic like disruptions.
 - Integration of all State/District portals with **Centralized Public Grievance Redress and Monitoring System (CPGRAMS)** for seamless Redressal of Public Grievances.
 - **National E-Governance Service Delivery Assessment (NeSDA) 2021** to be adopted in collaboration with MeitY for improving e-Governance landscape.
- **Theme:** "India's Techade: Digital Governance in a Post Pandemic World"
- **National e-Governance Awards 2021:**
 - To recognise the implementation of e-Governance initiatives, the National e-Governance Awards 2021 were presented during the Inaugural Session.
 - 26 awards were presented under the 6 categories of the Award Scheme to Central Ministries/Departments, State/UT Governments, Districts, Local Bodies, Public Sector Undertakings and Academic & Research Institutions.
 - These Awards are being given **since 2003**.

E-governance

- **About:**
 - It can be defined as the **usage of Information and Communication Technology (ICT)** by the government **to provide and facilitate government services**, exchange of information, communication transactions and integration of various standalone systems and services.
 - Through e-governance, **government services are made available to citizens and businesses** in a convenient, efficient and transparent manner.
- **Types of Interactions in e-Governance:**
 - **Government to Government (G2G):**
 - Information is exchanged within the government i.e., either, between the central government, state government and local governments or between different branches of the same government.
 - **Government to Citizen (G2C):**
 - The citizens have a platform through which they can interact with the government and get access to the variety of public services offered by the Government.
 - **Government to Businesses (G2B):**
 - The businesses are able to interact with the government seamlessly with respect to the services of the government offered to businesses.
 - **Government to Employees (G2E):**
 - The interaction between the government and its employees occurs in an efficient and speedy manner.
- **Objectives:**
 - To support and simplify governance for government, citizens, and businesses.
 - To make government administration more transparent and accountable while addressing the society's needs and expectations through efficient public services and effective interaction between the people, businesses, and government.
 - To reduce corruption in the government.
 - To ensure speedy administration of services and information.
 - To reduce difficulties for business, provide immediate information and enable digital communication by e-business.
- **Challenges:**
 - **Lack of computer literacy:** India is still a developing country and a vast majority of the citizens lack computer literacy which hinders the effectiveness of e-governance.
 - **Lack of accessibility:** Lack of accessibility to the internet or even computers in some parts of the country is a disadvantage to e-governance.
 - **Loss of Human interaction:** Governance results in a loss of human interaction. As the system becomes more mechanised, lesser interaction takes place among people.
 - **Risk of Data Theft:** It gives rise to the risk of personal data theft and leakage.
 - **Lax Administration:** Governance leads to a lax administration. The service provider can easily provide excuses for not providing the service on technical grounds such as "server is down" or "internet is not working", etc.
- **e-Governance in the Indian context:**
 - There are a large number of e-Governance initiatives, both at the Union and State levels.
 - In 2006, the **National e-Governance Plan (NeGP)** was formulated by the Department of Electronics and Information Technology and Department of Administrative Reforms and Public Grievances that aims at making all government services accessible to the common man, ensure efficiency, transparency and reliability of such services at affordable costs to realise the basic needs of the common man.
 - **NeGP** has enabled many e-governance **initiatives:**
 - [Digital India](#), [Aadhaar](#), myGov.in, [\(Unified Mobile Application for New-age Governance\) App](#), [Digital Locker](#), PayGov, **Computerisation of Land Records.**
 - myGov.in is a national citizen engagement platform where people can share ideas and be involved with matters of policy and governance.
 - PayGov facilitates online payments to all public and private banks.

Way Forward

- A **hybrid approach** needs to be adopted for enhancing interoperability among e-governance applications which will encompass a centralized approach for document management, knowledge

- management, file management, grievance management etc.
- The e-governance initiatives in **rural areas should be taken by identifying and analyzing the grassroots realities.**
 - The government should also **focus on devising appropriate, feasible, distinct and effective capacity building mechanisms** for various stakeholders viz bureaucrats, rural masses, urban masses, elected representatives, etc.
 - e-Governance through regional languages is appreciable for nations like India where people from several linguistic backgrounds are the participants.

[Source: PIB](#)

National Startup Awards 2021

For Prelims: National Startup Awards, Startup India Initiative

For Mains: Startups in India and challenges in achieving the true potential of start-ups, Steps taken to promote Start-ups

Why in News

Recently, the Union Minister of Commerce & Industry presented the **second edition of National Startup Awards 2021.**

- It was also announced that **16th January (Startup India Initiative was launched on this day in 2016)** will be celebrated as **National Start-up Day**, to take the Startup culture to the far flung areas of the country.
- The '**Blockchain-enabled verification** for Department for Promotion of Industry and Internal Trade (DPIIT) tax incentive certificates', '**Digilocker** enabled DPIIT Startup recognition certificate' were also launched.

Startup India Initiative

- It envisages **building a robust Startup ecosystem in the country** for nurturing innovation and providing opportunities to budding entrepreneurs. It was launched in 2016.
- The action plan of this initiative focuses on following three areas:
 - Simplification and Handholding.
 - Funding Support and Incentives.
 - Industry-Academia Partnership and Incubation.

Key Points

- **Designed by:**
 - Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce & Industry.
- **Aim:**
 - To recognize and reward outstanding Startups and ecosystem enablers that are building innovative products or solutions and scalable enterprises, with high potential of employment generation or wealth creation, demonstrating measurable social impact.

- **2021 Awards:**
 - The second edition of the awards invited applications across **15 sectors and 49 sub-sectors**.
 - The 2021 edition of the awards also recognized exceptional Startups innovating solutions to promote Indic languages and to compliment national efforts to combat [Covid-19 pandemic](#).
 - All applicants were **evaluated against six broad parameters** namely Innovation, Scalability, Economic Impact, Social Impact, Environmental Impact, and Inclusiveness and Diversity.
- **Prize:**
 - The winning startup founders will get a cash prize of Rs. 5 lakh and an opportunity to present their solutions to relevant public authorities and corporates. Incubators and accelerators will get Rs. 15 lakh as the winning amount.
 - 46 startups along with 1 incubator and 1 accelerator were honoured with the award.

Status of Start-ups in India

- **About:**
 - Today, India is the **third largest start-up ecosystem globally** (by number of start-ups) with more than 15,000 start-ups established in 2020, up from 5000 in 2010.
 - The underlying enablers of this startup ecosystem include smartphone and internet penetration, [cloud computing](#), [application programming interfaces \(APIs\)](#), and a national payments stack in place.
 - Additionally, amid the **Covid-19 pandemic**, India has witnessed more number of **Unicorn startups (startups having valuation of over USD1 billion) in just 2021** than it did in the period 2011-20.
 - However, still there are many challenges (Building and Scaling an Indian Startup, Diversity and the **Digital Divide**, Complex Regulatory Environment) that act as a hindrance in realising the true potential of startups in India.
- **Other Related Initiatives:**
 - [Ranking of States on Support to Startup Ecosystems](#): It is an evolved evaluation tool aimed to strengthen the support of States and UTs to holistically build their startup ecosystems.
 - **SCO Startup Forum**: The first-ever [Shanghai Cooperation Organisation \(SCO\)](#) Startup Forum was launched in October 2020 to develop and improve startup ecosystems collectively.
 - **Prarambh**: The 'Prarambh' Summit aims to provide a platform to the startups and young minds from around the world to come up with new ideas, innovation and invention.
 - [Startup India Seed Fund Scheme](#): It aims to provide financial assistance to startups for proof of concept, prototype development, product trials, market entry, and commercialization.
 - [Fisheries Startup Grand Challenge](#): The Department of Fisheries, Ministry of Fisheries, Animal Husbandry & Dairying In association with Startup India, the Ministry of Commerce and Industry inaugurated the **Fisheries Startup Grand Challenge**.

[Source: PIB](#)

India- Russia PASSEX Exercise

For Prelims: India- Russia PASSEX Exercise, INS Kochi, Zayed Talwar, Al-Mohed Al-Hindi', Project 15A

For Mains: Significance of Russia for India

Why in News

Recently, **India's INS Kochi** and Russian ships engaged in the international Passage Exercise (PASSEX).

- A passage exercise is normally undertaken whenever an opportunity arises, in contrast to pre-planned maritime drills.
- Earlier, Indian Naval ships conducted [PASSEX with the US Navy also](#).



Key Points

- **Russia's Importance for India:**
 - **In Indian Ocean Region:**
 - Russia's inclusion as a dialogue partner of the [Indian Ocean Rim Association \(IORA\)](#) has opened up a plethora of opportunities for collaboration with India including a possible maritime security architecture to create balance in the Indian Ocean Region (IOR) and on scientific and research endeavors.
 - **In the Arctic Region:** India has scientific, environmental, commercial and strategic interests in the [Arctic region](#), and the Russian Arctic can potentially address India's energy security objectives.
 - **Hydrocarbons:** Russia has the largest proven natural gas reserves in the world, enough to last for about 80 years at current production rates.
 - **Strategic Minerals:** The Russian Arctic also has **vast deposits of cobalt, copper, diamonds, gold, iron, nickel, platinum, high-value rare earth elements, titanium, vanadium and zirconium.**

- The Arctic accounts for 90% of Russia's nickel and cobalt production, 60% of copper, and over 96% of platinum metals.
- **Indian** rare earth reserves are **richer in lighter fractions and deficient in heavier ones**.
- Most of the rare earth products used in strategic industries viz. Defence, fibre optic communications, space and nuclear energy are also critical to various clean energy technologies, including wind turbines and electric vehicles.
- The **Russian Arctic, therefore, has the potential to mitigate India's critical deficiencies in rare earth and strategic minerals**.
- **Northern Sea Route:** For Indian ports, the [Northern Sea Route or NSR](#) does not offer any benefits and is longer than the current route, for Rotterdam.
 - However, there are other avenues for cooperation on the NSR.
 - Russia has **announced its intention, inter alia, to ensure year-round, safe, uninterrupted and cost-effective navigation in the waters of the NSR**.
 - India has indicated its **willingness to partner with Russia**, stating that "India and Russia will also be partners in opening of the NSR for international trade and commerce". In response, President Putin has stated that Russia welcomes India's interests in the NSR.
- **Russian Far East:** The Russian Far East or RFE is rich in natural resources.
 - About **one-third of all coal reserves and hydro-engineering resources of the country are available here**. Forests of the region comprise about 30% of Russia's total forest area.
 - **India's cooperation in the development of RFE including NSR has been endorsed** by the two countries.
 - Addressing the [Eastern Economic Forum \(EEF\)](#) in 2019, India announced a USD 1 billion line of credit to further contribute to the development of RFE.
- **Other Exercises of India and Russia:**
 - [Exercise TSENTR 2019](#) (Multilateral Military Exercise).
 - [Indra Exercises](#) - Joint Tri-Services (Army, Navy, Air Force) Exercises.
 - [ZAPAD 2021](#) (Multilateral Military Exercise).

INS Kochi

- It is an **indigenously designed second ship of the Kolkata-class stealth guided-missile destroyers**, was built under the code name of **Project 15A** for the Indian Navy.
- It was **constructed by Mazagon Dock Limited (MDL)** in Mumbai and was later commissioned to the [Indian Navy](#) services in 2015, after undergoing extensive sea trials.
- Earlier, it **took part in many other naval services** including:
 - '**Zayed Talwar**': It is a bilateral naval exercise between the Indian and UAE Navy.
 - '[Al-Mohed Al-Hindi](#)': India and Saudi Arabia started their first-ever Naval joint exercise.
 - [India- US PASSEX](#)

[Source: PIB](#)

Thiruvalluvar

Why in News

The Prime Minister of India paid tributes to the Tamil poet and philosopher Thiruvalluvar on [Thiruvalluvar Day](#).

- In the present time, the is usually observed either on 15th or 16th January in Tamil Nadu and is a part of [Pongal](#) celebrations.

Key Points

▪ About:

- Thiruvalluvar, also called **Valluvar, was a Tamil poet-saint.**
- The period when he lived is debated, as is his **religious identity.**
 - He is believed to have lived between the 3rd-4th century or 8th-9th century.
 - He is thought to be linked to [Jainism](#). However, Hindus have also claimed that [Thiruvalluvar](#) belonged to hinduism.
- Dravidian groups also count him as a saint, as **he dismissed the caste system.**
- He had **contributed the Tirukkural or 'Kural' to the Sangam literature.**
- Tirukkural is comprised of 133 sections of 10 couplets each is divided into three books:
 - **Aram (virtue),**
 - **Porul (government and society), and**
 - **Kamam (love).**
- The Tirukkural has been compared to the great books of the world's major religions.

Sangam Literature

- The word '**Sangam**' is the Tamil form of the Sanskrit word **Sangha** which means a **group of persons or an association.**
- The Tamil Sangam was an academy of poets who flourished in three different periods and in different places under the **patronage of the Pandyan kings.**
- It was compiled during the **3rd century BC to 3rd century CE** & was composed in poetic format around themes **of love and war.**
- According to the **Tamil legends**, there were three Sangams (Academy of Tamil poets) held in the ancient South India popularly called **Muchchangam.**
 - The **First Sangam**, is believed to be held at Madurai, attended by gods and legendary sages. No literary work of this Sangam is available.
 - The **Second Sangam** was held at Kapadapuram, only Tolkappiyam survives from this.
 - The **Third Sangam** was also held at Madurai. A few of these Tamil literary works have survived and are a useful sources to reconstruct the history of the Sangam period.
- The Sangam literature which was largely consolidated from the **third Sangam**, throws information on conditions of life of people around the **beginning of the Christian era.**
 - It deals with secular matters relating to the public and social activities like government, war charity, trade, worship, agriculture, etc.
 - Sangam literature consists of the earliest **Tamil works (such as the Tolkappiyam), the ten poems (Pattupattu),** the eight anthologies (**Ettutogai**) and the eighteen minor works (**Padinenkilkanakku**) and the three epics.

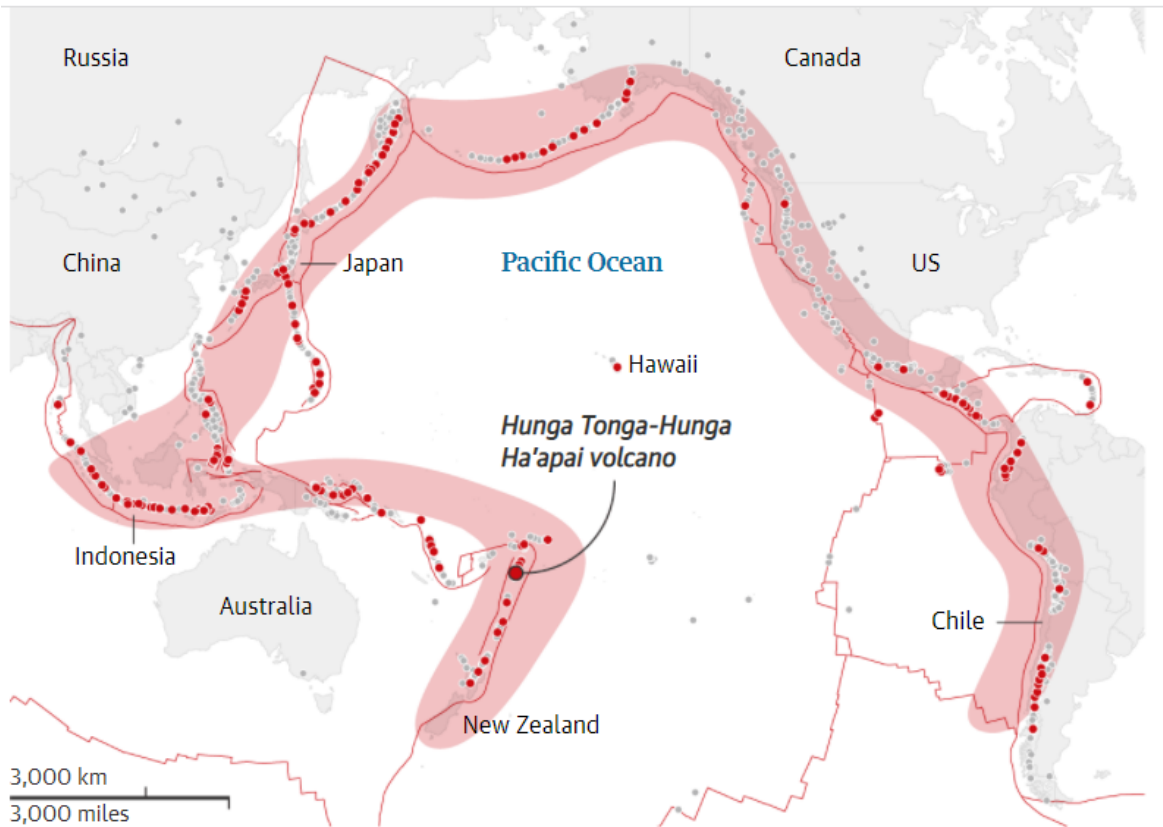
[Source: PIB](#)

Volcanic Eruption in Tonga

Why in News

Recently, a volcano erupted in the southern Pacific Island of Tonga, which triggered [Tsunami waves](#) around the [Pacific](#).

- The Tonga Islands occur along the [Ring of Fire](#)—a perimeter of heightened volcanic and seismic activity that encircles the Pacific Ocean basin.



Key Points

▪ About:

- It is an [Undersea Volcanic Eruption](#) consisting of two small uninhabited islands, **Hunga-Ha'apai and Hunga-Tonga.**
- The Hunga-Tonga-Hunga-Ha'apai volcano has **erupted regularly over the past few decades.**
 - During events in 2009 and 2014/15, hot jets of magma and steam exploded through the waves. But **these eruptions were small, dwarfed in scale by the January 2022 events.**
- This is one of the massive explosions the volcano is capable of producing **roughly every thousand years.**
- One of the reasons for it being highly explosive is the **Fuel-Coolant interaction.**

▪ Impact:

- Huge volcanic eruptions **can sometimes cause temporary global cooling as sulfur dioxide is pumped into the stratosphere.** But in the case of the Tonga eruption, initial satellite measurements indicated the amount of sulfur dioxide released would only have a tiny effect of perhaps 0.01 Celsius global average cooling.

- The eruption altered **atmospheric pressure that may have briefly helped clear out the fog** in Seattle, in the United States.
- The waves crossed the Pacific, drowning two people in Peru and causing minor damage from New Zealand to Santa Cruz, California.
- The US Geological Survey estimated the **eruption caused the equivalent of a magnitude 5.8 earthquake.**

Volcano

- A volcano is **an opening or rupture in the earth's surface that allows magma** - which comes out as hot liquid and semi-liquid rock - volcanic ash and gases to escape.
- The volcanic hotspots are places which are found where Earth's tectonic plates come together.
- A **volcanic eruption is when lava and gas are released from a volcano** - sometimes explosively.

Undersea Volcano

- The undersea volcanic eruption happens in a **volcano which is located under the ocean surface**. There are an estimated one million undersea volcanoes, and most of them are located near the tectonic plates.
- Apart from lava, these openings also spew out ash. These deposit on the ocean's floor and lead to the **formation of sea mounds - underwater mountains that are formed on the ocean floor** but do not reach the water surface.

Fuel-Coolant Interaction

- If magma rises into sea water slowly, even at temperatures of about 1200 degrees Celsius, **a thin film of steam forms between the magma and water**. This provides a layer of insulation to allow the outer surface of the magma to cool. But this process doesn't work **when magma is blasted out of the ground full of volcanic gas**.
- When magma enters the water rapidly, **any steam layers are quickly disrupted, bringing hot magma in direct contact with cold water**.
- It is akin **to weapons-grade chemical explosions**.
- Extremely violent blasts tear the magma apart.
- A chain reaction begins, with new magma fragments exposing fresh hot interior surfaces to water, and the explosions repeat, **ultimately jetting out volcanic particles and causing blasts with supersonic speeds**.

[Source: IE](#)

PDF Referenece URL: <https://www.drishtias.com/current-affairs-news-analysis-editorials/news-analysis/17-01-2022/print>