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YOJANA AND KURUKSHETRA

Webinar Handout

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YOJANA (JULY 2021) AND KURUKSHETRA (JUNE 2021)

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1. Inclusive, Equitable and Quality Education

Context

- In Indian society, which is marked by the division on the lines of caste, religion and language; the role of education becomes vital as it can be a great leveller or equaliser if access to quality education is universalised. Education is important in generating opportunities and creating a level playing field for all.

Inclusive Education

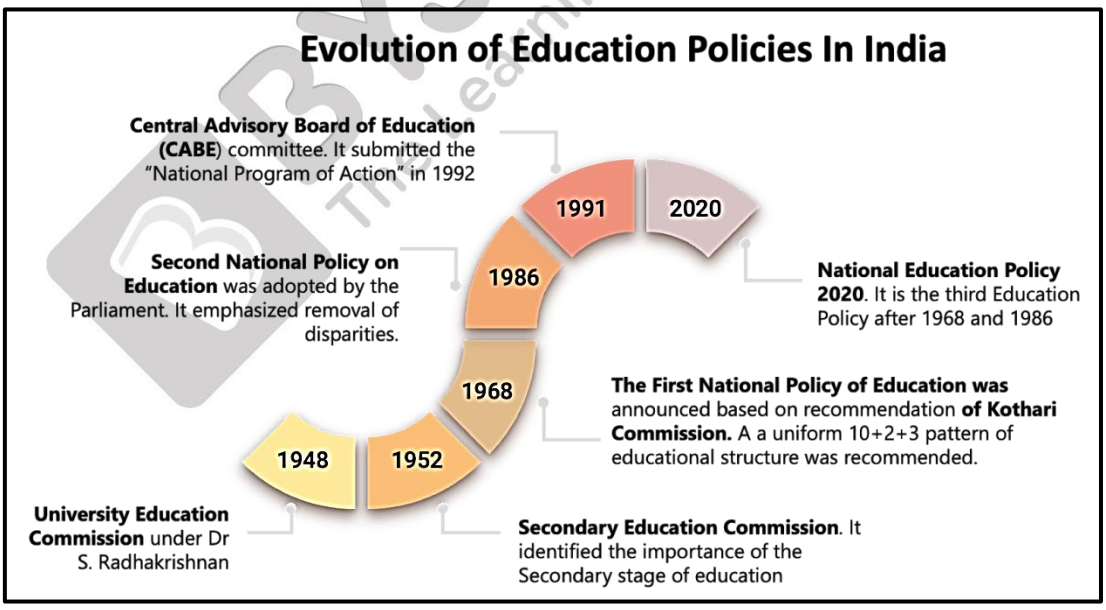
- Inclusive education means **different and diverse students learning side by side in the same classroom.**
- Inclusive Education is defined in the **Rights of Persons with Disabilities (RPWD) Act** as the 'system of education wherein students with and without disabilities learn together and the system of teaching and learning is suitably adapted to meet the learning needs of different types of students with disabilities.
- The **Sustainable Development Goal 4 (SDG 4)** also strives to ensure inclusive and equitable quality education for all by 2030.

  Aim of Inclusive Education System
  - To provide a **quality education system to all students** with a particular focus on marginalised and underrepresented groups.
  - To enable **children with disabilities to fully participate** in the regular schooling process.

Education In Post Independent India

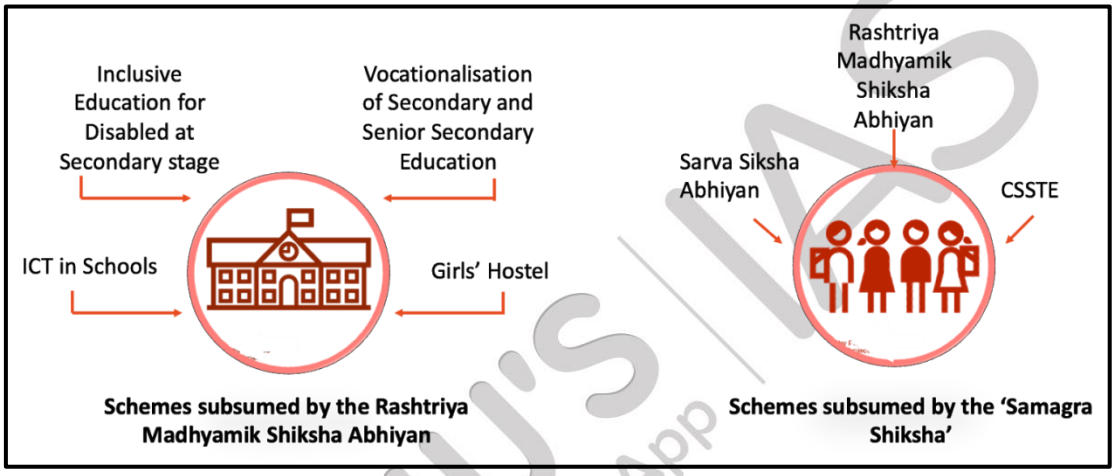
- Several policies and initiatives taken in post-independent India have resulted in remarkable progress in **literacy rate from 18 per cent in 1951 to 73 per cent as of 2011.**
- The present scale of the school education system in India is the **largest in the world** with around 94 lakh teachers, 15 lakh schools, and 25 crores students.

Evolution of Different Policies and Commissions for Education in India



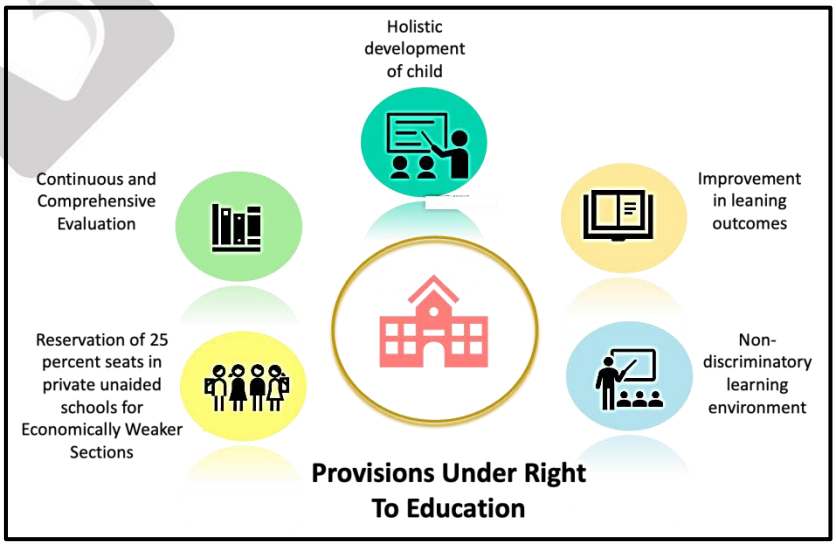
Programmes And Schemes for Inclusive Education

- **Sarva Shiksha Abhiyan:** It was launched as a flagship Centrally Sponsored Scheme in partnership with State Governments for Universalization of Elementary Education across the country.
- **The Rashtriya Madhyamik Shiksha Abhiyan (RMSA):** The scheme was initiated in 2009 to revamp the secondary education system. Later many different Centrally Sponsored Schemes were subsumed under the RMSA.
- **Centrally Sponsored Scheme of Restructuring and Reorganisation of Teacher Education (CSSTE):** Complying with the provision of the National Policy on Education 1986, the CSSTE was initiated in 1987.
- **Samagra Shiksha:** It was launched in **2018** as an integrated scheme for school education subsuming the existing schemes. The aim was to give a holistic treatment to education from pre-primary to Senior Secondary levels.



The Right To Education Act

- The Right To Education was introduced with the **86th amendment to the Constitution of India in 2002** with the insertion of Article 21 A. It provided every child with the Fundamental Right to full-time elementary education of satisfactory and equitable quality in a formal school that complies with certain norms and standards.
- The legal mandate was given by the **Right of Children to Free and Compulsory Education (RTE) Act, 2009** to provide free and compulsory elementary education to every child in the age group of 6-14 years.



Qualitative Steps and Suggestions for Inclusive Education

- **Emphasis on Early Years:** To improve investment in Early Child Care and Education (ECCE), the following steps are taken:
  - A **National Curriculum Framework** is being prepared by the National Council for Education Research and Training for ECCE.
  - **A National Mission on Foundational Literacy and Numeracy** is being set up by the Ministry of Education to ensure the universal acquisition of foundational skills by all children by grade III.
- **Focus on Learning Outcome:**
  - In 2017, the rules to the RTE Act were amended to delineate class wise and subject wise **Learning Outcomes** till Class VIII.
  - All states and Union Territories have adopted learning outcomes developed by the NCERT.
- **Reforms in Teachers Education:** The NEP 2020 has given the following recommendations in this regard:
  - **Four-yearB.Ed. integrated programme** to become the preferred degree for appointment of teachers,
  - Closure of sub-standard Teacher Education Institutions,
  - Extension of Teachers Eligibility Test (TET) at all stages,
  - Formulation of new National Curriculum Framework for Teacher Education (NCFTE)
  - To make NCTE part of the Higher Education Commission of India (HECI).
- **Building Capacities of Teachers:**
  - In 2017, the RTE Act 2009 was amended to ensure that all in-service elementary teachers acquire the **minimum qualifications** prescribed under the Act by 31st March 2019.
  - Mandatory training for untrained in-service elementary teachers was conducted by the **National Institute of Open Schooling.**
  - NISHTHA (**National Initiative for School Heads' and Teachers' Holistic Advancement**) has been launched in **2019** to build the capacities of around 42 lakh teachers and Heads of Schools, faculty members, etc.
- **Revamping Assessment:** The National Education Policy (NEP) proposes a transformed assessment framework with the following components:
  - Artificial Intelligence-based **holistic report card**.
  - **Peer** assessment and **self-assessment** of enquiry based learning.
- **Equity and Inclusion at all Levels:**
  - Due to different policy interventions to improve inclusivity, India has achieved the **Gender Parity Index of 1** which shows equal participation of girls.
  - Some of the key interventions to bring inclusivity in education include the Samagra Shiksha, self-defence training for girls, assistive devices for Children with special needs (CWSN) etc.
  - Recommendations under NEP 2020:
    - Classrooms must have continuous support for children with specific learning disabilities.
    - To identify such learning disabilities early, teachers should be assisted.
    - The use of technology can enable children to work at their own pace, with flexible curricula.

Conclusion

- While stepping towards celebrating 75 years of independence, India must remember that the key to India's continued ascent and leadership on the global stage is universal access to quality education.

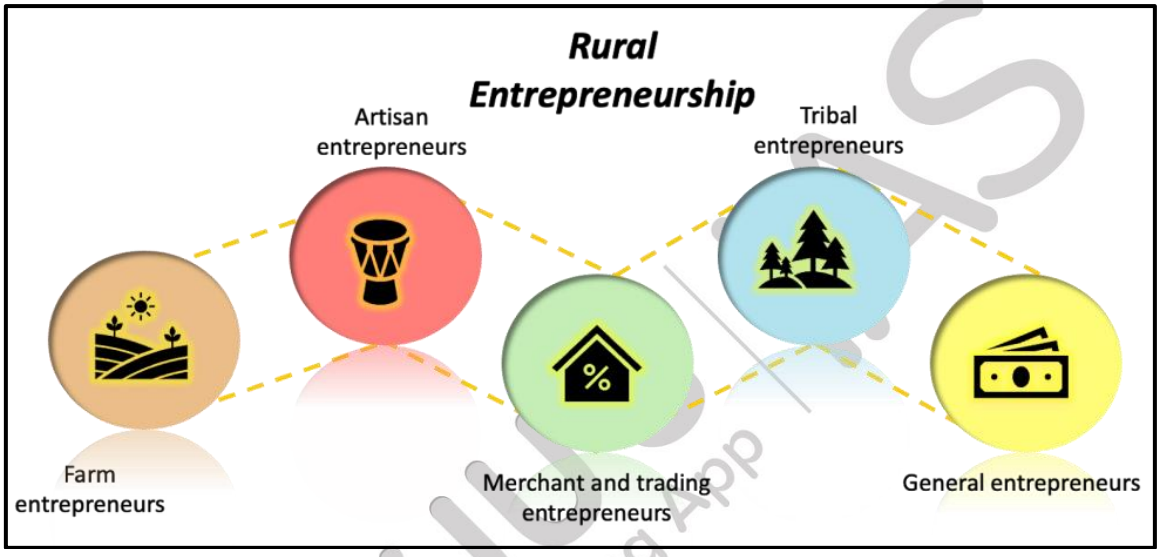
2. Rural Entrepreneurship

Context

- As India faces large scale rural unemployment or underemployment, rural entrepreneurship offers the solution not only to tackle this problem but also to reverse rural-urban migration.

What is Rural Entrepreneurship?

- Rural Entrepreneurship is defined as the activity taken up by the individuals in the countryside that supports **either manufacturing products or providing services or adoption of new technologies for an economic benefit.**
- It leads to **rural industrialisation** that helps in generating employment, spreading industrial and economic activities and utilising local labour as well as locally available raw materials.

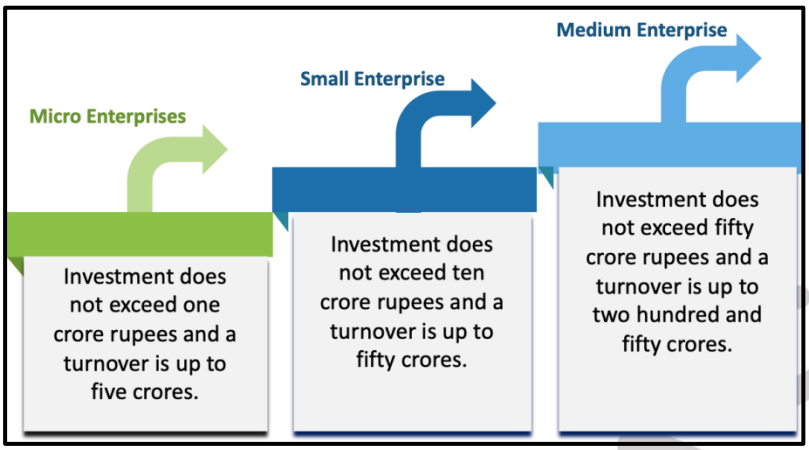


The necessity for Rural Entrepreneurship

- **Underemployment:** Prevalence of chronic **underemployment** in rural areas due to **cyclic and disguised** unemployment.
- **Distressed Migration:** Lack of resources and opportunities in rural areas results in rural-urban **migration.** Reversing this distressed migration is important to explore the village resources.
- **Inaccessible infrastructure:** The access to market and credit sources is often irregular. Intermediaries and informal credit sources still exist.
- **Poorly trained Artisans:** There is no formal training given to the artisans to improve upon their skills and adapt to the market demands. The sector remains unorganised and neglected.
- **Poor purchasing power capacity:** The low per capita income and lack of livelihood alternatives result in low purchasing power of rural communities.
- **Traditional set up:** The existing rural industries are of a traditional setup that is neither able to general remunerative employment opportunities nor reach optimum productivity.

Entrepreneurship in India

Based on their investment and annual turnover, the entrepreneurial ventures in India are broadly classified into micro, small and medium categories:

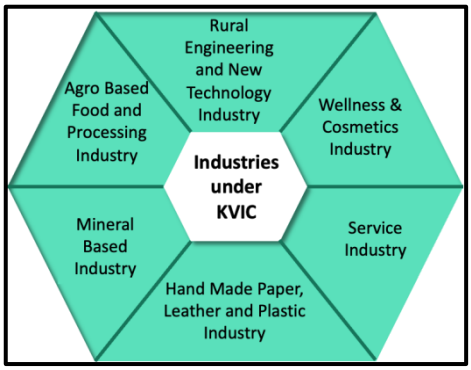


Contribution and Status of Entrepreneurship in India

- **Entrepreneurship** contributes to **45 per cent of the manufacturing** output, nearly **29 per cent** of the country's GDP and **48 per cent of the exports (2018-19)** while providing the largest share of employment (11.10 crore) after agriculture.
- Maximum employment opportunities are generated from the MSMEs in the trade sector.
- The percentage share of **MSMEs in urban areas (49 per cent) is lower than in rural areas (51 per cent)** but it is reversed when the percentage share of employment is considered.
- **West Bengal** stands among the most successful states (with 17.44 per cent of total rural enterprises) in exploring rural entrepreneurship as a potential option for inclusive rural growth.

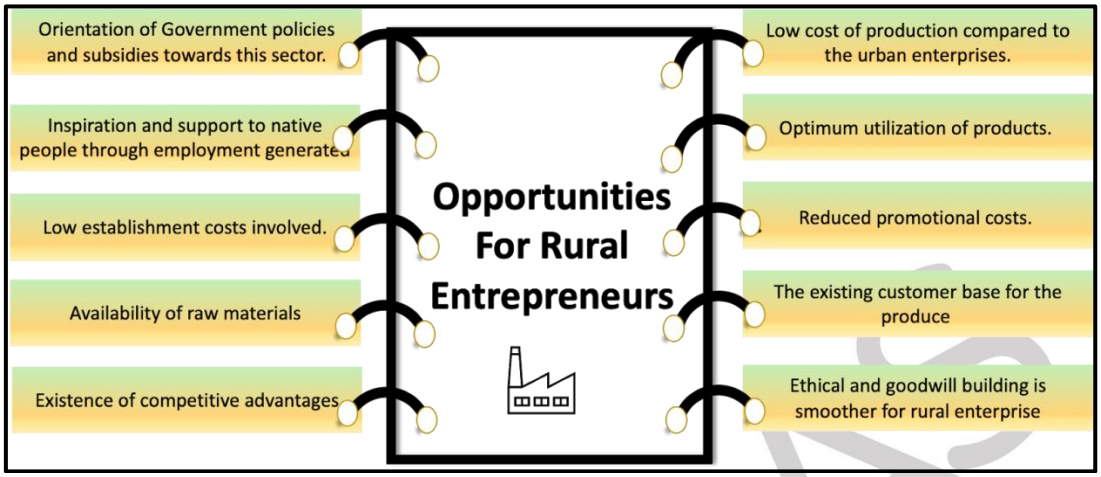
Statutory Bodies Promoting MSME

- Many statutory bodies like Technology Centres, Coir Board, Khadi and Village Industries Commission (KVIC), Mahatma Gandhi Institute for Rural Industrialization (MGIRI), etc are involved in promoting sustainable employment opportunities in rural areas.
    - The Most important among these is **KVIC**. Some of the schemes under the KVIC include Prime Minister's Employment Generation Programme (PMEGP), Workshed scheme for Khadi Artisans, Modified Market Development Assistance (MMDA), Kumbhar Shashaktikaran Yojana, Scheme of Fund for Regeneration of Traditional Industries (SFURTI), Honey Mission etc.
    - The MSME **Technology Centres** played a crucial role in generating employment especially for the migrants who were returning to their villages amidst the lockdown.



Risks Associated with Rural Entrepreneurs

- **Technical risks:** Risks related to technical methods, techniques and materials.
- **Economic risks:** Risks related to price fluctuations, market etc.
- **Social risks:** Risks related to environmental, belief systems and culture.



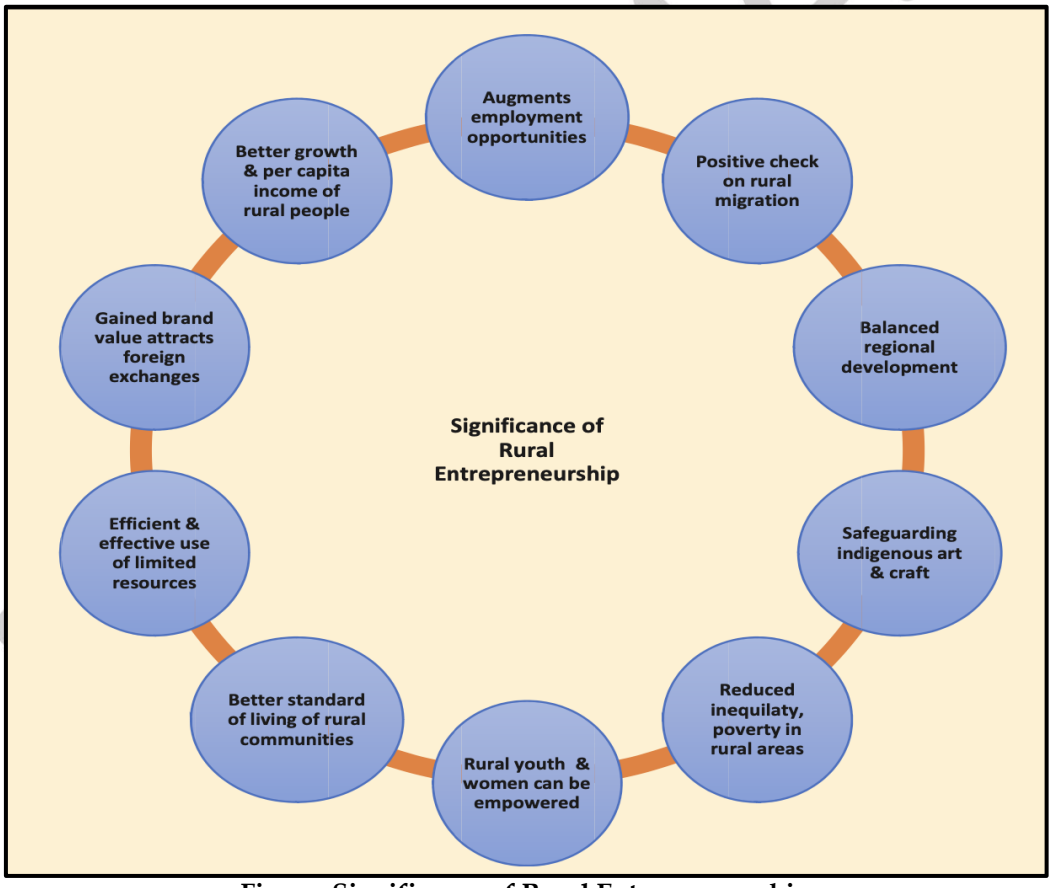
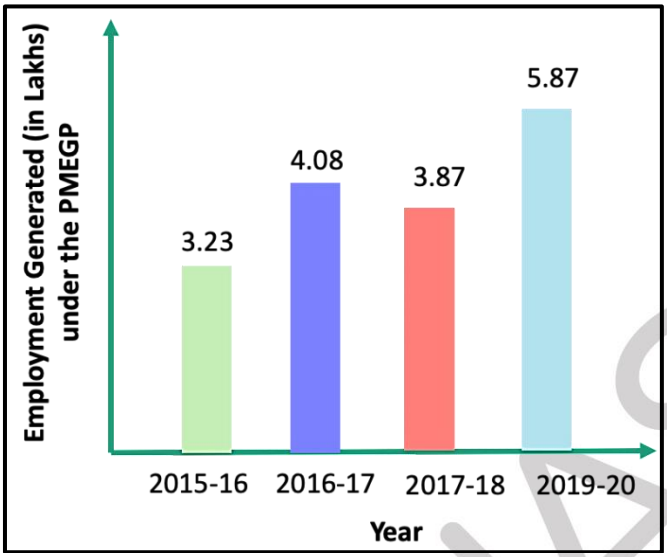


Figure: Significance of Rural Entrepreneurship
Source: Kurukshetra

Initiatives for the Promotion of Rural Entrepreneurship:

- **Scheme for credit & financial assistance to the rural enterprises:**
  - Prime Minister's Employment Generation Programme (PMEGP)



  - Credit Linked Capital Subsidy Scheme (CLCSS), Credit Guarantee Trust Fund for MSEs (CGTMSE)
  - Interest Subvention Scheme for Incremental Credit to MSME
- **Schemes for Skill Development and Training:**
  - A Scheme for Promotion of Innovation, Rural Industry & Entrepreneurship (ASPIRE)
  - Entrepreneurship and Skill Development Programmes (ESDP)
  - Gramodyog Vikas Yojana (GVY)
- **Schemes for Infrastructure Development:**
  - Scheme of Fund for Regeneration of Traditional Industries (SFURTI)
  - Scheme for Micro and Small Enterprises Cluster Development Programme (MSE-CDP)
- **Scheme for Marketing Assistance:**
  - Scheme for providing financial assistance to Khadi institutions under the Market Promotion and Development Assistance Scheme (MPDA).
- **Scheme for Technology Upgradation and Competitiveness:**
  - Financial Support to MSMEs in ZED (Zero Defect Zero Effect) certification
- **Other Schemes for the MSMEs across the country:**
  - The National Scheduled Caste and Scheduled Tribe Hub
  - Scheme for Promotion of MSMEs in N.E. Region and Sikkim
  - Building Awareness on Intellectual Property Rights (IPR) for MSMEs
- **MSMEs Under Atma Nirbhar Baharat Abhiyan:**
  - A substantial allocation has been given to MSMEs under the AatmaNirbhar Bharat Abhiyaan.
  - The Ministry of MSME has also launched a robust ICT based system called CHAMPIONS to handhold MSMEs in the current situation.

Empowering Rural Women through Entrepreneurship

- Rural women entrepreneurs are involved in enterprises with **fewer risks and requiring little organising skills**. The activities include making dairy products, pickles, fruit juices, papads, etc.
- Presently, **only 14% of the registered enterprises** in the MSME sector are led by women, with the maximum number of such registered enterprises in **Tamil Nadu**.

Challenges For Rural Women Entrepreneurs	Need For Promoting Entrepreneurship Among Rural Women
• Dual roles of homemakers and entrepreneurs • Low level of knowledge and education. • Lack of ownership of resources • Deficit of skills and entrepreneurial motivation • Socio-cultural Barriers and lack of family support • Weak bargaining position and poor financial freedom. • Poor marketing facilities and lack of infrastructure	• It creates new economic opportunities for rural women. • It helps in moving towards the fifth Sustainable Development Goal (SDG) i.e to achieve upward social mobility. • Women entrepreneurs can contribute to the reduction in poverty and the economic well-being of their families.

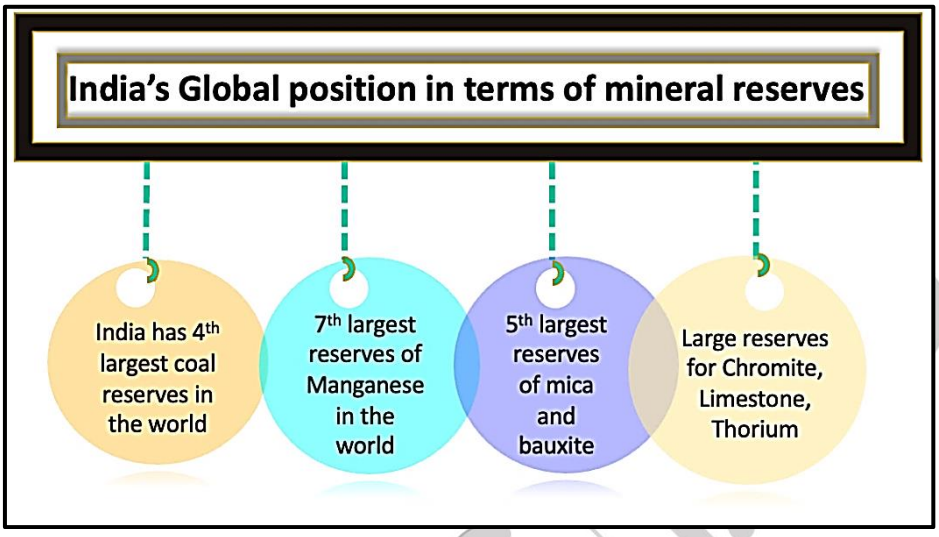
Conclusion:

- Rural entrepreneurship has immense potential to not only generate income but also elevate the standard of living and enrich the rural heritage. It can contribute towards inclusive rural growth and sustainable rural development.

3. Sustainable Mining

Context:

- India has a huge geological potential in terms of reserves of different minerals. However, when it comes to exports, the mining sector of India is a minor player. While India needs to enhance its mining output, sustainability goals and global trends also need to be kept in mind.

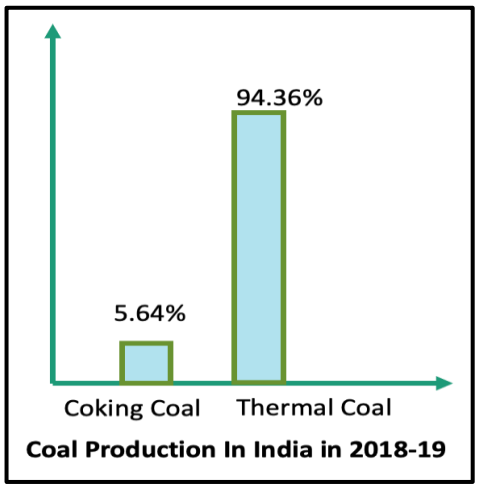


Note: Sustainable mining

- Sustainable mining is the process that minimizes the negative environmental and socio-economic impacts associated with mining and processing activities while limiting the extraction of minerals to rates that do not exceed capabilities to establish new sources or substitutes.

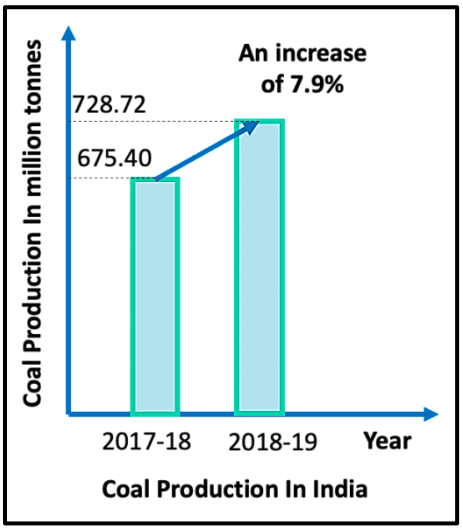
Present Status of Mining Industry in India

- Minerals contribute only 1.69% of the country's GDP even after 74 years of independence.
- **Coal and lignite** form the maximum part of this share at 0.80 per cent.
- **Limestone contributes almost 92 per cent** of the total value of non-metallic minerals produced.
- **Exports**: The export value for ores and minerals stood at **9.50 per cent of the total value** of all **merchandise exported from India** in 2018-19.
  - Diamond occupies the largest share (80.22%) in the total value of mineral exports. The **diamond** exports are mostly **re-exports in nature** - importing the rough diamond and exporting them after value addition (cutting and polishing).



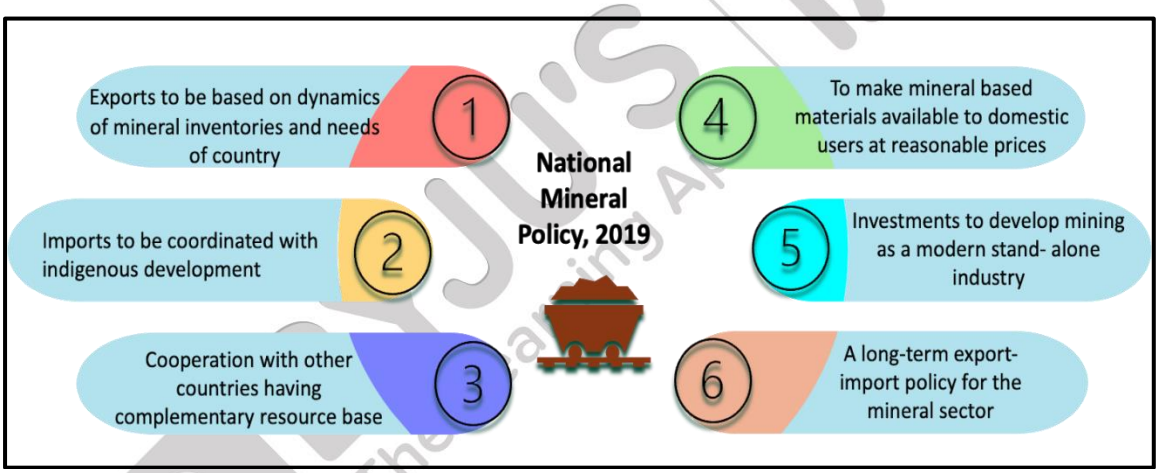
Coal Production In India in 2018-19

- **Imports**: The import value for ores and minerals stood at **9.50 per cent** of the total value of all merchandise imported by India in 2018-19.
  - 61.44% of this share is captured by petroleum.
- **Production**: Despite an increase in the amount of coal produced over the last year, it remains insufficient to meet the domestic demand. India needs to import coal from countries like **South Africa (thermal coal) and Australia (coking coal)**.



National Mineral Policy 2019

- The National Mineral Policy was approved by the Government in February 2019 to have a more **effective, meaningful and implementable** policy that brings in better regulation, transparency and enforcement, balanced socio-economic growth as well as sustainable mining practices.



India's Position in Iron Ore Mining and Export

- **Present Mining Status:** Presently, Iron ore constitutes more than **71 per cent of the total value of metallic minerals mined** in the country.
- **Global Position**: Even with rich iron ore reserves, India has an abysmally low (**1.8 per cent**) market share in the international iron ore market.
    - Australia (53.8 per cent market share) and Brazil (18.1 per cent market share) are the largest exporters of iron ore and major importing consumers are China, Japan, Korea, Middle East and the EU.

Challenges in Enhancing Export of Iron Ore

- **Export Duty:** An export duty of more than 30% is levied on iron ore with an iron content of more than 58%.
    - This is done to conserve high-grade iron for domestic use and has been a matter of prolonged dispute between the mining and steel industries.
- **The anomaly of Duties**: There is no export duty on iron ore pellets of any grade.
    - This creates an anomaly when high-grade pellets are exported at Nil export duty whereas high-grade iron ore cannot be.

- **Failure to Increase iron ore production:** India has still not reached its potential in iron ore production.
    - The main reason behind this has been the delays in restarting production which is creating a scarcity of domestic supply of iron ore, pumping up the prices.

Reasons for Low Iron Ore Production

- Either the States are not putting the new blocks on **auction** or the blocks are being held on by Public Sector Enterprises who have **failed to secure Mining Leases.**
- Non-issue of **Forest Clearance or Environment Clearances** or both as several iron ore mines are located in forest areas.
- Even after getting the Mining Leases, several mines have **not started production** and dispatch.
- Huge **reserves under captive mining** remain **unutilised** as the captive iron ore mines did not have permission to sell surplus iron ore in the market.

Production of Iron Ore in India (in millions)

Iron Ore	2020-21*	2019-20	2018 - 19	2017-18	2016-17	2015-16
Production	195	242.73	206.45	201.43	194.58	158.11
Import	0.9	1.24	12.80	8.70	4.60	7.09
Export	52	36.52	16.15	24.20	30.73	5.32
*Provisional						

Why does India need to import Iron Ore?

- The landed cost for imported iron ore is lower, especially for the steel plants near the coast.
- High freight charges affect the raw material cost for steel plants.
- Logistics cost in India is much higher than those in other countries.
- The high ash content of Iron ore found in India.
- Inefficient technology of ore mining impacting the overall production.

Difference Between Captive Mines and Non-Captive Mines

- Captive mines are those where coal or mineral is produced for exclusive use by the company that owns the mines.
- Non-captive mines are those where both production and sale of fuel is allowed.

Note:

- The Mines and Minerals (Development And Regulation) Amendment Act has removed the distinction between captive and non-captive mining. Thus the mines will no longer be limited to a specific purpose or sector.

Steps Taken by Government to Enhance Iron Ore Mining

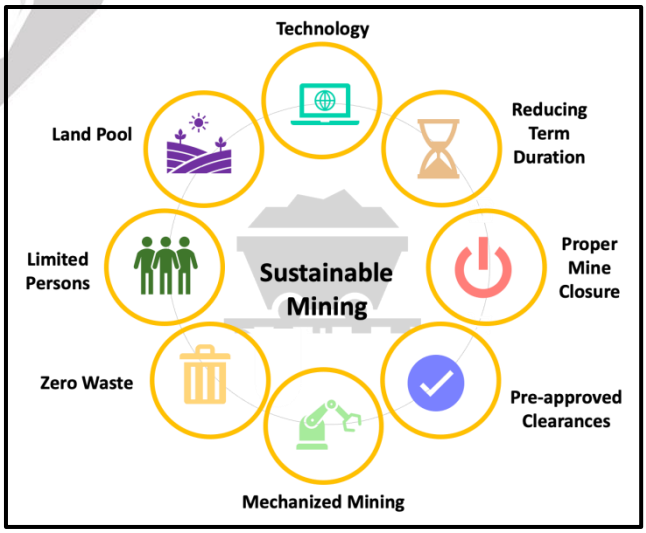
To enhance iron ore mining, the government has amended the Mines and Minerals (Development and Regulation) Act and Rules:

- **Streamlining process:** Eased the process of vesting statutory clearances from earlier lessees to the new ones.
- **More Freedom for Captive Miners:** Allowing the captive miners to sell up to 50 per cent of their production after meeting the end-use requirements and royalty payment.
- **Timeframe**: Setting a time frame for Government companies to obtain Mining Leases from the date of reservation.
- **Powers to the Central Government:** If a state government fails to complete the auction process in a specified period, the Central Government is empowered to conduct auctions or re-auction processes for the grant of a mining lease (ML).
- **Sunset clause:** Putting sun-set clause on mines reserved for Government companies so that ML is obtained and production-dispatch is commenced within a certain time limit.
- **Private Players:** Allowing the private entities to undertake mineral exploration along with the public sector entities.

Suggestions for Promoting Environmentally Sustainable Mining

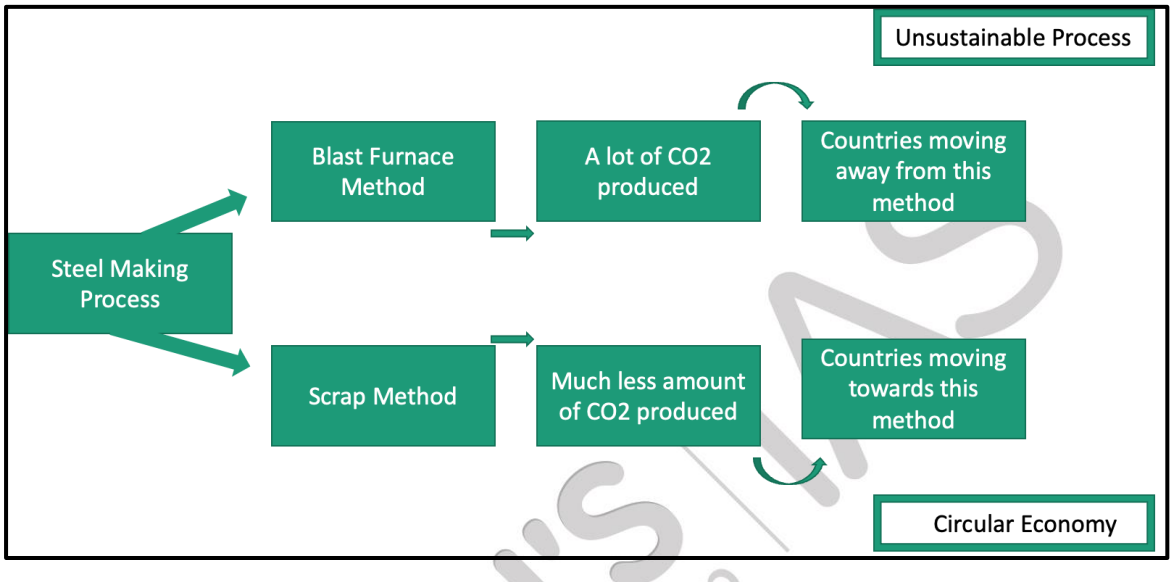
The pending environmental and forest clearances is one of the major reasons for India lagging behind in terms of mineral production. Thus, there is a need to incorporate sustainability in the mining process. Some suggestions in this regard are:

- **Reducing Term Duration:** Reducing the term of MLs from the present 30 years to 15 years with only one 5-year extension.
- **Closure**: After the expiry of the lease, proper mine closure needs to be taken by the lessee within a specified time frame.
- **Clearances**: All mineral blocks should be auctioned with pre-approved Forest Clearances and Environment Clearances.
- **Mechanised Mining**: Only mechanised mines should be allowed to operate, putting a complete ban on manual mining.
- **Mineral Evacuation**: It should be made mandatory to evacuate minerals using conveyors (overhead or ground) up to the Railway siding.
- **Zero Waste**: Zero waste mining must be made compulsory.
- **Limited Persons**: Limiting the number of persons/workers and their families getting settled in the lease area.
- **Land Pool:** Pan India pool of Compensatory Afforestation land should be created.
- **Technology**: India needs to adopt the state-of-the-art mining technology being used by countries like Canada, the USA etc.



The Need to Mine Fast:

- **Declining Demand for Coal:** With the world moving towards **sustainable production processes** to meet the Sustainable Development Goals, the **demand for coal is only set to decrease** both in the global and domestic markets.
- **Shift Towards Scrap Method**: Most of the counties, for example, are already moving towards the **scrap method of steel production** that does not depend on coal availability. (Refer infographic)
    - If India does not exploit its iron ore and coking coal reserves in the **next 20 years,** these reserves would become dead assets very soon.



Conclusion:

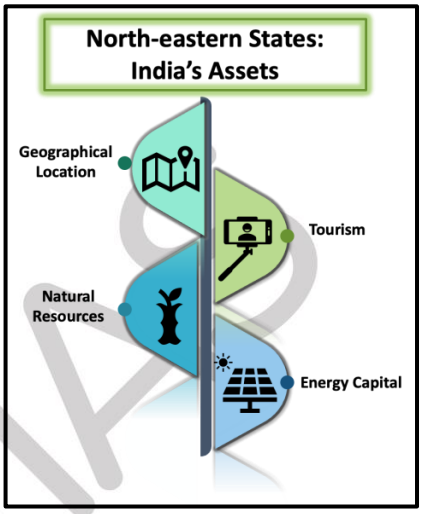
It is important for India to utilize its mineral resources effectively before the world moves towards non-mining based alternatives. And in doing so, it is essential to adopt the best practices for environmentally friendly mining processes in order to ensure sustainable development.

4. India's Asset, Threat and Growth Driver

Context

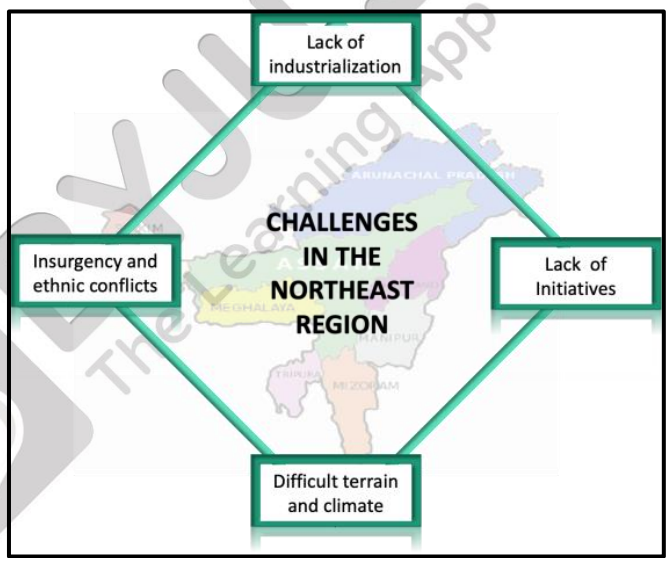
- The eight North-Eastern states form an integral and strategically most significant part of India. With their huge potential in different sectors like energy, tourism and security; they can serve as the drivers of growth for the country.

North Eastern States: India's Asset



Multiple factors add to the importance of the region:

- **Geographical location:** The region shares boundaries with many countries like Bangladesh, Myanmar, Tibet and China, thus acting as the bridgehead between India and these vibrant economies.
- **Natural Resources:** The region is endowed with huge natural resources that can be harnessed for national development. These include oil, gas, coal, hydro, fertile land, etc.
- **Energy Capital:** Besides the reserves of conventional resources, there also exist rich possibilities for solar, water and wind energy generation.
- **Tourism:** There is a huge and untapped potential for developing tourism, leveraging the huge diversity of flora and fauna and the stunning beauty of different locations in this region.



Different Initiatives and Schemes of the Government:

To unleash the potential of the North-Eastern region as the growth engine, the Government has undertaken many initiatives:

- **North East Special Infrastructure Development Scheme:** The scheme is entirely **funded by the central government** for infrastructure projects like water supply, power and connectivity.
    - It promotes the **tourism potential** of the North Eastern by investing in the natural beauty, scenic locations and archaeological sites, unique flora, fauna, loving people and pleasant climate of the region.
    - More focus is also given to primary and secondary **education and health**.
    - It promotes a lot of **industrialisation** in the region, in the manufacturing and service sectors.

- **The Northeastern Development Finance Corporation Opportunity Scheme for Small Enterprises:** The scheme is specially designed to help first-generation entrepreneurs.
- **The Act East Policy:** The focus of the Act East Policy is on the development of infrastructure in the region by building highways, expansion of air connectivity, an extension of the railway network, opening new trade routes and improving the infrastructure for border trade.
- **Smart Cities Mission:** Nine cities have been declared as Smart Cities across the North-Eastern region. These include Imphal, Kohima, Namchi, Gangtok, Pasighat, Itanagar, Agartala, Guwahati and Aizawl.
- **Skill Development**: There has been a renewed emphasis on initiatives for skill development amongst youth through a network of training centres and skill partners.

The Act East policy

- **The Act East Policy:** The Act East Policy was launched in 2014 with the following objectives:
  - To promote economic cooperation, cultural ties and develop a strategic relationship **with countries in the Asia-Pacific region** through continuous engagement at bilateral, regional, and multilateral levels.
  - Providing enhanced connectivity to the **States of North Eastern Region** with other countries in the neighbourhood.

Moving From the Look East Policy to Act East Policy:

Look East policy	Act East policy
It was launched when India had a fragile global position during the 1991 crisis	It was launched in 2014 when India's potential was well recognised globally
Focus on boosting economic cooperation	Focus on economic co-operation, greater connectivity, and security ties
Historical ties between India and ASEAN were not given much prominence	Focusing more on historical, cultural, linguistic, and religious ties
The focus was limited to Southeast Asian countries.	Upgradation of relationships with Japan, South Korea, Vietnam, Malaysia and Australia

Smart City Mission:

- The Smart City Mission was launched in the year **2015** to improve quality of life and drive economic growth through comprehensive work on social, economic, institutional and physical pillars of the city.
- The Mission is operated as a **Centrally Sponsored Scheme**.
  - The Central Government will give financial support to the extent of Rs. 48,000 crores over 5 years -. on an average of Rs.100 crore per city per year.
  - The State/ Urban Local Bodies (ULBs) will provide an equal amount on a matching basis
- The funding will be converged with ULBs' own funds, grants under the Finance Commission, innovative finance mechanisms such as Municipal Bonds, other government programs and borrowings.
- Participation of the private sector through **Public-Private Partnerships (PPP)** is given special emphasis.

Conclusion

- The Development Model for the North East region must be on the lines of "Development through Culture", and not "Development versus culture".
- There is a need to channelise the schemes and initiatives to create infrastructure and empower the people with skills and capabilities. Only then it is possible to build upon the vast potential of the region and achieve the Look East and Act East vision.

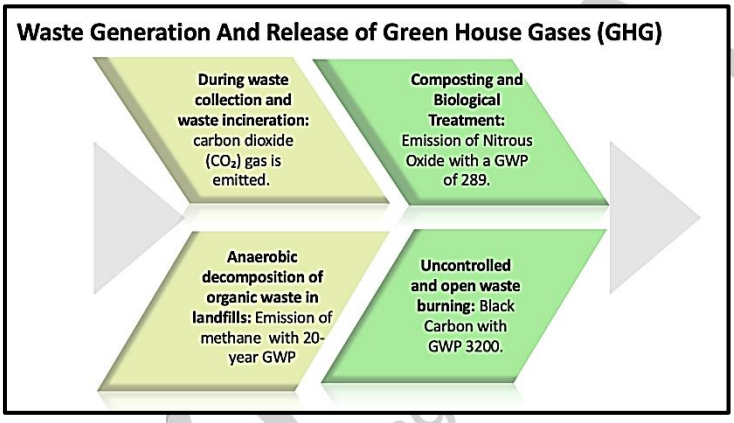
5. Waste and Climate Change

Context

The solid waste generated by various human activities is a major contributor to climate change. Climate Change, disasters and wastes have a multilayer cyclic relationship and one leads to the other.

Waste Generation

- It is estimated that by the year 2050, the world will generate 3.4 billion tonnes of waste from the present 2.01 billion tonnes, which itself is equivalent to a disaster.
- At present, 70% of the waste globally ends up in open dumps and landfills.
- The high-Income countries contribute around a third (34%) of the wastes generated globally.
- India with a global population share of 18.05% contributes 11.95% to global waste generation.
- The role of the economy is visible as low-income countries such as the countries in Sub-Saharan Africa are disposing of more than 70% of their waste in uncontrolled open dumpsites whereas for high-income countries this share is as low as 2%.



Note: Global Warming Potential (GWP)

- GWP is the amount of heat that is absorbed by a GHG, expressed in relation to that absorbed by the same mass of CO2.

Effect of Climate Change on Solid Waste Management

- **Impact of Changes in the Precipitation Pattern**
  With the rise in the average global temperature, there has been an **increase in the daily precipitation** rate as well as in the number of days of precipitation.
  - **Increased Moisture Content:** Increased precipitation increases the average moisture content of the atmosphere aggravating the risk of flooding, infrastructural damage, hindered supply system, creation of bulk household waste, inaccessibility of waste storage facilities, over flooding of site drainage systems and waterlogging in open waste storage containers.
  - **Erosion:** Waste management structures are protected by capping layers and bunds, which can be at a higher risk of erosion.
  - **Leaching:** At the landfill sites, the concentration and volume of **leachate** are also enhanced.
- **Impact of Changes in the Temperature Pattern**
  - **Rate of Degradation**: Frequent occurrences of very high atmospheric temperatures and heat waves hasten the rate of degradation and decomposition of the waste.
  - **Drying up of Waste:** In other cases, high temperatures can cause drying up of the compostable wastes and hinder the decomposition process as microbes fail to sustain.
  - **Health Risk:** The unpleasant odour, discomfort from extreme temperature and air pollution also put at risk the safety and health of workers involved in waste processing.
  - **Mechanical damage**: High-temperature damages the mechanical parts used in waste management machinery, shooting up the maintenance costs.

- **Impact of Increase in Sea Level and Storm Surges**
  - **Risk of Flooding**: The increased sea level is leading to high risks of inundation, flooding. bund erosion and seawater intrusion of the dumpsites and waste management sites in coastal areas leading to coastal water pollution.

Climate Change and Effluent Treatment Plant

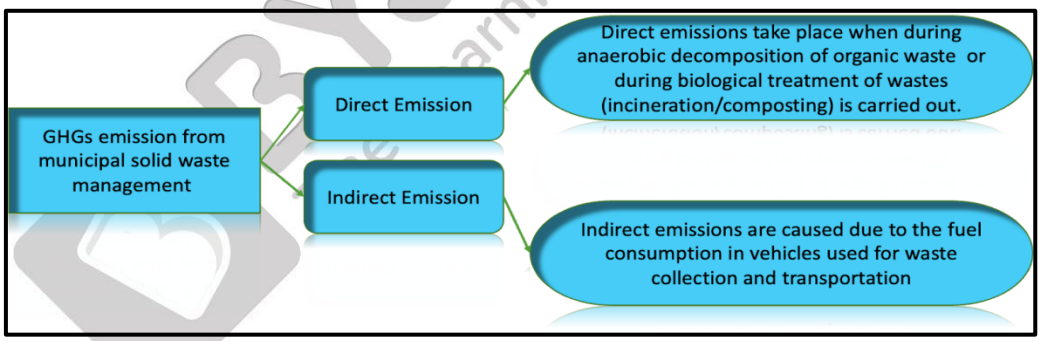
- **Temperature**: Various treatment processes, such as the conversion and removal processes or the usage of anaerobic reactors, are enhanced with warmer temperatures.
- **Rising Sea Level:** With the release of untreated water from a wastewater facility, the marine ecosystem can be damaged, especially in the event of a flood.
- **Storm Surges:** Storm surges cause heavy infrastructural damage to Waste Water Treatment Plants in coastal regions.
- **Precipitation**: Increased precipitation affects the **retention time** of waste in the treatment system, thus, impacting the nitrogen removal process. This will lead to a higher Total Nitrogen concentration in the output.
  - In areas with **low rainfall,** the **water quality will deteriorate** because the lower flow will also decrease the capacity of systems to dilute pollutant concentrations.

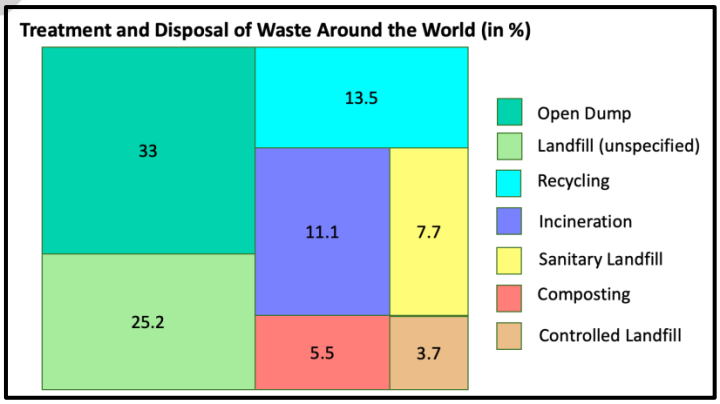
Effect of Solid Waste on Climate Change

There are three modes through which the waste sector is contributing to the GHG emissions:

- **The Upstream Contributions:** In this mode, the contributions emerge from the energy input provided during the manufacturing and distribution of the product. When the product is in its operating model, it accounts for direct contribution.
- **Downstream Contributions:** These arise during the disposal of the products.
- **Direct Contributions:** These are directly arising from the anaerobic decomposition of organic wastes. (Refer to Infographic)

Emission of Greenhouse Gases from the Municipal Solid Waste Management

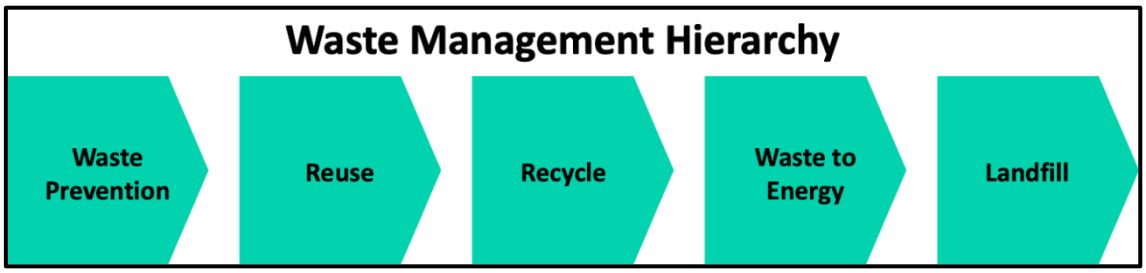




Source: World Bank

Mitigation Strategy

The Mitigation Strategy must be based on the **Integrated Solid Waste Management** that encompasses the waste management hierarchy:



Policy Action

- **National Action Plan for Climate Change (NAPCC):** India came up with a comprehensive NAPCC in 2008.
  - Out of the eight missions, the National Mission on Sustainable Habitat was made accountable for the management of municipal waste of the country.
  - In 2015, four additional missions were added to NAPCC, out of which one entire mission was dedicated to Waste to Energy Conversion.
- **Swachh Bharat Abhiyan:** In 2014, the Swachh Bharat Abhiyan was launched with the aim of making the country open-defecation free and improving the status of solid waste management. The success of the scheme can be estimated from the following figures:
  - Entire urban areas of 35 states/union territories have become open defecation free;
  - The waste processing rate has increased from 18% to 60%.

Conclusion:

- Waste Generation and Climate Change pose an interlinked global challenge that needs to be addressed with a robust policy formulation that takes into consideration all the factors associated with both phenomena.

6. Objective Questions

1. Which of the following scheme/s was/were subsumed under the Samagra Siksha Abhiyan?
   1. Centrally Sponsored Scheme of Restructuring and Reorganisation of Teacher Education
   2. Inclusive Education for Disabled at Secondary stage
   3. Rashtriya Madhyamik Shiksha Abhiyan

   Select the correct answer using the codes given below:
   (a) 1 and 2 only
   (b) 2 only
   (c) 1 and 3 only
   (d) 1, 2 and 3

   Answer: (d)

   Explanation:

   The Samagra Siksha Abhiyan was launched in 2018 and it has subsumed Sarva Siksha Abhiyan, Rashtriya Madhyamik Shiksha Abhiyan (RMSA) and Centrally Sponsored Scheme of Restructuring and Reorganisation of Teacher Education. The RMSA itself had earlier subsumed Inclusive Education for Disabled at Secondary Stage and other Centrally Sponsored Schemes.

2. Consider the following statements with reference to the Micro and Small Enterprises (MSMEs):
   1. The presence of MSMEs in urban areas is more than that in rural areas.
   2. Maximum employment opportunities are generated from the MSMEs in the trade sector.

   Which of the statements given above is/are correct?
   (a) 1 only
   (b) 2 only
   (c) Both 1 and 2
   (d) Neither 1 nor 2

   Answer: (b)

   Explanation:

   Statement 1 is incorrect: The presence of MSMEs in rural areas (51%) is more than that in the urban (49%) areas.

   Statement 2 is correct: Maximum employment opportunities are generated from the MSMEs in the trade sector (35%).

3. Which of the following measures can contribute towards sustainable mining?
   1. Use of conveyors for mineral evacuation
   2. State of the art mining technology
   3. Zero waste mining

   Select the correct answer using the codes given below:
   (a) 1 and 2 only
   (b) 2 and 3 only
   (c) 3 only
   (d) 1, 2 and 3

   Answer: (d)

   Explanation:

   Statement 1 is correct: Conveyors are more efficient, safe and environmentally friendly than mining trucks.

   Statement 2 is correct: State-of-art mining technology can bring in efficiency and reduce the Carbon footprint.

   Statement 3 is correct: Zero waste mining will reduce the negative externalities of mining and make the process more sustainable.

4. The North Eastern region of India shares boundaries with which of the following countries?
   1. China
   2. Bangladesh
   3. Bhutan
   4. Myanmar
   5. Thailand

   Select the correct answer using the codes given below:
   (a) 1, 2 and 4 only
   (b) 2, 3 and 4 only
   (c) 1, 2, 3 and 4 only
   (d) 1, 2, 3, 4 and 5

   Answer: (c)

Explanation:

The North Eastern region of India shares boundaries with many countries like Bangladesh, Myanmar, Bhutan, and China, thus acting as the bridgehead between India and these vibrant economies. The region does not share boundaries with Thailand.

Figure: North East India
Source: Maps Of India

5. Which of the following substances has the highest Global Warming Potential (GWP)?
   (a) Methane
   (b) Carbon Dioxide
   (c) Nitrous Oxide
   (d) Black Carbon

Answer: (d)

Explanation:

GWP is the amount of heat that is absorbed by a Green House Gas, expressed in relation to that absorbed by the same mass of CO2. The GWP of the above-mentioned substances is as follows: Carbon Dioxide (1), Methane (20), Nitrous Oxide (289), Black Carbon (3200).

7. Subjective Questions

1. Inclusive Education has been a consistent part of Education Policies in India. Analyse

(150 Words, 10 Marks)

2. Rural Entrepreneurship can address rural distress in India. Elaborate. Also, mention the factors that hinder the development of rural entrepreneurship.

(250 Words, 15 Marks)

3. What is sustainable mining? Enumerate the steps that India should take to move towards sustainable mining?

(150 words, 10 Marks)

4. What are the different challenges to the development of the North-Eastern region of India? Give the various steps taken by the Government of India to address those challenges.

(250 Words, 15 Marks)

5. Analyze the different ways in which climate change affects the solid waste management process.

(250 Words, 15 Marks)

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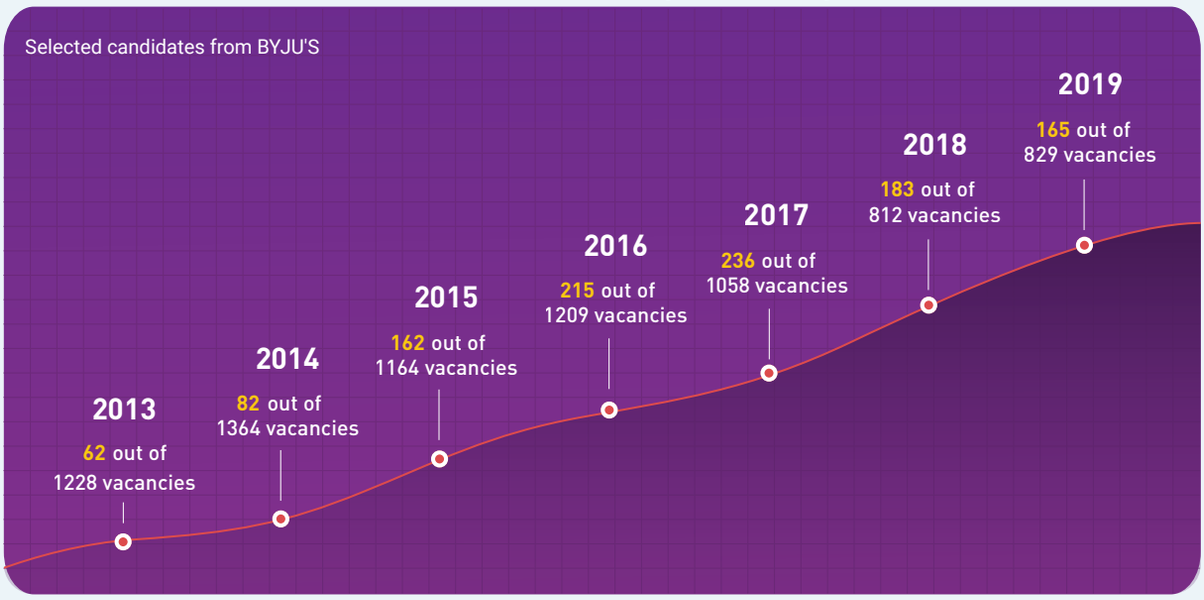

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