<u>**CONNECTIONS FOR SURVIVAL**</u>

Epidemiological Transition

- As per report published by ICMR in June 2017, some 7 per cent people in India had diabetes. The prevalence of pre-diabetes (early signs, particularly elevated blood sugar levels) was a staggering 10-15 per cent.

- This highlights to the fact that **we are undergoing an epidemiological transition**. States/UTs with <u>higher GDP have a higher prevalence of this disease</u>. Rural areas have lower diabetes rates than urban.

- The study finds that the **poor in well-off urban states have higher incidence** of diabetes than the rich in the same cities. The rich in rich cities have started to learn good food habits. But the poor are now falling into the trap of bad food.

- It is an **epidemic that is in a state of transition**. We are going from lack of food or malnutrition to overnutrition because of bad food. This is a transition that we must avoid.

- The fact is that India has what can only be described as a **double burden of diseases**. We have the **diseases of the poor**—everything from <u>malnutrition to cholera</u>. But we also have the diseases of the rich—cancer and diabetes.

- Worse, as the ICMR study shows, **the poor, who can ill-afford the diseases of the rich, are now afflicted by them**.

Health: An Indicator of the Environment

- Crucial linkages exist between our health and environment. Polluted water is one of the largest killers of babies in the country. Lack of clean energy in homes creates respiratory disorders.

- WHO has identified **four major risk factors for NCDs** - <u>alcohol, tobacco, poor diet intake and lack of physical activity</u>.

- We also know that economies are built on the use of toxins. So, it works conversely. The richer one gets, the higher the health burden and higher the costs of healthcare.

- It is always easier and far less expensive to deal with the diseases of the poor. Cholera, for instance, is about microbes in water that are easier to clean. Cancer, on the other hand, is about exposure to tiny chemicals in the same water. These are more expensive to clean.

- It is time we link **climate change with NCDs**. vector-borne diseases are growing because of the changes in weather. Heat and cold stress will grow making the poor more vulnerable.

Conclusion

- Our health is also the only real trigger for environmental action. We will act to improve the environment when we know it impacts us directly. For instance, today, in Delhi, there is outrage against the pollution in the air.

- We will change behaviour, not because it is in the planet's best interest. But in ours. The advantage is that if it is good for us, it is good for the planet. The ultimate win-win.

<u>**ARE WE ON A CLIFF?**</u>

- Recently, we witnessed the horrors caused by nature in Chamoli district. Nature's warning is evident with **visible cracks in its erstwhile harmonious relationship** with humanity.

- The wave of industrial revolution marked a major turning point in this relationship.

- The **first industrial** revolution was primarily with coal and steam; the **second** with electricity and oil; the **third** with computers and its accessories; and now the **fourth** is a **fusion of technologies** in the physical, digital and technological worlds.

Five Key Factors on Which the future of Peace and Harmony Depends

(1) ecology, global warming, and climate change; (2) nuclear weapons and the continuing arms race among nation-states; (3) geopolitics and nationalism; (4) religious extremism; and (5) poverty and inequality.

Today, both nature and world peace are under threat. This needs to be appreciated in a threefold perspective: (i) Nature; (ii) Science; and (iii) Wisdom.

Nature

- Five events of the recent times need to be particularly referred to: (i) Bushfires in Brazil and Australia of 2019; (ii) Extinction of species; (iii) Outbreak of pandemic SARS (Severe Acute Respiratory Syndrome) in Hong Kong in 2002-03; (iv) Coronavirus pandemic; and (v) Forest fires in California alongside the Covid-19 pandemic in 2020.

- **Species we lost just in 2019 -** three bird species, two frogs, a shark, a famous snail and one of the world's largest freshwater fish were among those declared extinct in 2019.

- Forest fire was not simply the **issue of forest management** but **climate change**. Earlier, the US had withdrawn itself from the Climate Change Accord.

- Later, President Biden has reversed the decision and has also promised to spend $2 trillion over four years to escalate the use of clean energy and ultimately phase out the burning of oil, gas, and coal.

Science

- S&T, especially the IT revolution has led to the **globalisation of products, cultural values, and information**. It is integrating markets and trade. But what becomes of environment and nature in such a scenario, remains a matter of great concern.

- Technology, being **value-neutral**, has accelerated the pace of the downward journey. Climate change and global warming are posing serious problems.

- To control it with speed, we have to **change the terms of the market**. A change would mean rejecting the general line of dealings in the market in the world for the sake of the long-term interests of the human race. And to embrace these changes, role of wisdom becomes important.

Wisdom

- Dictionary defines wisdom as, 'the ability to use one's knowledge and experience to make good decisions and judgments.' **Wisdom is a product of experiences and reflections**.

- Wisdom enables people to face challenges in the context of balancing conflicting claims of development and making the proper use of scientific inventions while keeping the requirements of the earth in view.

Global Steps

- The **Paris Accord** commits countries to actions and policies that would restrict the rise in global temperatures **'well below' 2 degrees Celsius** (3.6 degrees Fahrenheit) by the year 2100. They would even endeavor to limit global warming to an **even lesser, to 1.5 degrees Celsius**.

- The Accord goes on to acknowledge that the Industrial Revolution and consequential burning of coal and petroleum are prime causes of today's greenhouse gas issues.

- It further states that the countries in Europe and North America that became rich in the process have an **obligation to support developing countries** to come up to reasonable levels of economic development without similar burning of fossil fuels.

Path Forward

- The post-Covid world would be a different world. It has made evident that we are all interdependent and have to work for sharing economic benefits.

- Mahatma Gandhi said: '*Earth provides enough to satisfy every man's need but not for every man's greed*'. It should become the **maxim of the post-Covid world**.

- The Covid-19 pandemic has not only highlighted the lack of basic healthcare for people but also the damage to the ecology. Let us develop collective wisdom that provides, in particular, to young people to think not just about themselves but about each other.

Conclusion

We have to move towards building an **ecological civilisation** and descending from the present cliff of uncertainty towards peaceful living and inclusive development and respect for nature.

POLICY AND PRACTICE

Global Perspective on Health

- UN envisaged a comprehensive and integrated **primary health care for all** in **Alma Ata Declaration in 1978** to promote equity.

- **Article 3 of UDHR** (Universal Declaration of Human Rights 1948) clearly provides that everyone has '**the right to life, liberty and security of person'**.

- **International Conference on 'primary health care'** expressed the need for urgent action by the world community to protect and promote the health for all the people of the world.

Liberalisation and Privatisation: Impact on Health

Due to structural adjustment or economic reforms, **public spending on health per head declined due to cuts**. Following consequences are noticeable as a result of liberalisation and privatisation:

1. Since State retreated from development interventions, there was a **massive decline in public investment** in health sector like other social sub-sectors.

2. There accrued a **huge shortage of doctors** and supporting medical staff, leading to patients bound to go to private clinics.

3. There was a **shortage of medical equipment, drugs** and pathological facilities in public health institutions, **hospitals were reduced to mere writing of prescriptions**.

4. Private doctors not only indulged in charging **exorbitant fees** but also **prescribed unnecessarily more and costlier medicines**.

5. Even government doctors and supporting staff **started giving more time at their private clinics**.

6. Due to the retreat of state in providing subsidised food, sanitation facilities, there was a **rise in communicable and non-communicable diseases**.

- Nowadays, **public-private partnership** (PPP), **modernisation, value for money**, **health insurance** etc are the buzzwords.

Universal Health Care (UHC): Few Examples

- Since 2002, there is UHC coverage in Thailand for all people without any charge. There is equitable health service delivery with regulations like three years of compulsory rural service for doctors and nurses, and a radical shift in funding away from urban hospitals to primary health care across Thailand and Cuba.

- Health expenditure in **Thailand increased from 1.7 per cent of GDP in 2001 to 2.7 per cent in 2008 higher than that in India**.

- There are **9.4 doctors in Malaysia**, 18.3 doctors in Singapore for every 10,000 population, better than India (**only 7 doctors for 10,000 population**).

India's Position

- **National Health Policy 2017** speaks of just targeting **2.5% of GDP** to be spent on health. India committed earlier for **UHC coverage by 2030** by raising public funding from 1.26% of IGDP to 2.5% by 2025.

- India's **per capita public expenditure on health** in nominal terms is just **Rs. 1,657** (2018-19).

- Against WHO norm of **doctor to population ratio** of 1:1000, India has very lower ratio of **1:1,404** (2021 February); in rural India the situation is worse 1:11,000 (2019).

- In India, about **47 per cent children are underweight**. Severe acute malnutrition increases with chronic poverty, lack of education of mothers, inadequate and low nutrient diet, and lack of clean water and sanitation.

- In **Global Hunger Index 2020,** India ranked **94 out of 107 countries**, with a score of **27.2** (in '**serious hunger**' category- score range of 30- 34.9).

- As per this report **14% of Indian population is under nourished**. 17.3% of children under 5 are wasted in India. 34.7% of Indian children are stunted.

Environment for Health

The policy identified **7 priority areas** for improving the environment for health:

(a) Swachh Bharat Abhiyan; (b) Balanced healthy diets and regular exercises; (c) Addressing tobacco, alcohol and substance abuse; (d) **Yatri Suraksha**-preventing deaths due to rail and road accidents; (e) **Nirbhaya Nari**-action against gender violence; (f) Reduced stress and improved safety at work place, and (g) reducing indoor and outdoor air pollution

Gender Disparity and Male Bias in Health Care

- Various studies confirmed that **women report more illnesses than men** but **they are treated less**. Male bias is further exacerbated by poverty, location and other social factors.

- Though women's bodies respond differently to drugs due to smaller organs, higher fat & hormones but the medical tests / researches on male bodies are taken as reference point.

Health and Sanitation

- Health for All also requires **safe and clean environment**, avoiding of chemical fertilisers and pesticides as well as good hygiene (total sanitation) for all.

- On 2 October 2019, **India's more than 700 districts and about six lakh villages were declared 'open defecation free'** (ODF).

- Water should be conserved as a common good, as it is a social, economic, and human right. About 80% of diseases are water-borne, hence safe drinking water should get top priority.

Conclusion

For mental health, there is neither adequate consciousness among people nor adequate medical facilities in all parts of India.

THE PANDEMIC & GLOBAL SYNERGY

The Covid-19 pandemic is a seismic event that continues to grip the world. Despite being a biological domain-related concern, the **pandemic touched other aspects of human life ranging from socio-cultural, economic, and political level**.

Role of Nation States During Pandemic

- Nation-states as being the fundamental sovereign unit saw their role significantly increased. Nowhere is it more palpable than in the realm of **generation, availability and distribution of the various vaccines**.

- Since, nation-states are the basic sovereign fundamental units responsible for responding to such challenges, the **response in the field of vaccine development have followed the nationalist lines** albeit it also cuts across the national boundaries as witnessed in the **various collaborative international efforts** to develop the vaccine.

- But when it comes to **allocation of vaccine consignment**, the launch of India's vaccine outreach initiative known as **"Vaccine Maitri"** (i.e., Vaccine Friendship) demonstrates India's concern to bring down the curve of the pandemic as a powerful booster to economic recovery prospect.

- India assumes a significant position in the global supply chain of the vaccine due to its time-tested production capabilities and being the world's largest producer of vaccines.

- The significance of India's vaccine diplomacy can also be understood if we look at the actions developed countries. These countries showed their **propensity to reserve doses much beyond the need of their population**.

- It is undoubtedly a **great achievement so far as the domain of our foreign policy and soft power are concerned**. It would definitely leverage our prestige and facilitate our mobility to higher position of power.

What is Power?

- Bertrand Russell in his work, "**Power: A New Social Analysis; 1938**", defines power as the production of intended effects.

- Robert Dahl in his work, "**Modern Political Analysis; 1991**", described power as a kind of influence; it is exercised 'when compliance is attained by creating the prospect of severe sanctions for non-compliance'.

Second Face of Power: Soft Power

- As per Joseph Nye, "Sometimes we can get the outcomes we want **without tangible threats or payoffs**".

- A country may obtain the outcomes it wants in world politics because other countries - admiring its values, emulating its example, aspiring to its level of prosperity and openness - want to follow it.

Vaccine Diplomacy and Soft Power

- Vaccine diplomacy bends towards the soft power perspective. Soft power rests on the ability to shape the preferences of others.

- The **sources of soft power** of a country according to Joseph Nye rest primarily on **three resources**: its culture; its political values and its foreign policies. India's vaccine diplomacy provides a great fusion of these three asect.

- It provides India with the scope to reflect its cultural values imbued with democratic ethos, cooperation, humanity, development and compassion coupled with the vision of **India as a responsible global player deserving the UNSC permanent membership**.

- India has supplied vaccines to nations including Bhutan, Maldives, Bangladesh, Nepal, Myanmar, Mauritius, Seychelles, Sri Lanka, the UAE, Brazil, Morocco, Bahrain, Oman, Egypt, Algeria, Kuwait, and South Africa.

- Supplies made under **grant amount to 56 lakh doses** and commercial supplies amounting to over 100 lakh doses. Indian vaccines have reached Afghanistan and also it is reaching the shores of **CARICOM countries in the Caribbean**, Pacific Island States, Nicaragua etc.

- India's ubiquitous vaccine delivery programme to the rest of the world is **situated within the framework of Vaccine Maitri** which is quite **synonymous with the SAGAR** (Security and Growth for All in the Region) doctrine of India.

Conclusion

- Diplomacy is all about astute conduct of international relations with other countries based on certain parameters of connectedness and cooperation.

- It is worth noting that India's first supply of vaccine dosage went to Bhutan and Maldives. Bhutan happens to be the only nation within the SAARC to be not co-opted by the Chinese BRI tentacles.

- India should **follow a preferential and prudential line of judgement** when it comes to vaccine distribution. Being generous is a great virtue but **generosity should be backed by judicious calculation**.

THE PANDEMIC THROUGH GANDHIAN PERSPECTIVE

- Covid-19 has altered our consumption pattern, shocked our smart production systems, changed the modes of education and entertainment.

- The pandemic necessitates us to **introspect about the wrongs** we have committed as civilised inhabitants of earth which makes **our ways of living so precarious, inequitable and unsustainable today**. Gandhian thought can provide some critical insights during this exercise in introspection.

Gandhian Economics

- Beginning with containment of wants, Gandhian economics is grounded on the premises of non-violence, truth, and non-covetousness. **Dignity of labour**, **self-sufficient** and **strong village economy** and the **principle of trusteeship** are pillars of this thought.

- The **textbook economics** (i.e., positive economics) starts with the premise that wants in general are insatiable, and that the resources are limited.

- On the other hand, Gandhian system starts with the **idea of containment of wants**. It believes that *there is enough on this earth for everybody's needs but not for one's greed*.

- **Greed breeds violence** and gives rise to the **need to exploit others**, which is against non-violence. Squeezing wages and exploiting workers is also equivalent to violence.

- Creating circumstances that force people to **migrate because of poverty might amount to violence at a societal level**. Gandhiji wanted to reverse this by making village **communities stronger and self-sufficient**.

- **Empowering villages through a benevolent *Jajmani system*** was his idea of nurturing the roots of India that lived mostly in villages.

- Gandhiji's ideas about **choice of technology** have been much debated. Machines are useful. But **they should not impact the dignity of labour**.

- Gandhiji's concept of dignity of labour has several dimensions. Firstly, it means that no labour is menial. He strongly **recommended a few hours of manual labour** every day. This would **sensitise the employers of manual workers** appropriately.

- Dignity of labour also means more **importance to the man behind the machine**. It would include **healthy and clean working conditions and reasonable wages**.

- He was **not against industries**. Industries would be necessary for progress, and they would have to make profit in order to survive. However, the **profits belong to the society**, that provided every possible resource to an industrialist, who is therefore a mere trustee of this wealth.

- It becomes his **obligation to look after the needs of the society**. Using profit towards larger social good, which is the crux of **Corporate Social Responsibility**, can thus be traced back to Gandhiji's idea of Trusteeship.

Gandhian Thoughts Stand Validated During Pandemic

a) Changing Consumption Pattern

- During lockdown, studies have found a **substantial reduction in 'discretionary'** (read as conspicuous) consumption. Consumers are **less blinded by the 'brand-value'** and are increasingly alert about distinguishing between essential and non-essential consumption.

- This is a form of '**containment of wants'**, though forced by circumstances. Nudging households to choose healthy lifestyle to bolster immunity in the face of Covid-19 is another blessing in disguise.

b) Changing Patterns of Production

- As the world grapples with the problem of **fragmentation of the supply chain**, producers may be forced to relocate their sources of supply. An UNCTAD study observes a trend towards **relocation of the Global Value Chain in favour of a greater use of local skills and materials**. Gandhiji had strongly advocated this to promote self-sufficiency.

- Further, experts highlight compulsions to turn to green technology. In a significant move to ensure sustainability in post-Covid scenario, the UK government has even announced **Green Recovery Challenge Fund**.

- Investment in green technology can unleash a significant multiplier effect with a high employment potential as noted by ILO.

c) Empathy towards the Deprived

- The migrants reaching their home States by foot, by legitimate or illegal means has been a heart wrenching story. But it has also led to individuals and NGOs to **support these migrants** through supply of food packets and other materials to ease their agony.

- Gandhiji would have not only appreciated this spirit of empathy but would have perhaps succeeded in processing into institution building to sustain it longer.

Opportune Time to Correct the Previous Malfunctions

- When the existing patterns of socio-economic systems are shaken, they create a space for a paradigm shift. For example:

- **Reducing Rural-Urban Imbalance**: Providing more jobs in the non-agricultural sector, and more so in manufacturing is a need of the hour. Promoting agro-based and related commercial activities such as fisheries and food processing can go a long way in providing more opportunities of gainful employment in the rural sector, which would be a step in Gandhian direction.

- **Domestic Violence and the Gender Issue**: Frequent violent outbursts among men desperate for alcohol or tobacco seem to be considered socially acceptable. This was increased during the lockdown. In the first five weeks of lockdown, Pune police reported an increase in the cases of domestic violence by 12 times.

- These numbers have justified the term '**parallel pandemic**' **to domestic violence**, underlining the dark gender impact of the pandemic.

d) Treatment to the Reverse Migrants

- States which have had a pressure for accommodating reverse migrants now have an **opportunity to deploy their expertise at home**. Many such States have reportedly undertaken skill-mapping.

- These States can use this experienced labour force to work on improving infrastructure, building industrial estates, for setting up new MSMEs, etc. to attract more business.

- As for migrants with experience of running tiny or home-based businesses, it is possible to bring them together into **clusters to form co-operatives**. There are successful examples of **migrant workers' co-operatives** that emerged as a response to crisis in many countries.

- States can benefit by collaborating with ILO which has a rich experience of hand-holding many such projects across the globe. **Co-operatives are important because they facilitate decentralisation of the process of growth, which is Gandhian in spirit**.

e) Urban Development

Covid-19 has emphasised the need for cleanliness and hygiene like never before. It has compelled the urban local bodies to improve and expand their health services.

f) Decent Wages and the Covid Allowance

States from where the migrant workers have moved out have **had to raise wages due t**o **severe shortage of labour**.

g) Environmental Concerns

Lockdown reportedly reduced the air and water pollution substantially. It would be up to us to maintain it with as much caution as possible.

Conclusion

- **Any attempt to engage in greater sustainability is Gandhian in spirit**, because it can be achieved only by rising above the baser instincts of greed, violence and petty self-importance.

- The pandemic has opened up opportunities to tweak our ways of living on this planet in a wiser and more compassionate way. The choices we make now can have long-term effects on our well-being.

SUSTAINABLE HEALTH

Lessons From Cuba

- In modern history, the only country to have lost weight collectively (average of all adults) was Cuba. In early 90s, embargo from the US led to food and fuel shortage and even the public transport buses stopped running.

- It included food rationing, promotion of small-scale gardening and distribution of more than a million Chinese made cycles. Not surprisingly, people lost weight (5.5 kg on avg).

- It highlighted **how eating lesser and moving more could be used as a population-based intervention**.

- In other words, the only way to improve health without an economic or security crisis is to take the more sensible and sustainable route towards it - **education, advocacy, self-regulation**.

Health As per Yoga and Ayurveda

- Health is not just about the absence of disease, but rather the presence of youthful enthusiasm and an ability to learn at every stage in life.

- In Ayurvedic terms, 'health' can be translated as swasthya, a state where the swa (the self), is stha (centred).

- In other words, health is synonymous with the state of being centred, with all senses aligned – or as Mahatma Gandhi described it, **a confluence of thought, speech and action, and no conflict between them**.

- Globally, we are facing what is called as, the **double burden of malnourishment**. On the one hand is a population that eats so much that they could die because of the excesses and on the other hand is a population that doesn't have access to 3 square meals a day.

Importance of Local Food

- Local food is climate resilient. It blends into the local food systems and grows in a manner that allows for other crops and the surrounding eco-system of fruits, flowers, insects, bees, etc., to flourish.

- Its nutrient rich and by default a **culture fit for the population of that land**. It makes economic sense too, as it allows small farmers to grow local food without heavy investments (and unpredictable returns) into biotechnology, modified seeds and even labour. All in all, it helps keep the people, their land and their forest in a good shape.

SMART AGRICULTURE

Agriculture and allied sectors are the **primary source of livelihood** for nearly 55 per cent of India's population. It accounted only for **approximately 17.8%** of the country's GVA in 2019-201.

Adoption of Technology

- The **yields on cereal crops are about 50% lower** in India, than in countries such as the United States or China. The **average size of farm holdings** in the country is **just over 1 hectare**, with **small and marginal farmers holding nearly 86% of the total**.

- The existence of a large number of intermediaries across the value chain, challenges in access to credit and technology, limited sales channels, and lack of digital infrastructure have inhibited agricultural potential.

- An important solution lies in the **rapid adoption of agritech**. It would improve yield, efficiency and profitability by leveraging Internet of Things, big data, artificial intelligence, machine learning, drones, and sensors in agricultural processes to track, monitor, automate and analyse.

How Will It Help

- The rationale behind the use of such emerging technologies is to **minimise the impact of the unknowns of agriculture**. For instance, weather, soil and climatic conditions are important factors in agricultural production.

- Using **predictive technologies** to detect erratic weather, sensors to map the specific type of climate and soil in an area, and machine learning algorithms that determine the appropriate crops based on this data, can improve the quality and quantity of yield.

- In the dairy and livestock vertical, the **use of sensors to monitor the health and nutrition of cattl**e and **drones to track herds** can improve efficiency and traceability.

Numerous Initiatives by Central and State Govts.

- **Central Govt** - Soil Health Cards (2015-2017): crop-specific recommendations for fertilizers and nutrients, every two years. **Soil Health Card Mobile App** (2017): captures GIS coordinates while registering sample details to indicate location of sample

- **Madhya Pradesh** - Set up the **UN-ICRISAT** agency to assist with climate smart agriculture solutions.

- **Uttar Pradesh -** Bill and Melinda gates Foundation and TATA Trusts collaborated with the State government to set up an **Indian Agriculture Incubation Network** at IIT Kanpur.

Role of Private Players

- Agritech Start-ups have been driving innovation towards bridging the various gaps that persist along the value chain. These start-ups have been **improving market linkages**, while disrupting traditional agricultural systems with innovative and affordable solutions.

- **Some notable agritech startups** which are utilizing cutting-edge technologies to drive solutions in the sector include Fasal, DeHaat, Clover, CropIn, and Intello Labs.

Certain Fundamental Issues

- Issuing of blanket solutions as opposed to localised recommendations which are sensitive to geographical, socio-cultural, and demographic requirements,

- The fragmented and unorganised structure of agriculture that involves multiple levels of intermediaries,

- The hesitation of small holders to undertake technologies that would not be commercially viable and cost-efficient.

- The adoption and penetration of technology is a slow process that diminishes investor interest.

Conclusion

- The process of unleashing the true potential of agritech in the country would involve developing synergetic relationship between various stakeholders in the process.

- Also, improving the regulatory environment to ease accessibility of startups and other companies would help in creating a robust ecosystem.

MIS Module For Strengthening Domestic Agarbatti Industry

- **National Bamboo Mission** has launched an **MIS (Management Information Systems) based reporting platform for agarbatti stick production.**

- The aim is to collate the locations of stick making units, availability of raw material, functioning of the units, production capacity, marketing, etc.

- With the help of this module, the **linkages with the industry will be synergised** better to enable seamless procurement from production units and information gaps can be plugged.

- The aim is to provide **support for 'Vocal for Local'** and '**Make for the World'** since Indian agarbatti are much sought after in global markets.

- The **restructured National Bamboo Mission (NBM) was launched in 2018-19** for holistic development of the bamboo sector **through a cluster-based approach.**

- The Mission is presently being executed by 21 States, including all the 9 States of NER through the respective State Bamboo Missions.

E-WASTE MANAGEMENT

- Electronic waste (e-waste) i.e., waste arising from end-of-life electronic products, such as computers and mobile phones.

- As per Global E-waste Monitor, 2020, the world dumped a record **53.6 million ton** (Mt) **of e-waste in 2019**, recycling only **17.4% of it**.

- India has an **e-waste management policy in place since 2011**, with its scope expanded in 2016 and 2018. Yet, the pace of its implementation has not been satisfactory. **Less than five percent of the waste** is treated through formal recycling facilities.

E-waste Value Chain

- E-waste value chain involves **four stages** - *generation, collection, segregation and treatment/ disposal*.

- E-waste is generated when the first user of the product concludes on its useful life with **no intention of reuse** and **disposes it off by donating or selling**.

- This e-waste can be managed either formally through collection or disposal in waste bins or informally through developed e-waste management infrastructure or even without it.

Different Modes of E-waste Collection

1. **Formal Collection**

- e-waste is collected by designated organisations, producers, Government etc. This e-waste is then **taken to a specialised treatment facility**, which **recovers the valuable materials** and **manages the toxic substances** in an environmentally controlled manner. Residuals are incinerated or safely landfilled.

2. **Waste Bin Collections**

- The disposer resorts to openly dump the product along with other household wastes. The e-waste **ends up being incinerated or landfilled** as other domestic waste.

- As a result, besides **losing the resource value it harms the environment**.

3. **Informal Collection**

- There are established network of individual waste dealers or companies who collect and trade the e-waste through various channels wherein **possible metal recycling may occur at the destination**.

- In others, the e-waste may be picked door-to-door and sold to an informal dealer who may repair, refurbish, or sell again to a backyard recycler.

India's Regulatory Ecosystem:

- **Increased production and penetration of imported electronics** items led to an accelerated e-waste generation that necessitated regulatory control in India. Because of the high cost of recycling e-waste, many companies in developed nations **ship their e-waste overseas to dump in developing nations**.

- To streamline e-waste management, Government notified **Electronic Waste (Management and Handling) Rules 2011**.

- This rule introduced **Extended Producer Responsibility** (EPR), whereby producers were required to collect and recycle electronic items. **By shifting the burden of waste management** onto manufacturers, the EPR framework **created incentives for more environment-friendly product designs**.

Shortcomings of EPR framework in India

- **EPR regulations in India were <u>not quantified through collection or recycling targets</u>**.

- In the absence of targets, and in a **relatively lax regulatory environment**, producers had **little incentive to ensure the collection** of their used products. As a result, e-waste generated in India had climbed to 1.9 Mt in 2015.

- Therefore, the **e-waste rules were amended in 2016** to <u>include collection targets and implementing a *Deposit Refund System* (DRS) by the producer</u>.

- In a DRS, an **upfront deposit is charged to the consumer at the time of purchase** of the product, and the **deposit is refunded when the product is safely returned** to the producer.

- The 2018 amendment made provision for the **registration of Producer Responsibility Organizations** (PROs). PROs in India offer comprehensive compliance services, from negotiating the most cost-effective regional collection and recycling contracts with different recyclers to helping producers meet outreach and awareness raising requirements.

Current scenario and issues in e-waste recycling

- As of today, some **95% of e-waste is managed by the informal sector** which operates under <u>inferior working conditions</u> and <u>relies on crude techniques</u> for recycling.

- **Price competencies** is another issue. Unlike formal recyclers, informal recyclers have lesser operating costs, no overheads, or other administrative necessities. They hence can offer better price to the aggregators for material.

- The informal network is **well-established and rests on social capital ties that PROs have yet to establish**.

- Another important issue is the **lack of sufficient metal processing infrastructure**. As a result, **true value of extraction is never realised**. If these materials are domestically isolated, it can lead to greater metals security and resource efficiency in the country.

- On the demand side, the major constraint is the **awareness level of the consumers** both in terms of consumption pattern and disposal pattern. Modern societies have become **resource-intensive in their consumption**. This has upended the demand for electronic items while considerably bringing down the life cycle of electronic products.

- Coupled with planned obsolescence by the producers, **inadequate repair options or awareness about deposit refund policies**, consumers tend to dispose of electronic goods along with other household waste, thus leading to issues of segregation of products entering the informal market.

- **Increased supply to formal recyclers and closing the infrastructure deficit** to improve dismantling and extraction in the country can go a long way in creating the desired market for e-waste recycling. In this context, the government's role is crucial.

- The life span of devices is getting shorter with the rapid pace of technological advancements, improved specifications and better performance leading to product replacements much before these run out of their usable periods.

- **It is important that consumers responsibly consume** the product for its useful life and then weigh between the chances of repair or disposal with utmost consciousness towards the environment.

- On the supply side, e-waste can be reduced when producers design electronic products that are safer, and more durable, repairable and recyclable. Most importantly, this means **using fewer toxic materials**.

- Manufacturers must **reuse the recyclable materials** and not mine rare elements unnecessarily to meet new production.

Recommendations

- The issue of E-waste brings us to the **crossroads of Malthusian versus Cornucopian views**.

- Cornucopian view holds that the *resources are plenty and the ability to adapt and adopt designs will compensate for any shortage in a particular resource in the future*. The eminent danger that mining of such vast resources of rare, toxic and precious metals pose; and their likely harmful effect on environment and human health puts a big question mark on the efficacies of these industrial practices.

- The Neo-Malthusian school propounds for **sustainable development and encourages recycling**.

- The electronics sector will have to adapt operations to reduce virgin material usage and build technologies around greater extraction and recycling capabilities.

- Process designs should be revolutionized to find alternatives to existing practices.

- It is pertinent to reduce environmental impacts. **Incentivising take-back programs**, introducing **deposit refund systems** and **trading credits or discounts** for the exchange value of products by sector conglomerates will induce a natural ecosystem of waste collection and disposal.

- **Enforcement of EPR targets** and **comprehensive monitoring of formal recycling** flows and processes is a critical first step to avoid leakage of valuable materials to an uncontrolled informal sector.

- All the stakeholders shall be **held accountable for their actions** during the process of collection, dismantling, processing, extraction, and recycling. All the steps involved in the recycling process should be critically benchmarked against international best practices to derive maximum financial, environmental and resource efficiency.

- It is important to build collection capacities in as decentralized a manner as possible.

- Further, people should be made aware of the trade-offs between sustainability and consumerism through both industry campaigns and media networks. This can also be approached through environmental justice analysis. In India, **public awareness of e-waste hazards and recycling is low**.

Conclusion

- Ministry of Electronics and Information Technology, initiated an **e-waste awareness program under Digital India Mission in 2016** to create awareness among the public about the hazards of e-waste

recycling by the unorganized sector and to educate them about alternate methods of disposing of their e-waste.

- Since India is highly deficient in precious mineral resources, there is a need for a well-designed, robust and regulated e-waste recovery regime that would generate jobs and wealth.

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Van Dhan Yojana: Benefiting the Tribal Livelihoods

- As part of "**Sankalp se Siddhi**" – **Village & Digital Connect Drive**, teams have been visiting villages to oversee the ground-level implementation of the Van Dhan Vikas Kendras.

- **Van Dhan tribal start-ups programme** is being implemented by TRIFED, Ministry of Tribal Affairs to generate employment and income generation among the tribal population.

- The Van Dhan tribal start-ups is a programme for **value addition, branding & marketing of Minor Forest Produces** by establishing Van Dhan Kendras to facilitate creation of sustainable livelihoods for the forest-based tribes.

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