

JUNE 2021

# YOJANA SUMMARY

AN INITIATIVE BY THE PRAYAS INDIA

THE PRAYAS IAS

HEALTH AND ENVIRONMENT





# Summary of Yojana

June 2021

***Theme: Health and Environment***

## **Table of Contents**

Are we on a cliff? .....	2
Policy and Practice .....	4
The Pandemic and Global Synergy .....	7
The Pandemic through Gandhian Perspective .....	9
Sustainable Health .....	12
Smart Agriculture .....	14
E-Waste Management .....	16



## **Are we on a cliff?**

### **Introduction**

- The world is facing gloomy times in midst of the pandemic, conflicts, and natural calamities. Recently, we witnessed the horrors caused by nature in Chamoli district, the ground of the famed Chipko movement in Uttarakhand.
- 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 earth's ecology and humans' relationship with the environment. The agricultural revolution which grew five thousand years ago provided food and stability to society.
- The future of peace and harmony in the 21st century is likely to be directly linked to issues concerning five key realities of life today:
  - ecology, global warming, and climate change;
  - nuclear weapons, the emerging technology of warfare and the continuing arms race among nation-states;
  - geopolitics and nationalism;
  - religious extremism; and
  - poverty and inequality.
- Today, both nature and world peace are under threat. All these developments coupled with geopolitics have put humanity on a cliff and we do not know how to retrieve the present dangerous situation away from its self-destructive ways. This needs to be appreciated in a threefold perspective:
  - Nature;
  - Science; and
  - Wisdom.

### **Nature**

- Today there is a credible threat to human survival from global warming and climate change with the potential to damage the lives and habitats of billions of people in different parts of the world.
- The enormity of the challenge of conservation of ecology and halting climate change is formidable and calls for making changes in our behaviour and thinking. At the heart of the matter is: How do we move towards building fresh sensitivities for conservation in our civilisational processes?
- Five events of the recent times need to be particularly referred to:



- Bushfires in Brazil and Australia of 2019;
- Extinction of species;
- Outbreak of pandemic SARS (Severe Acute Respiratory Syndrome) in Hong Kong in 2002-03;
- Coronavirus pandemic; and
- Forest fires in California alongside the Covid-19 pandemic in 2020.

## Science

- In the last decades of the 20<sup>th</sup> century, the focus of society has shifted decisively towards science and its domineering daughter, technology, both in the western and developing countries.
- Today, technology is pervasive and powerful and will continue to be so in the coming decades. The information and communications revolution is rapidly transforming our ways of communication which have become enormously fast-paced.
- This has led to the globalisation of products, cultural values, and information.
- Technology, being value-neutral, has accelerated the pace of the downward journey.
- Climate change and global warming are posing serious problems. The biggest polluter has been the release of carbon dioxide.
- To control it with speed, we have to change the terms of the market. It is based on the law of profit. 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.
- Are we ready for this major break? And, here wisdom comes.

## Wisdom

- Wisdom is a product of experiences and reflections not only of the present generation but of the civilisational processes of a nation and also of the world.
- 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.
- Human beings can destroy their environment as well as can rise above petty interests, use technology and reverse the process of destruction of plant species and minimise carbon emissions.
- At the present juncture, if we do not make use of our cumulative wisdom, nature will be harmed and succeeding generations will blame us for our failure.
- We have to keep the Vedic precept of 'माता भूमिः पुत्रो अहं पृथिव्याः' ('This earth is our mother and we are its sons.') in our minds.





- Thankfully, on 12 December 2015, the Global Climate Accord was reached among 195 countries of the world in Paris. The Paris Accord, as it came to be known, 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 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 as well as fruits of science together, irrespective of religious, ethnic, economic, and cultural divides.
- If science, spirituality, and wisdom go hand in hand, one can create a better world on this earth. Mahatma Gandhi said: ‘Earth provides enough to satisfy every man’s need but not for every man’s greed’.
- There is an imperative requirement to contemplate and work towards building an ecological civilisation that would outline the ways of living in harmony with nature.

## **Policy and Practice**

### **Introduction**

- To put the conception of Health for All (HFA) in a historical perspective, the UN envisaged a comprehensive and integrated primary health care for all in Alma Ata Declaration in 1978 to promote equity and was driven by the community needs.
- The constitution of World Health Organization (WHO) mentions that health, well-being, standard of living, medical care, right to security in case of sickness as well as special care and assistance for mothers and children are quite significant and notable in the context of HFA.

### **Liberalisation and Privatisation: Impact on Health**

- Due to ‘structural adjustment’ or economic reforms during 1980s in the poorest 37 nations, public spending on health per head declined by half due to cuts e.g. in Mexico, it declined up to 60 per cent. Following consequences are notable:



- Since State retreated from development interventions, there was a massive decline in public investment in health sector like other social sub-sectors (education, welfare of the deprived sections, etc.);
- There accrued a huge shortage of doctors and supporting medical staff, leading to patients bound to go to private clinics;
- There was a shortage of medical equipment, drugs and pathological facilities in public health institutions hospitals were reduced to mere writing of prescriptions and patients were compelled to buy medicines from the open market and to get pathological tests done at private labs at higher costs;
- Private doctors not only indulged in charging exorbitant fees but also prescribed unnecessarily more and costlier medicines as well as avoidable pathological tests;
- Due to the laxity of the State regulatory apparatuses, even government doctors and supporting staff started giving more time at their private clinics;
- Due to the retreat of state in providing subsidised food, sanitation facilities, there was a rise in communicable and non-communicable diseases, leading to long duration of morbidity, and finally death;
- The phenomenon of free market ('invisible hand') was based on the 'individual care', considered as a 'private' good but in most of developing countries, there was no improvement in quality of health care, equity and efficiency for the local people while the private insurance companies, consultancy firms, private pharmaceutical companies and private hospitals earned profits.

S.N.	Countries	Health expenditure as % of GDP
1.	U.S.	16.9%
2.	Switzerland	12.2%
3.	Germany	11.2%
4.	France	11.2%
5.	Cuba	11.19%
6.	Sweden	11.0%
7.	Japan	10.9%
8.	Canada	10.7%
9.	Denmark	10.5%
10.	Belgium	10.4%
11.	Austria	10.3%
12.	Norway	10.2%
13.	Netherlands	9.9%
14.	U.K.	9.8%
15.	Australia	9.3%
16.	Brazil	9.2%
17.	Chile	8.9%
18.	South Africa	8.1%
19.	Israel	7.5%
20.	Hungary	6.6%
21.	Mexico	5.5%
22.	Russian Fed	5.3%
23.	China	5.0%
24.	India	1.26%
25.	Bangladesh	3.0%
26.	Pakistan	3.0%



- This reflects India's lowest public expenditure to health subsector. Even National Health Policy 2017 speaks of just targeting 2.5% of GDP to be spent on health. Consequently, Indian people usually do not have access to quality health services.
- India committed earlier for universal health care (UHC) coverage by 2030 by raising public funding from 1.26% of IGDP to 2.5% by 2025-about 70% of this is to be meant for primary healthcare.
- Similarly, India's per capita public expenditure on health in nominal terms is just Rs.1,657 (2018-19)-much lower than that in Sri Lanka (Rs.5,000) and Indonesia (Rs. 3,500).
- Third, 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 addition, as per the WHO norm (2016) of 44.5 health workers per 10,000 population to achieve SDGs, and UHC, India has its half only-and health system has far less health workers, especially doctors.
- Most PHCs/Health Centers are almost defunct in many north Indian states, only the ASHA workers, pharmacists, nurses, etc sometimes visit there; further there are no facilities like beds, medicines, pathological tests etc there.
- **SDGs:** Unfortunately, by 2015, most of the developing countries including India, could not achieve rest of the MDGs. Hence United Nations declared 17 Sustainable Development Goals (SDGs) with 169 targets-it is also called 'Transforming Our World: Six years have passed since the beginning of SDGs in 2015, but most of the countries are not on the track and by 2030 only a few countries would be able to achieve SDG targets.
- **Environment for Health:** The policy identified 7 priority areas for improving the environment for health:
  - Swachh Bharat Abhiyan;
  - Balanced healthy diets and regular exercises;
  - Addressing tobacco, alcohol and substance abuse;
  - Yatri Suraksha-preventing deaths due to rail and road accidents;
  - Nirbhaya Nari-action against gender violence;
  - Reduced stress and improved safety at work place, and
  - reducing indoor and outdoor air pollution.
- **Shifts in Public Health care Delivery:** There are 7 shifts in organising public healthcare services:
  - Primary care-open selective care to assured comprehensive care with linkages to referral hospitals;
  - Secondary and tertiary care-from an input oriented to an output-based strategic purchasing;
  - Public hospitals- from user fees and cost recovery to assured free drugs, diagnostic and emergency services to all;



- Infrastructure and human resource development-from normative approach to targeted approach to reach under-serviced areas;
- Urban health- from token interventions to on-scale assured interventions, to organise primary health care delivery and referral support for urban poor.
- National Health Programmes- integration with health systems for programme effectiveness and contributing to strengthening of health systems for efficiency; and
- AYUSH services-from stand alone to three dimensional mainstreaming.
- There is a gender disparity and male bias in health care globally, nationally, and locally in following ways:
  - In 2016, 23.8 lakh patients visited AIIMS, New Delhi for treatment but of them only 37% were women, though it is 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.
  - In the developed countries, too, women suffer from heart diseases as much as men but get recognised and treated far less than men.
  - 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.
- Therefore, there is an urgent need to address such a bias and gender disparity at the earliest to ensuring health for all.

### **The Pandemic and Global Synergy**

- The Covid-19 pandemic is a seismic event that continues to grip the world. Despite being a biological domain-related concern in its purest nature and a pandemic characterised by global health emergency, the scope of the event was remarkably discernible in other aspects of human life ranging from socio-cultural, economic, and political level.
- The notion of correlation between various countries characterised by the temporal and spatial interconnectedness which played such an important role in the proliferation of the disease requires consideration to justify the idea of the concept of “Global Village” as being acute.
- 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 between various manufacturing companies and laboratories engaged in research.

- 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.
- The significance of India's vaccine diplomacy can also be understood if we take into account the nature of action of the developed countries which shows their propensity to reserve doses much beyond the need of their population.
- The situation of the developing countries, on the contrary, is messy because majority of people in the developing and poor countries could remain unprotected if they cannot afford to pay for the vaccine.
- Put in this perspective, the nobility of India's move stands upon her commitment to share her mastery in inventing the *Sanjeevani* with all fellow countries not only those situated in South Asia but also to different countries of the Middle East to Africa and beyond.
- 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 (in places where it is attractive to others), its political values (when it lives up to them at home and abroad), and its foreign policies (when they are seen as legitimate and having moral authority).
- India's vaccine diplomacy provides a great fusion of three sources as mentioned above. 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 United Nations Security Council (UNSC) permanent membership.
- The apparatus of traditional diplomacy is well recognised by the 1961 Vienna Convention on Diplomatic Relations but in the age of globalisation, there is a complexity in the global relations opening up new avenues for the conduct of global diplomacy involving newer actors including the non-state actors such as transnational corporations, civil society organisations, nongovernmental organisations but they are not sovereign and their activities must pass through the window of approval created by the sovereign unit of the state representing the will of the people.
- Therefore, such complexity needs to be streamlined because there should not be any scope for political anxieties to develop as it did during the second-decade of the twenty first century. Rather, it provides a scope for democratic ethos celebration as the only way to counter a global challenge is through a concerted global response.



- The word ‘concerted’ in this context refers to the direction provided by the democratic nation-states as sovereign responsible units. The Kantian democratic peace thesis provides the light in this direction.

## Effective Allocation of Covid-19 supplies received from the Global Community

The global community has extended a helping hand in supporting efforts of Government of India in this collective fight against the global Covid-19 pandemic. Medical equipment, medicines, oxygen concentrators, ventilators etc., are being provided by many countries.

A streamlined and systematic mechanism for allocation of the support supplies received by India has been put into place, for effective distribution of the medical and other relief and support material.

The Indian Customs is sensitive to the need for availability of Covid-related imports including Oxygen & Oxygen related equipment etc., and are working 24X7 to fast track and clear the goods on arrival and lead to expeditious clearance within hours. The steps taken for expeditious clearance on fast track basis are as follows:

- The Goods are given high priority for clearance by the Customs Systems for processing over other goods.
- Nodal Officers also gets alert on email for monitoring and clearance.
- Monitoring by senior officers for pendency of Covid-related imports is also being undertaken.
- The handholding to the trade is given for complying with the requirements beforehand.
- Outreach activities and Helpdesk enables Trade to get the goods cleared on arrival.

In addition to faster clearance,

- Indian customs has waived Basic Customs Duty and Health cess on goods identified for defending Covid.

- When imported free of cost and distributed freely, based on the state govt. certification, IGST is also waived.
- Further, for import of oxygen concentrators for personal use, IGST has been reduced from 28% to 12%.

The medical items started coming in as donations from different countries after the rise in sudden cases of Covid across the different parts of the country from the last week of April, via MEA. The materials are being given by countries due to the immediate and urgent requirements in different parts of the country. This help is over and above what Govt of India is already providing, and is thus an additionality for the states and UTs. Later on, supplies coming from private companies, entities etc also started routing through the Niti Aayog.

The Ministry of External Affairs is the nodal agency for channeling offers of help from foreign countries and coordinates with Missions abroad. The MEA has issued its own SOPs which are applicable across board.

### Indian Red Cross Society

For all consignments received via MEA and coming as donations from foreign countries; the consignee is the Indian Red Cross Society. Upon receipt of the papers outlined in the process flow chart, IRCS issues the necessary certificates immediately to HLL for processing customs and regulatory clearances at Airports. IRCS also ensures liaison with MoHFW and HLL so that delays are reduced and quick turnarounds are achieved.

## The Pandemic through Gandhian Perspective

- Gandhiji’s ideas never fail to appeal to higher consciousness, it is customary to applaud them as legends that can only be admired from a distance<sup>3</sup>. It is also an easier way to escape the responsibility of implementing them or even experimenting with them.



- However, the current pandemic has paved way to possibility of such experimentation, and there are several grounds to justify this position.
  - **Changing Consumption Pattern:** The pattern of consumption has changed significantly especially during the lockdown periods. Studies have noted 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, even while choosing a brand.<sup>4</sup> 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. Preferences are shifting to natural and herbal remedies and learning about their goodness and lasting effects. Ceremonies have become Spartan since huge gatherings are dangerous.
  - **Changing Patterns of Production:** As the world grapples with the problem of fragmentation of the supply chain, the necessity to restart in whatever manner possible, producers may be forced to relocate their sources of supply. An UNCTAD economist, P. Fortunato, in his study on “How Covid-19 is Changing Global Value Chains (September 2, 2020), observes a trend towards relocation of the GVC (Global Value Chain) in favour of a greater use of local skills and materials. Compelled by the pressures of circumstance we might redevelop production systems of the kind that Gandhiji advocated strongly to promote self-sufficiency.
  - **Empathy towards the Deprived:** The migrants reaching their home States by foot, by legitimate or illegal means<sup>11</sup> has been a heart wrenching story. But it has also led to individuals and NGOs rising to the occasion to support these unfortunate fellow beings 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. Reducing Rural-Urban Imbalance: Greater dependence of our population on agriculture indicates non availability of non-agricultural jobs. Providing more jobs in the nonagricultural 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.
  - **Treatment to the Reverse Migrants:** 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. This is simply because migrants who have returned back are more likely to tune and team up with each



other, and such trust would prove a strong foundation for a new enterprise especially in the form of co-operatives. There are successful examples of migrant workers' cooperatives that emerged as a response to crisis in many countries. States can benefit by collaborating with ILO which has a rich experience of handholding many such projects across the globe. Finally, co-operatives are important because they facilitate decentralisation of the process of growth, which is Gandhian in spirit.

- **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. It is also a wake-up call to transform slums and the living conditions therein. Ignoring hygiene or treating it as welfare or a charitable act is not going to help because these are necessary for everyone's survival now. In a way, ensuring decent living conditions, which is implicit in dignity of labour is thrust upon us as a need for survival. One thing the pandemic has taught us is that an infection anywhere is a threat to health everywhere.
- **Decent Wages and the Covid Allowance:** States from where the migrant workers have moved out have had to raise wages due to severe shortage of labour. There are instances where workers have been given air tickets to return to work. These may be anecdotal instances, but they do echo the need to treat workers with dignity though under duress. One only hopes that at least some such benefits last long enough to emerge as new practices. This should take us to Gandhiji's intervention in Ahmedabad textile strike to negotiate in the issue of plague allowance.
- **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. For instance, there might be greater possibilities of shifting to more eco-friendly urban transport system and manufacturing systems to enable reduction in the carbon emissions along with creation of more employment opportunities.

#### 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.
- In a truly Gandhian perspective, the 17 Sustainable Development Goals can be seen as an integrated vision stemming from a peaceful and harmonious coexistence of human beings with each other, with nature, and other beings supported by nature, which Gandhiji might have longed for.
- 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**

- 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.
- It's not about losing weight, it's about doing it the right way, the sustainable way. Here are 3 easy to understand and practical rules to get on the path of sustainable health –

#### **Metabolic health over weight loss:**

- The basic premise of all diet trends, regardless of their name is – weight loss. Sometimes outright, sometimes garnished with words and concepts like detoxify, rejuvenation, anti-diabetes, anti-cancer, etc. But for any diet trend to thrive, weight loss is the central pillar.
- Ever heard of a viral diet trend whose only promise is 'food security for all' or even a modest one like 'better digestion and no acidity'? The trillion-dollar food industry needs our focus to stay on losing weight for it to stay profitable.
- Do we sleep well in the night, do we wake up feeling fresh, do our energy levels stay good through the day, do we suffer from acidity, bloating and indigestion, do we get sweet cravings post meals, are we able to stay active and comply to exercise plans and do we have painful PMS and periods, etc.
- In scientific terminology, the above parameters are surrogate measures of metabolic health. They give an indication of how well your hormones are behaving, how is your heart health, how diverse is your gut bacteria, are your blood sugars well regulated, and so much more. In other words, they are markers of your susceptibility to non-communicable diseases (NCDs).
- One of the biggest reasons for deteriorating public health, even when diet trends proliferate, is the single minded focus on losing weight at the cost of metabolic health. The narrative of what accounts for good health therefore must shift from weight loss to metabolic health.

#### **All-round over One-dimensional Approach:**

- Once we move beyond weight loss, we discover that there are many aspects of a fit body – hormones, organs, bones, muscles, ligaments, tendons, joints, skin, hair and so much more.





- And that they don't work in isolation but are dependent on each other. It then becomes obvious that for the whole of us to stay healthy, a wholesome approach is necessary.
- Food, activity, exercise and sleep together make for an all-round approach to sustainable health.

## 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. It encourages one to be on – and stay on – a path of happiness and fulfilment. The Upanishads describe *sukha*, or happiness, as a state where all our senses – sight, smell, touch, sound and taste – are all aligned with one another. *Dukha*, on the other hand, is a state where the senses are not aligned and is, naturally, the lack of happiness. Each of us has experienced this: the body in one place, the mind in

another and the senses distraught. This lack of alignment is what the modern world calls 'stress'. 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. Yoga, for one, guides us to health on the path of *shanti*, or peace, and the yoga texts teach us that *swasthya* is step one to both inner and outer peace.

### Long term over Short term Solutions:

- The other aspect of sustainable health, one which is built into the meaning of the word sustainable, is the concept of long term health.
- Although the human body is not designed to respond well to short term measures, our brain on the other hand, finds it very difficult to comprehend long term and is more interested in immediate rewards.
- This is what the weight loss industry uses to its benefit and the only way is to constantly remind yourself not to fall for the trap.
- Quick results, usually used as proxy for quick weight loss, can and mostly do lead to slow deterioration in the body, sometimes irreversible. We usually don't make the connection between that month long liquid diet we did 5 years ago and the damage to the liver that shows up now.

## Metabolically-healthy Obese

One of the many problems with making weight loss as the sole marker for good health is that it completely ignores the concept of metabolically healthy obesity. Not everyone who is overweight or obese is unhealthy or prone to diseases. In fact, about 25-30% of obese people are perfectly fit and healthy otherwise. Their chances of getting any of the NCDs is just about 20%. However, the most common advice they receive is to lose weight and lose weight quickly. And when

they lose weight quickly through diet trends described above, not only does the weight come back (80% of all weight loss attempts end in gaining weight back), but most importantly, now they are no longer metabolically healthy obese (MHO).

Now, they have a 150% higher chances of getting diabetes, cancer, heart disease, hormonal imbalance, mental health issues, etc. They are now metabolically unhealthy obese (MUHO).

### Conclusion



- This issue surely deserves the attention of the governments, need serious policy changes and more importantly advocacy for local food and food systems.
- 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 ecosystem 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. Essentially it's about going back to the wisdom of our forefathers, of eating local, seasonal and traditional.

### **Smart Agriculture**

- Agriculture and allied sectors are the primary source of livelihood for nearly 55 per cent of India's population (Census 2011) but accounted only for approximately 17.8 per cent of the country's Gross Value Added (GVA) in 2019-20.
- With agricultural output being utilised as important input for various industries, including retail and e-commerce, the importance of agriculture and improving yields becomes all the more pressing.
- The average size of farm holdings in the country is just over 1 hectare, with small and marginal farmers holding nearly 86 per cent of the total.
- Small holders find it particularly difficult to invest in expensive technologies and other inputs that would improve efficiency.
- The distinctive attributes of the agriculture sector in India have made it imperative to look towards policies that improve yield, simplify value chain networks, democratize digital infrastructure, and improve access to credit and insurance.
- An important solution lies in the rapid adoption of agritech, defined here as technologies and tools that 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.
- 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.



## The Prayas ePathshala

[www.theprayasindia.com/e-pathshala/](http://www.theprayasindia.com/e-pathshala/)

Central Government Initiatives	State Government Initiatives	
Soil Health Cards (2015-2017): crop-specific recommendations for fertilizers and nutrients, every two years.	Karnataka	Agri-tech fund of USD 2.5 Mn using AI.  Partnership with IBM to price forecasting using AI and ML.
Soil Health Card Mobile App (2017): captures GIS coordinates while registering sample details to indicate location of sample.	Haryana	Integrated Farmer Producer Organization's (FPO) packhouses to the eNAM platform.
National Agriculture Market - eNAM (2016): electronic trading portal connecting APMC mandis. Incorporates 1,000 markets with over 90 commodities.	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.
	Telangana	Open Data Portal, containing 199 datasets including agriculture, irrigation, and animal husbandry and livestock.
	Punjab	Collaboration with Israeli farming solutions organization, ARNA, which provided affordable technical skill training to farmers to boost crop yield, income, and diversify crops. The company also provided a state digital agriculture platform with a database of all farmers to track their agriculture activities.
Direct Benefit Transfer: Around 14 schemes in agriculture and 2 in animal husbandry have been rolled out using DBT, which involved use of Aadhar-based biometric authentication and ePOS machines to directly reach the farmers' bank accounts.	Rajasthan	Hosted agri-meets, and a Challenge for Change platform for Agri-tech entrepreneurs.

- The agritech space in the country involves various actors, including think-tanks, research laboratories, government, incubators, and startups. The Central as well as various state governments have undertaken numerous initiatives to enable and support the integration of smart technologies in agriculture.
- Agri-tech startups have been driving innovation towards bridging the various gaps that persist along the value chain. Acting as the link between farmers, wholesalers, retailers, and consumers, these startups have been improving market linkages, while disrupting traditional agricultural systems with innovative and affordable solutions.
- There are over 500 agritech startups in the country, which witnessed a significant rise with the government's Digital India campaign that has prioritized the creation of digital infrastructure for all. These include Fasal, DeHaat, Clover, CropIn, and Intello Labs.



- Even as the various stakeholders are driving smart agriculture in India, certain fundamental issues must still be addressed to effectively bring about this digital revolution.
- These include the 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 process of unleashing the true potential of agritech in the country would involve developing a synergistic relationship between the various stakeholders in the process, including the farmers themselves, enhancing investment and R&D to constantly improve and update solutions, and further improving the regulatory environment to ease accessibility of startups and other companies to create a robust ecosystem.

### **E-Waste Management**

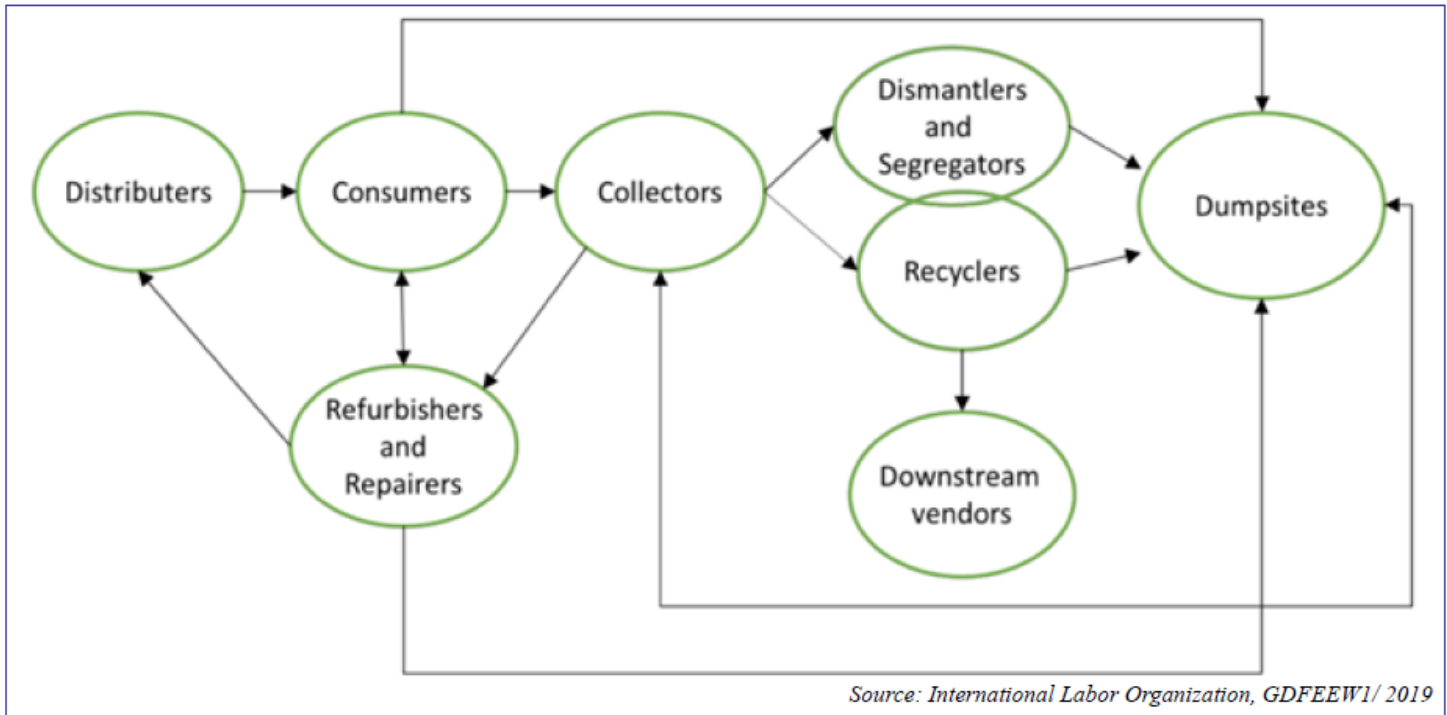
- Electronic waste (e-waste) i.e., waste arising from end-of-life electronic products, such as computers and mobile phones, is one of the fastest growing waste streams in the world today. The world dumped a record 53.6 million ton (Mt) of e-waste in 2019, recycling only 17.4% of it.
- India has an e-waste 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 management is limited by both the demand and the supply side factors and requires an in-depth analysis.

#### **E-waste value chain:**

- E-waste management is a complicated process given the multitude of actors that are involved in the process. The major stakeholders in the value chain include importers, producers/ manufacturers, retailers (businesses/ government/ others), consumers (individual households, businesses, Government and others), traders, scrap dealers, dissemblers/ dismantlers and recyclers.



- The process involves four stages - generation, collection, segregation and treatment/ disposal. The generated 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.



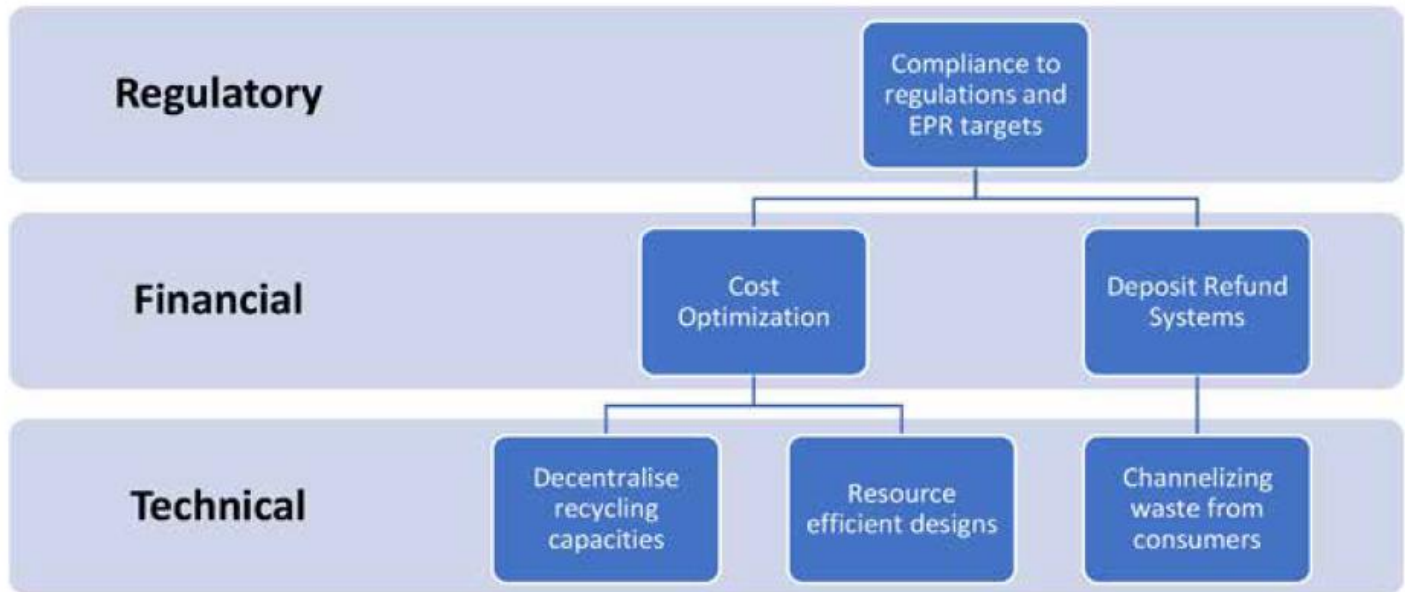
### Formal Collection:

- The activities usually fall under the requirements of national e-waste legislation, in which e-waste is collected by designated organisations, producers, Government.
- 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.

### Waste Bin Collections:

- The disposer resorts to openly dump the product in a waste bin along with other household wastes.
- Since segregation of such waste is rudimentary, 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.





Source: Author's compilation

**Figure 2: Applying business solutions to e-waste problems** Source: Author's compilation

#### Informal Collection:

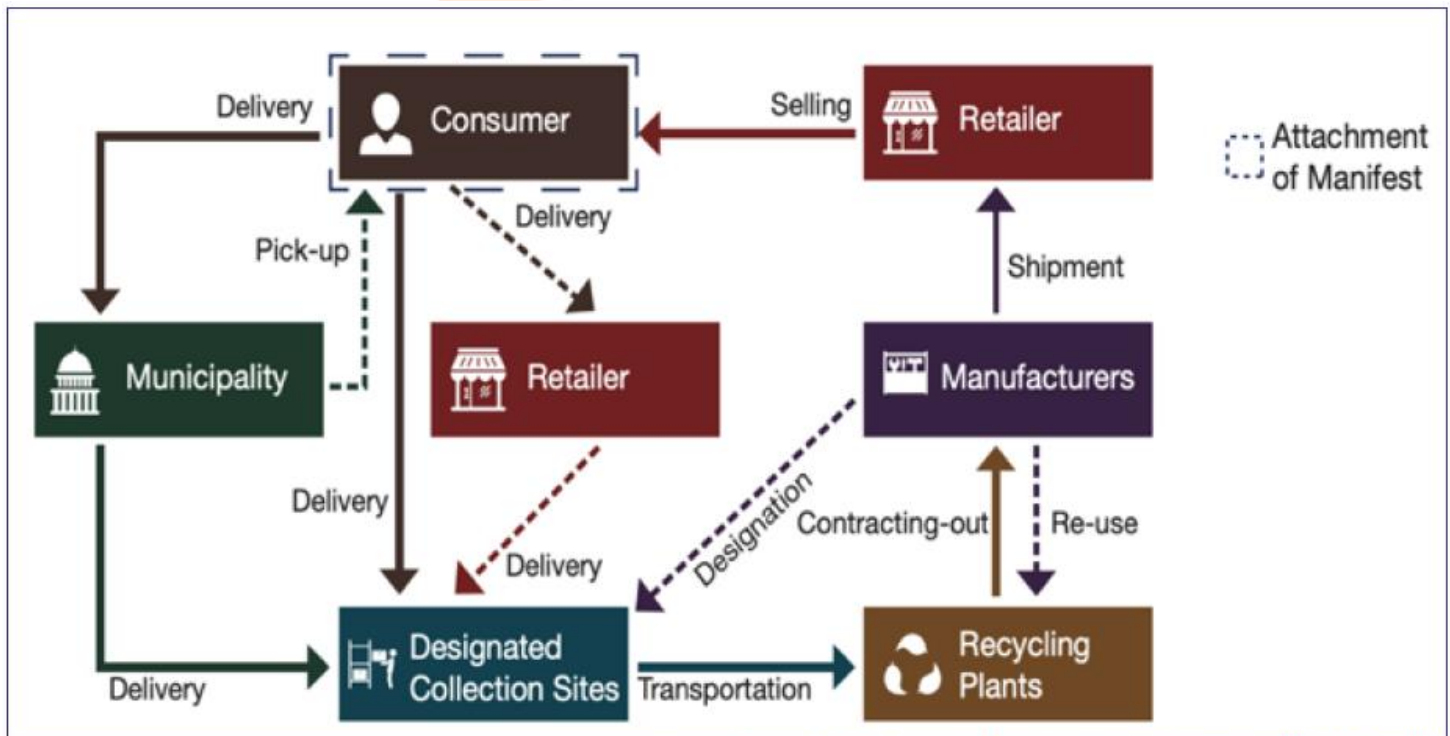
- Some countries may have an established network of individual waste dealers or companies who collect and trade the e-waste through various channels wherein possible metal recycling may occur at the destination.
- In others, the e-waste may be picked door-to-door and sold to an informal dealer who may repair, refurbish, or sell again to a backyard recycler.
- This recycler dismantles the product through burning, leaching, and melting, thus converting it into secondary raw materials.

#### India's regulatory ecosystem:

- Indian electronics sector boomed in the last decade, picking up from US\$ 11.5 billion in 2004-05 to US\$ 32 billion in 2009-10. Increased production and penetration of imported electronics items led to an accelerated e-waste generation.
- Besides, because of the high cost of recycling e-waste (companies have to pay for disposal of broken equipment), many companies in developed nations opted for the less expensive option, i.e. to ship their e-waste overseas to dump in developing nations.
- The Government also started focusing on formalizing the electronics recycling industry by issuing registrations and e-waste management guidelines.



- To streamline e-waste management, Government notified Electronic Waste (Management and Handling) Rules 2011, introducing Extended Producer Responsibility (EPR), whereby producers were required to collect and recycle electronic items.
- By shifting the burden of waste management onto the burden of waste management onto manufacturers, the EPR framework, in theory, created incentives for more environment-friendly product designs.
- In the absence of targets, and in a relatively lax regulatory environment, producers had little incentive to ensure the collection of their used products.
- This resulted in the e-waste rules being amended in 2016 to include collection targets and implementing a deposit refund system (DRS) by the producers. 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 also made provision for the registration of Producer Responsibility Organizations (PROs). PROs in India offer comprehensive compliance services.



Source: *Electricals & Electronics Manufacturing in India, ASSOCHAM-NEC, 2018*

**Figure 3: E-waste Disposal System, Japan**

#### Current scenario and issues in e-waste recycling:

- Even though e-waste management policies are in place since 2011 in India, implementation has been sluggish.



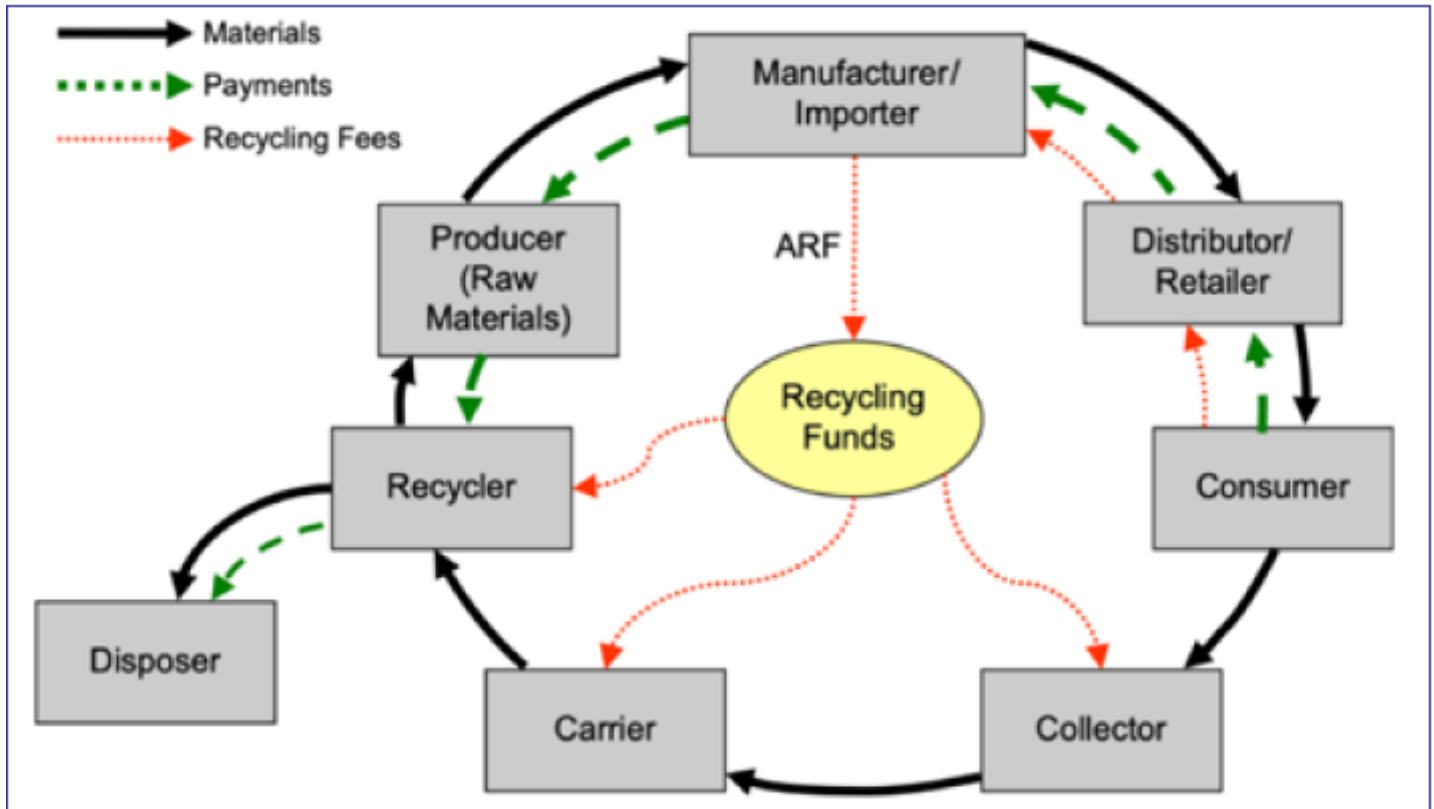
- As of today, some 95% of e-waste is managed by the informal sector which operates under inferior working conditions and relies on crude techniques for dismantling and recycling.
- Policy changes have tried repeatedly to formalise the sector, but issues of implementation persist on the ground.
  - First is the issue of price competencies.
  - Second, the informal network is well-established and rests on social capital ties that PROs have yet to establish and are hence insulated from reaching the viable number of aggregators.
  - Another important issue is the lack of sufficient metal processing infrastructure which is why recyclers have to export materials to global smelters and hence never fully realise the true value of extraction, both in terms of processing cost and the in terms of processing cost and the price of the extracted metals' quality and quantity. 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. With the enhancement in the standard of living, 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.
  - Consumers tend to dispose of electronic goods along with other household waste, thus leading to issues of segregation of products entering the informal market.
  - 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.

#### **Stakeholder Analysis:**

- The demand and supply side gap analysis against the backdrop of the regulatory landscape reveals two major stakeholders in the process –
  - Business advocates and
  - Public and Media gatekeepers.
- The Government remains a great catalyst in the entire process. Its role can be discounted to be that of a facilitator and a regulator in a self-propelled market.



- A neo-classical growth method triggering 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. This is where the current policy framework needs to put in efforts and hence, the Government's role is essential.
- 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.



Source: D.S. Khatriwal et al. / Journal of Environmental Management 90 (2009), 153-165

### Flow of materials and finances in the Swiss e-waste management system

#### Recommendations

- The issue of E-waste brings us to the crossroads of Malthusian versus Cornucopian views.
- The current business practices of planned obsolescence in the electronics industry have been more in congruence with the Cornucopian view 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 one, reduce virgin, material usage and second, build technologies around greater extraction and recycling capabilities. Process designs should be revolutionized to find alternatives to existing to not unsustainably extract rare earth resources.
- Further, optimizing the E-waste recycling chain requires strict monitoring, enforcement and tracking, realization of economies of scale and global cooperation. Failing to address any of these elements will result in suboptimal resource efficiency while posing a risk to the environment.
- 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. This monitoring will lead to the creation of a level playing field where all stakeholders shall be held accountable.
- Thus, a stepwise approach is essential for optimizing the recycling chain during all stages of the process rather than only at the beginning or the end as the current policy advocates.
- On the demand side, as per the Neo-Malthusian school of thought, it is important to build such 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.
- Research and surveys conducted in India have shown that public awareness of e-waste hazards and recycling is low.
- NGOs and community-based organizations can further the cause of ensuring safe disposal practices as well as monitor health and safety adherence by corporates and recyclers.

### **Conclusion:**

- Immense potential is there in augmenting e-waste recycling in the country. There are some forward movements in this direction.
- However, lots of ground need to be covered through awareness campaigns, skill development, building human capital, and introducing technology while adopting adequate safety measures in the country's informal sector.
- 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.