

Scarred Generation

According to the Organization for Economic Cooperation and Development's (OECD) Economic Survey of India, **over 30 per cent of India's youth (about 120 million) is neither employed nor in school or in any kind of apprenticeship.**

Add to this a crumbling welfare state, rising inequality, a rapidly changing economy that constantly needs new skills, a consumer culture that feeds on ever-new material fantasies.

Demographic dividend -

- Demographers call it the “**youth bulge**”, a phrase first coined by the **German social scientist Gunnar Heinsohn** in the 1990s to describe a phase in a country's demographic transition when even as fewer kids die at birth, women continue to be as fertile as before.
- India is not the sole witness to this phenomenon. According to the Population Action International, a Washington-based private advocacy group, at least 62 countries, mostly from West Asia, South Asia and Africa, have a “very young” populace, which means every two out of three people are under the age of thirty.
- As Africa's population mushrooms, it is set to become the youngest continent in another 30 years.

The issues of unemployment -

The Great Recession that gripped the world in the wake of the 2008 financial crisis shows no signs of letting up. About 74 million youth between the ages of 15 and 24 were unemployed in 2013. Although that figure has come down by 3 million since then, it is still about 35 per cent of the total unemployed.

The neoliberal dilemma -

- Extracting capital out of youth is part of the neoliberal project that views each individual decision or choice as a rational calculus of costs and benefits.
- The trouble is that with the neoliberal experiment is on the brink, its proponents now have to deal with the fury and frustration of millions of young men and women left to their own devices.

Way forward -

Perhaps it is high time the world junked the discredited neoliberal project and tried something more radical than capitalism in pastel shades.

E-driven

In the late 1960s and early 1970s, concerns about air pollution and more important, the OPEC oil embargo, kindled interest in e-cars. This got further impetus in California's Zero Emission Vehicle Mandate that demanded 2 percent of California's vehicles to be zero emission by 1998 and 10 percent by 2003.

The modern impetus -

- The concerns over high oil prices and stringency in pollution and climate regulations have once again spurred new interest in e-vehicles. These are fuel efficient, as, technically the conversion of electrical energy into motive power is more efficient than burning fuel in an internal combustion engine.
- According to the California Air Resource Board, the estimated fuel efficiency of e-vehicles is three times higher than the conventional car.
- As electricity costs significantly less than oil, the operating cost per kilometre falls to a fraction of that in a petrol car.

Challenges -

- High prices, limited range, slow investment in technology improvement and lack of charging infrastructure have significantly slowed the commercialisation of e-vehicles.
- The battery is a major chunk of the cost of e-vehicles. It costs nearly 30 per cent of an e-bike's price.

- And it has to be replaced every two to three years. For an e-car, a battery costs Rs 60,000 to Rs 70,000.

Which way the wind blows

This winter has seen severe western disturbances which have hurt the Rabi crops such as wheat, mustard, gram and fenugreek crops.

What are western disturbances?

Western disturbances are low-pressure areas embedded in the Westerlies, the planetary winds that flow from west to east between 30° and 60° latitude. They usually bring mild rain during January-February, which is beneficial to the rabi crops.

What is the issue?

- In the past few years western disturbances have been linked to disasters. The cloud burst in Leh in 2010, the floods and landslide in Uttarakhand in 2013 and the excessive rain in Jammu and Kashmir in 2014 were all linked to these disturbances.
- This year, as per the India Meteorological Department (IMD), the average rain received between March 1 and March 18 was 49.2 mm—197 per cent above normal. This caused severe damage to crops in several states of the country.

Why the western disturbances have been severe?

- First, **easterly wave**, that according to IMD, the severe rain this year is the result of the **confluence of western disturbance and easterly wave from the Bay of Bengal**. Easterly wave, or Easterlies, blows throughout the year from east to west. The confluence of the two winds happens throughout the year, but the results vary.
- Secondly, according to another study, **global warming** is to be blamed. A study published in the January issue of Environment Research Letters, suggests that **heating up of the Arctic has weakened the jet streams in the northern hemisphere**.
- Similarly, a study by Indian Institute of Tropical Meteorology, Pune has found **increased warming of the Tibetan Plateau** in the recent decades which has increased the instability of the Westerlies and this has increased the variability of the western disturbances.
- Another study say **temperatures have risen in the middle- and upper-tropospheric levels over the subtropics** (area between the Tropic of Cancer and the Tropic of Capricorn) and the middle latitudes.

Fatal Resistance - Can we fight antibiotic overuse?

Experts at the Global Antibiotic Resistance Partnership (GARP) met recently to show that a steady growth in the use of antibiotics in India has caused antibiotic resistance.

Common antibiotics -

Of all the antibiotics, the beta-lactams, like penicillin, were sold the most followed by quinolone antibacterials, like ciprofloxacin. Penicillin is used to treat, among others, wound infections. Ciprofloxacin is given to patients with urinary tract infections.

The extent of issue -

Resistant bacteria are also lurking in rivers and sewage, risking lives of those living in the vicinity. Antibiotics have made their way to the environment as well. Cattle, for instance, harbour resistant bacteria that could pose a problem to humans who come in contact with them.

What has been done?

To combat this threat, many countries have started formulating policies to maintain the effectiveness of antibiotics. In March 2011, the Union Ministry of Health and Family Welfare formulated the National Policy for Containment of Antimicrobial Resistance.

A line drawn in sand

India has the world's third largest construction business after China and the US. Every one rupee investment in the construction industry for manufacturing cement or for mining sand causes Rs 0.80 increment in the GDP as against Rs 0.20 and Rs 0.14 investment in the agriculture or the manufacturing industry.

The sand use -

- Legal or illegal, sand continues to be a scarce commodity. The construction sector, mostly real estate, constantly complains of acute shortage of this minor mineral.
- By the end of 2011, the Union Ministry of Housing and Urban Development projected a sand-shortage of 91,666.7 million tonnes.

Issue -

- To put the brakes on illegal sand extraction, the Supreme Court, on February 27, 2012 made environmental clearance mandatory for all mining sites.
- Minor mineral mines will now have to undergo the **Environmental Impact Assessment (EIA)** process under the **Environment Protection Act of 1986**, the court said.
- This EIA scheme has put a break on the mining of sand. Even the mines with legal status have not applied for an environmental clearance.

Bullish on Biosimilars

Since the crash in 2000, many developments have happened in drug science and policy that are fuelling the biotechnology industry's growth.

What is the definition of 'biosimilars' or 'generic drugs'?

It covers a group of medicines, termed as the 'generic equivalent' of branded biological products or biologics that are created through biological processes instead of chemical synthesis.

The emerging boom -

- There is an overarching change in drug policy in various countries and a push for freeing drugs from the patent regime. This is leading to a major realignment in the biotech industry in terms of investment.
- The next big push for the industry comes from the unprecedented increase in the market for generic drugs, particularly in the US that controls the global market.
- Similarly, middle-income countries like India and Brazil are reporting increased demand and local manufacturing capabilities.
- The US is already pressuring drug firms to lower prices to reduce cost of government programmes and to lower insurance rates, which will benefit people. Though at present, generics account for 70 per cent of America's total prescription sales, market analysts estimate that it would grow further.
- Patented and brand biologics are expensive and turn out to be prohibitive in case of diseases like cancer and hepatitis. The biosimilars are relatively dirt-cheap and are now being supported by governments of developed countries precisely for this reason.

The Arctic Rush

Recent scientific studies confirm that the Arctic is warming twice as fast as the rest of the globe. The period between 2005 and 2010 was the warmest since record keeping began in 1840.

The extent of issue -

- In September 2011, at the height of its summertime shrinkage, ice caps covered 4.33 million square kilometres of the Arctic Ocean. This, according to the US National Snow and Ice Data Center (NSIDC), was a 50 per cent drop from the average sea ice cover between 1979 and 2000.
- The Arctic is also getting thinner and younger. Its thicker, older ice caps that have formed over several years and were able to survive through the summer melt season are increasingly being replaced with ice that accrues over the winter every year and then melts away.

- By the reckoning of NSIDC, only five per cent of the Arctic ice caps were over five years old last summer. In the early 1980s as much as 40 per cent of the Arctic sea ice was over five years old.

Problem of industrialisation -

- The Arctic's vast reservoirs of fossil fuel, fish and minerals, including rare earth materials, are now accessible for a longer period.
- But unlike Antarctica, which is protected from exploitation by the Antarctic Treaty framed during the Cold War and is not subject to territorial claims by any country, there is no legal regime protecting the Arctic from industrialisation, especially at a time when the world craves for more and more resources.

Mineral wealth -

Of the eight Arctic nations—Russia, Sweden, Norway, Iceland, Denmark (Greenland), Finland, Canada and the US—several have explored the Arctic waters and found over 400 oilfields with proven reserves of around 240 billion barrels of crude oil and natural gas. This is about 10 per cent of the world's known hydrocarbon reserves. They have also discovered significant deposits of various minerals on the seabed.

Permaculture spreads in India

At the heart of permaculture lies the idea that **a plantation should offer multiple benefits, right from food and fodder to timber and fertiliser.**

Background -

- It was first propagated in the 1970s by Australian biologist Bill Mollison.
- It gained acceptance in India after several enthusiasts were influenced by Mollison during his visit to the country in 1987.
- By 2016, permaculture had grown into a movement and spread to 140 countries. Today, more than 3 million people across the globe practise permaculture, and claim that the novel farming system is the only way to make agriculture sustainable in the face of extreme weather events.

Need for permaculture -

- In 2009, the UN gave a call to scale up food production to feed the global population, which is estimated to reach 9.1 billion by 2050, with 70 per cent of them living in urban areas.
- In such a scenario, it is imperative to produce more with less resource, build resilience among small farmers, improve soil health and encourage people to grow their own food. And all these can be achieved through permaculture.
- All alternative farming systems, including permaculture, organic farming and non-pesticide management methods, emphasise on using local resources and not disturbing the local environment.

Way forward -

- It should rely on local crop varieties and natural pesticides.
- The native cattle breed is a major component in this farming system which consumes the local weed varieties of grass.
- Its dung and urine are used as pesticide and fertiliser.
- This technique also uses mulching, mixed cropping patterns and crop rotations to maintain the soil nutrients.

Chile may give people rights over their mind

Chile might soon become the first country to **recognise people's rights over their minds.** Its Congress is currently considering two legislations that call for constitutional reforms that establish mental identity as a basic right.

More details -

The Organization for Economic Cooperation and Development, an intergovernmental body with 36 member countries had already adopted the world's first international standards on responsible innovation in neurotechnology, which can be used to read minds.

Significance -

The legislation in Chile will allow the use of the technology for altruistic or medical use, while safeguarding individuals from commercial exploitation.

Treasure in excreta

Phosphorous, a fast depleting natural resource, can be extracted from the unlikeliest avenue; faecal sludge.

Need of phosphorous -

- Presence of phosphorous is essential in soil for crop growth and its shortfall can result in reduction of crop yield.
- But the reserves of phosphate rock, the main source of the element is fast depleting.
- With an annual increase of 2.3 per cent in its demand, phosphorus reserves will most likely get exhausted in another 50 to 100 years.
- Phosphate rocks are concentrated in Morocco, Western Sahara, China, the US, Russia and West Asia. Therefore, most of the world, including India, has to import it. In 2018, Diammonium phosphate constituted 28 per cent of India's fertiliser import.

Phosphorous in human excreta -

- The solid matter that humans excrete is largely organic. It contains carbon, phosphorous and a whole lot of other nutrients. We consume these nutrients in the form of food. Leafy vegetables, for instance, have phosphorus.
- About 11 per cent of phosphorus entering Earth systems is lost in human urine and excreta, but phosphorus and nitrogen in it can be recovered by up to about 90 per cent. If recovered, this could supply 22 per cent of the current global demand for phosphorus.
- In one day, a human being produces 30 g of carbon, 10-12 g of nitrogen (N), 2 g of phosphorus and 3 g of potassium (K) through human excreta, according to the International Water Management Institute, Colombo.

What is being done in India?

- Pilot projects in different parts of the country are attempting to turn human excreta into NPK-rich fertiliser. For instance, in Talcher, Odisha,, FINISH Society set up a Sewage Treatment Plant (STP) in November 2018 for composting purposes.
- In Tamil Nadu's Nilgiri district, a similar project was started in 2018 to use recycled water for agriculture. It also helped treat and reuse faecal sludge as co-compost for farming.

Way forward -

India needs to make policy changes to extract nutrients from faecal sludge, as this will serve the dual purpose of reducing its dependency on imports for phosphorus and improve soil health, thus boosting farmers' income.

Cold Trap

India recognised cold waves as disaster in 2012, but it still does not have an effective action plan to mitigate its impact. This year several deaths have been reported in North India due to bone chilling cold wave.

What caused the unusual freeze?

- An active Western Disturbance affected north and northwest India from December 10 to 14 last year.
- This caused rainfall and snowfall in the Western Himalayan Region (December 10-12) and then in the northern plains (December 11-13) including Punjab, Haryana, Delhi, Uttar Pradesh, western Bihar, northern Rajasthan and northern Madhya Pradesh.

- This brought moisture into the region leading to the formation of a low-lying cloud in the atmosphere, which stopped sunlight from reaching the surface, resulting in cold day conditions (dip in maximum temperatures).
- The absence of the western disturbance winds in subsequent days meant that the clouds could not be dispersed.
- The presence of pollutants in the atmosphere made matters worse. All these factors led to the formation of a high pressure in the atmosphere (anti-cyclone) which lasted till December 30, causing the severe cold day conditions to persist.
- The colder days without enough sunlight led to another phenomenon: the Earth surface did not have enough radiative heat to be released at night, causing even the night temperatures to dip.
- This resulted in cold wave conditions from December 25 in the north and northwestern regions. The unique event of parallel cold days and cold wave conditions made the situation worse.

The issue -

- Unlike most other notified natural disasters, including floods and droughts, NDMA is yet to come up with any detailed guidelines exclusively on cold waves.
- Guidelines are essential for laying down the broad framework under which state governments can prepare their action plans to mitigate the impacts.
- Part of the problem lies in the fact that India has so far looked at cold waves primarily from the perspective of agriculture, or so it seems from the National Disaster Management Plan. Cold wave and frost is a notified calamity for agricultural purposes only.

Way forward -

- Given the trends, NDMA and states need to draw immediate action plans that will equip them with technical and technological know-how.
- Pilot projects in the most vulnerable areas could be the first right step in this direction of mobilising and sensitising local communities.