Pg 6. GS I (Geography)

Water management needs a hydro-social approach

Freshwater resources are under stress, the principal driver being human activities in their various forms

SRIKUMAR CHATTOPADHYAY

The Global Water System Project, which was launched in 2003 as a joint initiative of the Earth System Science Partnership (ESSP) and Global Environmental Change (GEC) programme, epitomises global concern about the human-induced transformation of fresh water and its impact on the earth system and society. The fact is that freshwater resources are under stress, the principal driver being human activities in their various forms.

Fresh water, water valuation

In its fourth assessment report in 2007, the Intergovernmental Panel on Climate Change (IPCC) highlighted the link between societal vulnerability and modifications of water systems. It is globally estimated that the gap between demand for and supply of fresh water may reach up to 40% by 2030 if present practices continue.

The formation of the 2030 Water Resource Group in 2008, at the instance of the World Economic Forum, and the World Bank's promotion of the group's activity since 2018, is in recognition of this problem and to help achieve the Sustainable Development Goal (SDG) on water availability and sanitation for all by 2030 (SDG 6). Formally, it is: "to ensure safe drinking water and sanitation for all, focusing on the sustainable management of water resources, wastewater and ecosystems...." The latest UN World Water Development Report, 2021, titled 'Valuing Water', has laid stress on the proper valuation of water by considering five interrelated perspectives: water sources; water infrastructure; water services; water as an input to production and socio-economic development, and socio-cultural values of water.

Designing a comprehensive mix of divergent views about water (along with ecological and environmental issues) held by stakeholder groups is necessary. In this context, a hydro-social cycle approach provides an appropriate framework. It repositions the natural hydrological cycle in a human-nature interactive structure and considers water and society as part of a historical and relational-dialectical process.

Inter-basin transfer projects

The anthropogenic factors directly influencing a freshwater system are the engineering of river channels, irrigation and other consumptive use of water, widespread land use/land cover change, change in an aquatic habitat, and point and non-point source pollution affecting water quality. The intra- and inter-basin transfer (IBT) of water is a major hydrological intervention to rectify the imbalance in water availability due to naturally prevailing unequal distribution of water resources within a given territory.

There are several IBT initiatives across the world. One recent document indicates that there are 110 water transfer mega projects that have either been executed (34 projects) or being planned/under construction (76 projects) across the world. The National River Linking Project of India is one of those under construction. These projects, if executed, will create artificial water courses that are more than twice the length of the earth's equator and will transfer 1,910 km³ of water annually. They will reengineer the hydrological system with considerable local, regional and global ramifications. Based on a

GETTY IMAGES

multi-country case study analysis, the World Wildlife Fund/World Wide Fund for Nature (2009) has suggested a cautious approach and the necessity to adhere to sustainability principles set out by the World Commission on Dams while taking up IBT projects.

Some of the key assumptions

Recently, inter-basin transfer of water drew attention in India due to a provision made in Budget 2022 for the Ken Betwa river link project which is a part of the National River Linking project (mooted in 1970 and revived in 1999). This decision raises larger questions about hydrological assumptions and the use and the management of freshwater resources in the country. We shall ponder over some of them.

First, the basic premise of IBT is to export water from the surplus basin to a deficit basin. However, there is contestation on the concept of the surplus and deficit basin itself as the exercise is substantially hydrological. Water demand within the donor basin by factoring present and future land use, especially cropping patterns, population growth, urbanisation, industrialisation, socio-economic development and environmental flow are hardly worked out. Besides this, rainfall in many surplus basins has been reported as declining. The status of the surplus basin may alter if these issues are considered.

Second, there is concern about the present capacity utilisation of water resources created in the country. By 2016, India created an irrigation potential for 112 million hectares, but the gross irrigated area was 93 million hectares. There is a 19% gap, which is more in the case of canal irrigation. In 1950-51, canal irrigation used to contribute 40% of net irrigated area, but by 2014-15, the net irrigated area under canal irrigation came down to less than 24%. Ground water irrigation now covers 62.8% of net irrigated area. The average water use efficiency of irrigation projects in India is only 38% against 50%-60% in the case of developed countries.

Agriculture, grey water use

Even at the crop level we consume more water than the global average. Rice and wheat, the two principal crops accounting for more than 75% of agricultural production use 2,850 m³/tonnes and 1,654 m³/tonnes of water, respectively, against the global average of 2,291m³/tonnes and 1,334m³/tonnes in the same order. The agriculture sector uses a little over 90% of total water use in India. And in industrial plants, consumption is 2 times to 3.5 times higher per unit of production of similar plants in other countries. Similarly, the domestic sector experiences a 30% to 40% loss of water due to leakage.

Third, grey water is hardly used in our country. It is estimated that 55% to 75% of domestic water use turns into grey water depending on its nature of use, people's habits, climatic conditions, etc. At present, average water consumption in the domestic sector in urban areas is 135 litres to 196 litres a head a day. Given the size of India's urban population (469 million estimated for 2021), the amount of grey water production can be well imagined. If grey water production in the rural areas is considered it will be a huge amount. The discharge of untreated grey water and industrial effluents into freshwater bodies is cause for concern. The situation will be further complicated if groundwater is affected.

Apart from the inefficient use of water in all sectors, there is also a reduction in natural storage capacity and deterioration in catchment efficiency. The issues are source sustainability, renovation and maintenance of traditional water harvesting structures, grey water management infrastructure, groundwater recharge, increasing water use efficiency, and reuse of water.

Planning ahead

Looking into these issues may not be adequate to address all the problems. Nevertheless, these measures will help to reduce demand supply gap in many places, and the remaining areas of scarcity can be catered to using small-scale projects. The axiom that today's water system is co-evolving and the challenges are mainly management and governance has been globally well accepted. Water projects are politically charged and manifest an interplay of social relations, social power, and technology.

It is important to include less predictable variables, revise binary ways of thinking of 'either or', and involve non-state actors in decision-making processes. A hybrid water management system is necessary, where (along with professionals and policy makers) the individual, a community and society have definite roles in the value chain. The challenge is not to be techno-centric but anthropogenic.

Srikumar Chattopadhyay is ICSSR National Fellow, Gulati Institute of Finance and Taxation, and former Scientist, National Centre for Earth Science Studies, Thiruvananthapuram

Global Water System Project (2003) - joint initiative of the Earth System Science Partnership (ESSP) and Global Environmental Change (GEC) programme talks about concerns about the human-induced transformation of fresh water and its impact.

4th assessment report in 2007, IPCC -link between societal vulnerability and modifications of water systems. Gap between demand for and supply of fresh water may reach up to 40% by 2030. SDG 6 - Water availability and sanitation for all by 2030 (SDG

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Budget 2022 had a provision for the Ken Betwa river link project which is a part of the National River Linking project (mooted in 1970 and revived in 1999). Questions – 1st – Have we considered future use as well? Rainfall in many surplus basins has been declining. 2nd - By 2016, India created an irrigation potential for 112 million hectares, but the gross irrigated area was 93 million hectares. In 1950-51, canal irrigation used to contribute 40% of net irrigated area, but by 2014-15, the net irrigated area under canal irrigation came down to less than 24%. Ground water irrigation now covers 62.8% of net irrigated area. The average water use efficiency of irrigation projects in India is only 38% against 50%-60% in the case of developed countries.

Rice and wheat in India consume more water than world average. The agriculture sector uses a little over 90% of total water use in India. The domestic sector experiences a 30% to 40% loss of water due to leakage. 3rd - grey water is hardly used in our country. 55% to 75% of domestic water use turns into grey water depending on its nature of use, people's habits, climatic conditions, etc. At present, average water consumption in the domestic sector in urban areas is 135 litres to 196 litres a head a day. Discharge of untreated grey water and industrial effluents into freshwater bodies is cause for concern.

Beyond the Writeup: Wastewater management in India

- India generates 1.7 million tonnes of faecal waste a day. Official figures show that **78% of the sewage generated remains untreated** and is disposed of in rivers, groundwater or lakes. The **two main sources of water contamination are sewage and industrial waste.**

- **Only one-third of India's wastewater is currently treated,** leading to the high burden of water-borne diseases. While urban water access is high on average, significant gaps remain across the country, and **wastewater treatment remains stuck at the national average of around 33%.**

Avadi Sewage Treatment Plant: Sustainable off-grid sewage treatment in Chennai: The Tamil Nadu Police Housing Corporation (TNPHC) has successfully constructed an off-grid sewage treatment plant (STP) to improve living conditions in the police housing colony in Avadi, a suburb of Chennai. This sewage treatment plant has not only solved the problem of sewage disposal but also provided a pond of treated water for fishing, vegetable cultivation and recharging of groundwater.

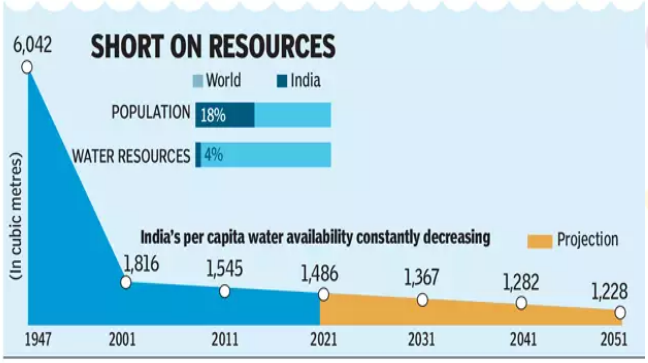
Sewage-fed aquaculture system of Kolkata: A century-old innovation of farmers: Farmers around Kolkata city in India developed a technique of using domestic sewage for fish culture and other agricultural purposes, almost a century ago. This technique is widely used to meet the growing demand for fish. The technique is considered to be unique and is the largest operational system in the world to convert waste into consumable products.

Beyond the Writeup: Draft new National Water Policy

It has been submitted to the Ministry of Jal Shakti. Two **Major Recommendations** of the proposed NWP:

1. Shift focus from endlessly increasing the supply of water towards measures for demand management. This means diversifying our cropping pattern to include less water-intensive crops, in line with regional agroecology. Cities must mandatorily shift all non-potable uses, such as flushing, fire protection, vehicle washing, landscaping, horticulture etc to treated wastewater.

2. Shift in focus within the supply-side also because the country is running out of sites for further construction of large dams, while water tables and groundwater quality are falling in many areas. There are trillions of litres of water stored in big dams, which are not reaching the farmers for whom they are meant.



- Avg annual water by precipitation in India: 4,000 billion cubic metres (BCM)
- Avg annual availability as natural runoff afterevaporation:1,869BCM
- Avg annual 'utilisable' potential by geological & other factors: 1,122 BCM

(Surface water: 690 BCM) **(Ground water:** 432 BCM) **(1 cubic metre** = 1,000 litres)

63% of annual ground water recharge is consumed in India. While net ground water availability (extractable) per year is 393 billion cubic metres (BCM), 249 BCM is drawn for irrigation, domestic and industrial uses

Pg 7. GS I (Society)

Challenges to Tamil Nadu's urban future

The State has to recalibrate its welfare architecture and strengthen urban governance

KALAIYARASAN A.
& PRITI NARAYAN

CHENNAI, VELMURUGAN R.A.G.

In the 2022 urban local body elections held after over 10 years in Tamil Nadu, the Dravida Munnetra Kazhagam (DMK) and its allies won by a sweeping majority. Chief Minister M.K. Stalin attributed this resounding victory to the Dravidian model of governance, a relatively inclusive model that combines high economic growth with social development. While these results are rightfully celebrated, the newly elected representatives must reckon the stakes of this victory and the ongoing and imminent urban governance challenges.

A post-agrarian scenario

A significant factor that has fostered inclusive growth in the State is broad-based urbanisation that is driven not only by metropolitan cities, but also by localised economic processes. Although exact urban population numbers as of 2021 are still awaited, estimates suggest that more than half the State's population now lives in urban areas. It is in recognition of this urban growth and corresponding land use transformations and development needs that Tamil Nadu recently decided to constitute new urban development authorities in Madurai, Coimbatore, Tiruppur and Hosur, along the lines of the Chennai Metropolitan Development Authority. The proportion of the urban population is expected to increase to 67% by 2036, according to some estimates, given that the agricultural sector is shrinking and urban agglomerations are expanding.

Agriculture, considered the backbone of the Indian economy, is now only a residual sector in Tamil Nadu. According to the Situation Assessment Survey of Agricultural Households 2019, only 26% of rural households in the State directly depend on agriculture as the main source of livelihood. In contrast, in Kerala, 33% of rural households identify agriculture as their main source of livelihood, while 61% and 54% do so in "developed States" like Gujarat and Maharashtra, respectively. Therefore, if we conservatively assume that 50% of Tamil Nadu is urbanised, seven out of eight households rely on the non-farm sector in Tamil Nadu. In addition, the survey reveals that a majority of the households that reported agriculture as their main source of income also rely on wage labour to complement their household income. As much as 62% of farm household income comes from wage labour in Tamil Nadu, as against 43% in Gujarat and 45% in Maharashtra. This is perhaps an indicator of how much diversification has occurred even within farm households in the State.

The Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) is a critical source of livelihood, particularly for landless labourers and marginal landowners who together constitute over 92% of all rural households in the State. Therefore, when a village gets designated as urban, landless labourers suffer the most. Change of designation of land from rural to urban might benefit landowners from increased land values. However, this is not the case for those who are landless. Though the main reasons for urban growth in Tamil Nadu are the absorption of villages into the nearest urban jurisdictions and the designation of existing villages as census towns, there has been some resistance from village panchayat heads against classifying their villages as urban, simply so that they can continue to avail of the benefits from MGNREGS.

Labourers displaced from rural and agrarian sectors are not being adequately absorbed by urban sectors. The main driver of employment generation in urban areas is the low-end service sector and construction. The share of those employed in construction in the total workforce has more than doubled between 2005 and 2019, according to the Periodic Labour Force Survey 2019-20; while the proportion of those in manufacturing has been stagnating around 20% for more than a decade. In comparison, Gujarat increased its share of the workforce in manufacturing to 20% in 2019 from 16% in 2004-05.

The quality of jobs available is also notable, given that 63% of all non-agricultural enterprises are informal. The pandemic has only further informalised the labour force and made it harder to access jobs. In other words, the dispossession rate from traditional occupations in the State is higher than the rate at which secure employment is generated in the urban sector. While this dispossession has weakened the caste basis of occupations, it has not ensured secure opportunities in modern sectors.

To its credit, the Tamil Nadu government has announced a pilot urban employment scheme inspired by the MGNREGS. However, this is set to cover select corporation zones, municipalities and town panchayats, and at a mere expense of ₹100 crore, without any support from the Union government. A demand-driven, guarantee-based approach to ensure urban employment is an immediate need for urban centers, especially given the adverse effects of the pandemic on employment.

With more and more people moving to urban centres in search of employment, we are likely to witness urbanisation of poverty as well. The State has to reckon with the need to provide affordable housing, health care, subsidised food and fuel through the public distribution system, among other necessary social measures. This will entail expanding and strengthening the capacities of urban governance structures which are less participatory compared to rural Panchayati Raj institutions. An urban grievance redress mechanism must be set up.

The Union government's role

The Union government has been encroaching policy spaces where State-level protections have been ensured for citizens. For instance, Tamil Nadu has 34 welfare boards for informal workers across multiple sectors. These are the primary mechanisms through which workers receive formal benefits including pensions, maternity benefits, compensation in the event of an accident or death, educational scholarships for children of workers, and skills training. These boards, a vital aspect of the State's inclusive development, are now under threat from the Union government's new labour laws, which seek to "consolidate" and "universalise" provisions for all labourers.

In addition to the ideological biases and centralising tendencies of the Union government, many national policy interventions also suffer from a rural bias (the Jal Jeevan Mission, for instance), which Tamil Nadu's majority urban population will not benefit from. The Union government's aggressive one-size-fits-all strategy does not do justice to State-specific development patterns.

Even as it is losing potential funds from the Union government, the State has not been raising its own resources optimally, through property taxes, for instance. Member of the Economic Advisory Council to the Chief Minister Arvind Subramanian pointed out that despite being the most urbanised State in India, Tamil Nadu's property tax collection is only ₹2,500 crore, much lower than the earnings of less urbanised States like Maharashtra and Karnataka.

In sum, Tamil Nadu needs to take steps to keep up with the rate at which urbanisation is taking place, recalibrate its welfare architecture and strengthen urban governance, while collectively bargaining with the Union government to reclaim its rightful budget shares and policy priorities.

Kalaiyarasan A. is Research Affiliate at South Asia Institute, Harvard University, and Priti Narayan is faculty at the University of British Columbia

TN factors behind inclusive growth: More than half of TN's population now lives in urban areas. Tamil Nadu recently decided to constitute new urban development authorities in Madurai, Coimbatore, Tiruppur and Hosur, along the lines of the Chennai Metropolitan Development Authority. The proportion of the urban population is expected to increase to 67% by 2036. Agriculture is now only a residual sector in Tamil Nadu.

Situation Assessment Survey of Agricultural Households 2019: Only 26% of rural households in the State directly depend on agriculture as the main source of livelihood. In contrast, in Kerala, 33% of rural households identify agriculture as their main source of livelihood, while 61% and 54% do so in "developed States" like Gujarat and Maharashtra, respectively.

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MGNREGA plays an important role for landless labourers and marginal landowners - 92% of all rural households in the State. When a village gets designated as urban, landless labourers suffer the most. Labourers displaced from rural and agrarian sectors are not being adequately absorbed by urban sectors. In TN, the proportion of those working in manufacturing has been stagnating around 20% for more than a decade. Gujarat increased its share of the workforce in manufacturing to 20% in 2019 from 16% in 2004-05. The quality of jobs available is also notable, given that 63% of all nonagricultural enterprises are informal.

Tamil Nadu government has announced a pilot urban employment scheme inspired by the MGNREGS, but only ₹100 crore budget give, without any support from the Union government. There is a need to provide affordable housing, health care, subsidised food and fuel through the public distribution system. This will entail expanding and strengthening the capacities of urban governance structures which are less participatory compared to rural Panchayati Raj institutions.

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Beyond the Writeup: Rapid Urbanization in India

India is the second largest urban system in the world with almost 11% of the total global urban population living in Indian cities. Urban growth is expected to contribute to 73% of the total population increase by 2036.

Urbanisation and Economic Growth:

- Urbanisation could generate millions of jobs for the growing youth population. Productivity increases when rural farmers become urban factory workers, as has happened most spectacularly in China.
- Between 1978 and 2018, China's urbanisation rate jumped up from 18% to 58%. In the process, over 500 million people were lifted out of poverty and the country attained middle income status.
- India's present level of urbanisation (34%) is far lower than China (58%) or even Indonesia (55%).

Negative Impacts:

- Metros like Bengaluru, once known for its expansive lakes, are set to face extreme water stress in the future. Cities are flooded during monsoon and after that we see a period of drought.
- Long term exposure to fine particulate matter (PM2.5) contributed to 42 lakh premature deaths in 2015 in the whole world out of which India and China together shared 52%.
- Water scarcity has often led to riots among common people in slums and undeveloped colonies where population density is very high.
- India spends about $17 per capita annually on urban infrastructure projects, against a global benchmark of $100 and China's $116.
- Poor collection of property taxes. Jaipur and Bengaluru collect only 5-20% of their potential property tax.

Page 7. GS II (Social Justice)

A new vision for old age care

A formal approach to homes for the elderly is an important policy and planning issue for India

TEJAH BALANTRAPU
& SRINIVAS MARMAMULA

As India becomes increasingly urbanised and families break up into smaller units, homes for the elderly have sprung up. The care of elderly people is managed by a set of professionals or voluntary organisations interested in geriatric services. The number of such care homes is rising rapidly in urban and semi-urban India. These homes are either paid for, or offer free or subsidised service. Typically, such homes are run by NGOs, religious or voluntary organisations with support from the government, or by local philanthropists. They provide accommodation, timely care, and a sense of security for their residents. However, the quality of service varies as these homes lack regulatory oversight. Many homes lack clearly established standard operating procedures, and their referral paths to health care are informal. There is an urgent need to understand the quality of life at such institutions, including the impact of these homes on the mental health of their residents.

A rapidly growing section

A formal approach to homes for the elderly is an important policy and planning issue for India. The UN World Population Ageing Report notes that India's ageing population (those aged 60 and above) is projected to increase to nearly 20% by 2050 from about 8% now. By 2050, the percentage of elderly people will increase by 326%, with those aged 80 years and above set to increase by 700%, making them the fastest-growing age group in India. With this future in mind, it is essential that our policy framework and social responses are geared to meet this reality.

A recent set of research papers from Hyderabad focusing on the quality of health in homes for the elderly has some interesting insights. The papers highlight the fact that good intentions and a sense of charity are often inadequate when it comes to addressing the basic health needs of their elderly residents. These papers are outcomes of the Hyderabad Ocular Morbidity in Elderly Study (HOMES) by the L.V. Prasad Eye Institute that was primarily meant to understand the vision needs of elderly residents of such homes. About 30% of the residents who were part of the study (over 1,500 participants from 40 homes) had a vision impairment of some sort, but nearly 90% of this vision impairment could be addressed by simple, relatively low-cost health interventions: issuing better eye glasses or cataract surgery.

The study also found some 'unseen' effects of vision impairment: many were prone to depression. In fact, those with both vision and hearing impairment had a rate of depression that was five times higher than those without. Our homes, buildings and social environment are not built keeping the elderly (or people with disabilities) in mind. As people age, and their motor skills weaken, they are at a greater risk of falling down and hurting themselves. Having an impairment increases this risk. Instead of planning for accessible and elderly-friendly structures that allow them to operate safely, we reduce their mobility. People with functional skills are asked to stay away from daily tasks like cooking, sewing, cleaning, or washing up. This reduces their sociability, their sense of independence and well-being – all leading up to mental health issues and depression.

The state of homes for the elderly today offers us some low-hanging fruit we can address easily: build formal pathways for basic health screening between such homes and public health facilities. This can include screenings for blood sugar, blood pressure, periodic vision and hearing screening, and a simple questionnaire to assess mental health. Such interventions are inexpensive (think of all the motorcycle-operated screenings outside public grounds for morning-walkers) and could go a long way in identifying health issues and offering support. The next step would be to build formal pathways to address any health issues that such screenings identify. Many hospitals (public, NGO-run, and private care) can help.

Public policy support

Crucial though will be the need for robust public policy to support homes for the elderly. Health institutions will also need to offer a comprehensive set of packages that are tailored for the elderly – not piecemeal solutions for diabetes, cardiology or cancer, for example. What happens once care is provided? Homes for the elderly must be guided, again by policy, to make their facilities, buildings and social environment elderly- and disabled-friendly. Design, architecture and civic facilities must be thought from the ground up – and these innovations must be available for all residents, not just those living in expensive ones. There are lessons here for society as a whole, but, as they say, let's take one step at a time.

Tejah Balantrapu is Associate Director, Science, Health Data, and Story-telling , L.V. Prasad Eye Institute; Srinivas Marmamula is Associate Director, Public Health Research and Training, L.V. Prasad Eye Institute

The care of elderly people is managed by a set of professionals or voluntary organisations interested in geriatric services. Typically, such homes are run by NGOs, religious or voluntary organisations with support from the government, or by local philanthropists. Many homes lack clearly established standard operating procedures, and their referral paths to health care are informal.

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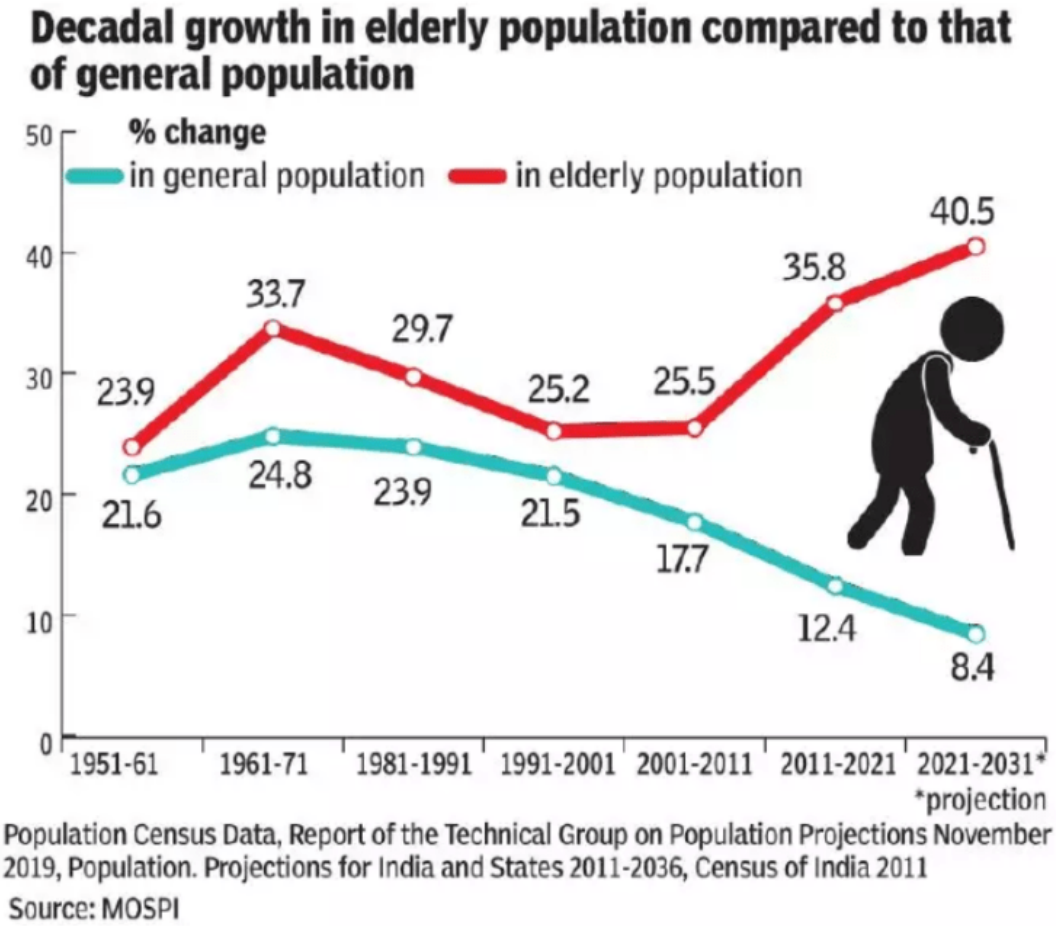
People with functional skills are asked to stay away from daily tasks like cooking, sewing, cleaning, or washing up. This reduces their sociability, their sense of independence and well-being — all leading up to mental health issues and depression. Homes for the elderly must be guided policy to make their facilities, buildings and social environment elderlyand disabled-friendly.

Beyond the Writeup: Elderly in India



WHO: India's elderly population will rise from its current 60 million to over 227 million by 2050. Accordingly, the old-age dependency ratio will rise from 9.8 to 20.3. By the UN population projections, the headcount of people aged 65 and above, which constituted 703 million people in 2019, will double to 1.5 billion in 2050, thus accounting for 16% of the world population.

Government schemes and initiatives:

In 2011, the government introduced a National Policy for Older Persons. The key objectives of the policy are,

- To encourage individuals to make provisions for their own and their spouse during old age, to encourage families to take care of their older family members, to bring non-governmental organizations for caring for older persons, to provide healthcare facilities to the elderly

Indira Gandhi National Old Age Pension Scheme (IGNOAPS) – The scheme provide an

old-age pension for persons above the age of 60 years and belongs to the BPL category.

- **Rashtriya Vayoshri Yojana (RVY)** – The scheme provides Physical Aids and Assisted-living Devices for Senior citizens belonging to the BPL category.
- **Pradhan Mantri Vaya Vandana Yojana** – The scheme aims to provide social security during old age. It also protects elderly persons aged 60 and above against a future fall in their interest income due to uncertain market conditions.
- **Senior care Ageing Growth Engine (SAGE) Initiative and SAGE portal**– It aims to help startups interested in providing services for elderly care.

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(Text & Context. GS III (Infrastructure)

Reviving the inland water transport system for the Northeast

How is the transport of cargo services through waterways in Bangladesh possible?

RAHUL KARMARKAR

The story so far: A month after setting sail on the Ganga from Patna, the MV Lal Bahadur Shastri carrying 200 metric tonnes of food grains for the Food Corporation of India (FCI), docked at Guwahati's Pandu port on the southern bank of the Brahmaputra on March 6. The occasion is believed to have taken inland water transport, on two of India's largest river systems, to the future.

Why is a Ganga-Brahmaputra cargo vessel in focus?

There is nothing unusual about a cargo vessel setting sail from or docking at any river port. But a host of VIPs lined up to receive MV Lal Bahadur Shastri, a cargo vessel operated by the IWAI (Inland Waterways Authority of India), at Guwahati's Pandu port on March 6. They included Union Minister of Ports, Shipping and Waterways, Sarbananda Sonowal, Assam Chief Minister Himanta Biswa Sarma, Guwahati MP Queen Oja and IWAI chairperson Sanjay Bandopadhyay.

The vessel had on February 5 started sailing from Patna on National Waterway-1 (NW1, river Ganga).

It passed through Bhagalpur, Manihari, Sahibganj, Farakka, Tribeni, Kolkata, Haldia, Hemnagar in India, Khulna, Narayanganj, Sirajganj and Chilmari in Bangladesh and again to India on National Waterway-2 (NW2, river Brahmaputra) through Dhubri and Jogighopa covering 2,350 km. The docking of the vessel carrying 200 MT of food grains for the FCI has rekindled hope for the inland water transport system which the landlocked northeast depended on heavily before India's independence in 1947.

Is this the first such shipping of cargo?

The shipping of cargo from Patna to Pandu via Bangladesh was FCI's pilot project. A similar experiment was carried out in 2018 when two 1,000-tonne barges carrying 1,233 tonnes of bagged fly ash travelled 2,085 km from Bihar's Kahalgaon to Pandu for more than a month. A private firm had procured the fly ash from the National Thermal Power Corporation's plant in Bihar for use in its cement factories in Assam and Meghalaya. But the FCI cargo is expected to lead to regular services between NW1 and NW2 "heralding a new age of inland water transport" for the northeast. According to the IWAI, the process has already started with a 252 MT cargo destined for eastern Assam's Numaligarh bio-refinery having reached central Assam's Silghat from Haldia in West Bengal on February 15. Another vessel, MV Ram Prasad Bismil with two barges named Kalpana Chawla and APJ Abdul Kalam started its voyage from Haldia on February 17 and is expected to reach Pandu soon.

No more landlock: The MV Lal Bahadur Shastri. • SPECIAL ARRANGEMENT

How would regular inland water service impact the northeast?

Around Independence, Assam's per capita income was the highest in the country primarily because of access for its tea, timber, coal and oil industries to seaports on the Bay of Bengal via the Brahmaputra and the Barak River (southern Assam) systems. Ferry services continued sporadically after 1947 but stopped after the 1965 war with Pakistan, as Bangladesh used to be East Pakistan then.

The scenario changed after the river routes were cut off and rail and road through the "Chicken's Neck", a narrow strip in West Bengal, became costlier alternatives. "The start of cargo movement through the Indo-Bangladesh Protocol (IBP) route is going to provide the business community a viable, economic and ecological alternative. Seamless cargo transportation has been a necessity for the northeast," Mr Sonowal said.

India has invested 80% of ₹305.84 crore to improve the navigability of the two stretches of the IBP (Indo-Bangladesh Protocol) routes

He attributed the rejuvenation of the historical trade routes via Bangladesh to the PM Gati Shakti initiative envisaged to slowly convert the northeast into a connectivity hub and ramp up the swift movement of cargo on the Brahmaputra, which meets the Ganga in Bangladesh. These rivers are called Jamuna and Padma in that country.

How did the water cargo service through Bangladesh come about?

The resumption of cargo transport service through the waterways in Bangladesh has come at a cost since the Protocol on Inland Water Transit and Trade was signed between the two countries.

India has invested 80% of ₹305.84 crore to improve the navigability of the two stretches of the IBP (Indo-Bangladesh Protocol) routes – Sirajganj-Daikhowa and Ashuganj-Zakiganj in Bangladesh.

The seven-year dredging project on these two stretches till 2026 is expected to yield seamless navigation to the north-eastern region.

IWAI officials said the distance between NW1 and NW2 will reduce by almost 1,000 km once the IBP routes are cleared for navigation.

The Government has also undertaken the Jal Marg Vikas project with an investment of ₹4,600-crore to augment the capacity of NW1 for sustainable movement of vessels weighing up to 2,000 tonnes.

A few issues remain, though. Sailors who made the cargo trips possible have had difficulties steering clear of fishing nets and angry fishermen in Bangladesh.

These hiccups will get sorted out with time, officials say.

MV Lal Bahadur Shastri had on February 5 started sailing from Patna on National Waterway-1. It passed through Bhagalpur, Manihari, Sahibganj, Farakka, Tribeni, Kolkata, Haldia, Hemnagar in India, Khulna, Narayanganj, Sirajganj and Chilmari in Bangladesh and again to India on National Waterway-2 (NW2, river Brahmaputra) through Dhubri and Jogighopa covering 2,350 km.

The shipping of cargo from Patna to Pandu via Bangladesh was FCI's pilot project. Similar experiment was carried out in 2018. IWAI: Process has already started with a 252 MT cargo destined for eastern Assam's Numaligarh bio-refinery having reached central Assam's Silghat from Haldia in West Bengal on February 15.

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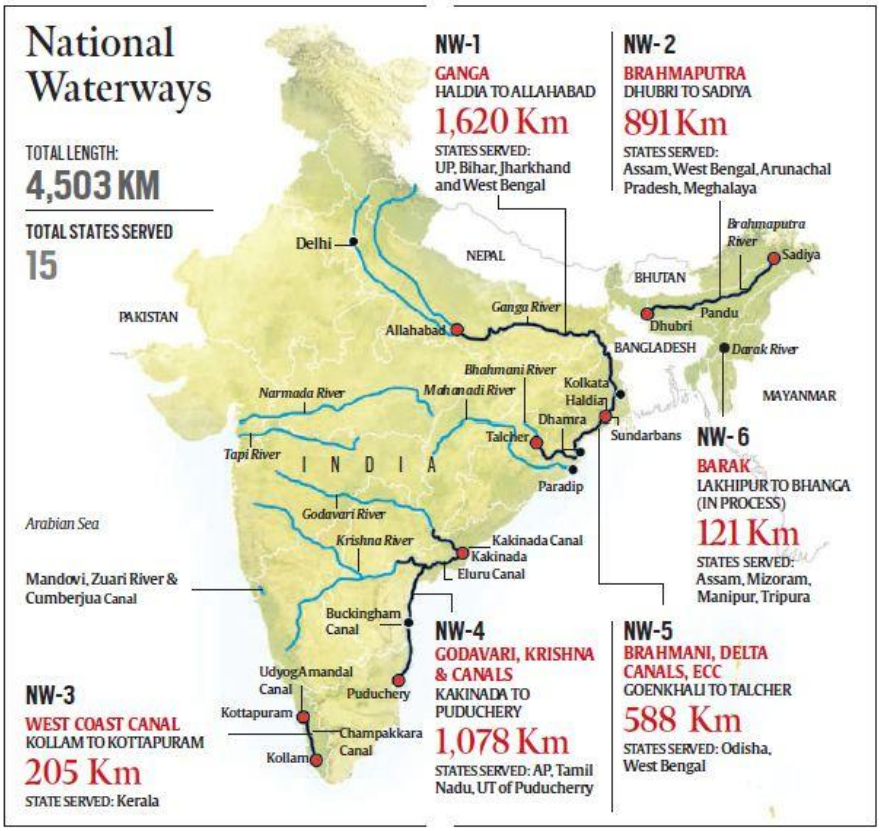


Beyond the Writeup: Inland water transport in India

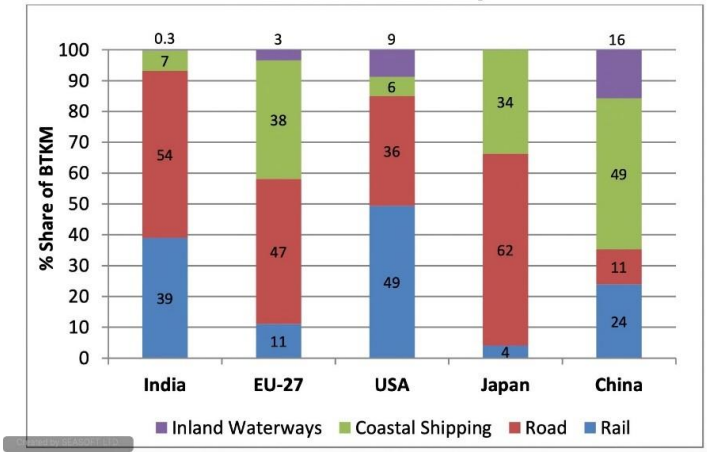
- India has over 5,000 km of navigable inland waterways under development. These not only form a competitive alternative mode of transportation with lower operating cost (30% lower than the railways and 60% lower than road) but also a sustainable mode in freight logistics and passenger transport. To harness the potential of IWT, **Inland Waterways Authority of India** (IWAI) was established in 1986, and since has been working towards development and regulation of inland waterways

- In order to increase the significance of Inland Waterways and to improve their efficiency, the Government has identified few important Waterways, which are given the status of **National Waterways.** From only five waterways recognised as National Waterways (NWs), the government of India notified 106 additional waterways as National Waterways, by the **National Waterways Act, 2016.** As a result, the total cargo volume transported through inland waterways in India reached 73.6 million tons per annum (MTPA) in 2019-20 and has grown at a CAGR of 19 per cent over the last five years.

- Rivers in south India are seasonal and are not much suited for navigation: However, the **deltaic areas** of the Godavari, Krishna, Mahanadi, lower reaches of the Narmada, Tapi serve as waterways.

- There are some **navigable canals** also, which serve as inland waterways: Buckingham Canal in Andhra Pradesh and Tamil Nadu is one such canal, which provides water transport for a distance of 413km. The other navigable canals are Son Canal, Odisha Canal, Damodar Canal.

Figure 1: Comparison of Modal Mix of Domestic Freight Transport across Different Countries (in Percentage Share of Billion Tonne Kilometres)

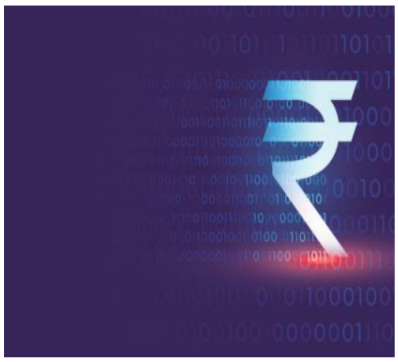


Text & Context. GS III (Banking)

UPI123Pay: Payment solution for feature phone users

What is the latest RBI initiative 'UPI123Pay'? How will it facilitate financial transactions without internet connectivity?

ISHAN PATRA



The story so far: On March 8, the Reserve Bank of India launched a new Unified Payments Interface (UPI) payments solution for feature phone users dubbed 'UPI123Pay'. UPI, which was introduced in 2016, has become one of the most used digital payments platforms in the country. The volume of UPI transactions has already reached ₹76 lakh crore in the current year, compared to ₹41 lakh crore in FY21 , RBI Governor Shaktikanta Das said. However, at present, efficient access to UPI is available largely via smartphones, the Central bank noted.

How does the new solution work?

The new UPI-based service is designed to bring the digital payments platform closer to a significant number of feature phone mobile subscribers in the country, which is estimated to be more than 40 crore. UPI123Pay will materially improve the options for such users to access UPI, who could earlier access the digital transactions platform through the USSD-based process, using the short code of *99#, which according to RBI is not popular. The USSD-based process is considered cumbersome, with users required to send multiple messages and charged for the same, and not supported by all mobile service providers, T Rabi Shankar, RBI Deputy Governor, noted.

With the UPI123Pay, feature phone users will be required to go through an onboarding process where they have to link their bank account to their feature phone and then set a UPI PIN using their debit card for authenticating transactions. Once they have completed this initial process, users will be able to use the new UPI facility for person-to-person as well as merchant transactions, among others, through one of the four distinct payment options that don't require an internet connection.

"The launch of UPI123Pay makes facilities under UPI accessible to that section of society which was so far been excluded from the digital payments landscape. In that way, it is promoting great amount of financial inclusion in our economy," Mr. Das said.

How will users make payments without internet?

The new UPI payments system offers users four options to make payments without internet connectivity: Interactive Voice Response (IVR), app-based functionality, missed call facility and proximity sound-based payments. Using the IVR option, users would be required to initiate a secured call from their feature phones to a predetermined IVR number and complete UPI on-boarding formalities to be able to start making financial transactions like money transfer, mobile recharge, EMI repayment, balance check, among others.

The missed call facility will allow users to access their bank account and perform routine transactions such as receiving, transferring funds, regular purchases, bill payments, etc., by giving a missed call on the number displayed at the merchant outlet. The customer will receive an incoming call to authenticate the transaction by entering UPI PIN.

They could also install an app on their feature phone through which several UPI functions, available on smartphones, will be available on their feature phone, except scan and pay feature which is currently not available.

Finally, they could utilise the proximity sound-based payments option, which uses sound waves to enable contactless, offline, and proximity data communication on any device.

Do other countries have something similar?

Mobile payment systems that do not rely on internet connectivity like the ones based on USSD or SMS technology were introduced many years ago and are still being used in some developing countries.

In fact, one of the major mobile payment systems globally was introduced by Vodafone's Kenyan associate, Safaricom in 2007. M-PESA, which is Africa's leading mobile money service, operates across the Democratic Republic of Congo, Egypt, Ghana, Kenya, Lesotho, Mozambique and Tanzania, with 51 million customers making over $314 billion in transactions per year through the service, according to Vodafone.

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Beyond the Writeup: UPI

UPI is currently the biggest among the National Payments Corporation of India (NPCI) operated systems including National Automated Clearing House (NACH), Immediate Payment Service (IMPS), Aadhaar enabled Payment System (AePS), Bharat Bill Payment System (BBPS), RuPay etc. As part of an agreement, India's UPI will be linked to Singapore's PayNow. NPCI launched UPI with 21 member banks in 2016. India's digital payments industry is likely to grow from Rs. 2,153 trillion at 27% Compounded Annual Growth Rate (CAGR) to Rs. 7,092 trillion by 2025.

Challenges: The threat of cybercrime in the global banking and financial services industry has increased amid the coronavirus pandemic. E.g. Malicious Software Cerberus. Fraudulent claims, chargebacks, fake buyer accounts, promotion/coupon abuse, account takeover, identity theft, card detail theft and triangulation frauds are emerging as challenges.

National Payments Corporation of India: NPCI, an umbrella organisation for operating retail payments and settlement systems in India, is an initiative of RBI and Indian Banks' Association (IBA) under the provisions of the Payment and Settlement Systems Act, 2007. It is a "Not for Profit" Company under the provisions of Section 25 of Companies Act 1956 (now Section 8 of Companies Act 2013), with an intention to provide infrastructure to the entire Banking system in India for physical as well as electronic payment and settlement systems.

Mains Practice Questions

1. Examine National Water Policy of India and discuss its potential in promoting the water use efficiency in agriculture. (250 words; 15 marks)

2. What are the challenges involved in developing the inland water transport in India and its advantages? What steps need to be taken to tap its potential? (250 words; 15 marks)

Q1 – GS I (Geography)
Q2 – GS III (Infrastructure)