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Master Plan

1. 1950s → Archaic concept → Urbanization ?
   → Sustainable development

   - Sanitation
   - Management of waste
   - Water bodies managed

   } → Short term bye laws
   Short term scheme

2. Spatial Plan (Space or how the land use of the City)

3. ULBs

The master plan and the slaves

The master plan and the slaves

Amitabh Kant, India's G20 Sherpa, stressed at a recent Urban-20 City Sherpas' meet that a master plan is crucial for any city to manage urbanisation. There have been similar calls in the past. Are master plans really a panacea?

A master plan is an instrument of governance for urban local bodies (ULBs). It has recently received extensive attention in national policy discussions, and rightly so. The Ministry of Housing and Urban Affairs has recommended that master plans in cities should be revisited for the improved governance of cities. The National Mission for Clean Ganga has been advocating such a step to protect urban water bodies; yet, the idea has not advanced beyond exhortations. Why? Much needs to be understood, for the scholarship on master plans is puzzlingly shallow.

Statutory and spatial

The renewed focus on the concept of a master plan is to be welcomed. But few acknowledge its distinct status as the sole statutory instrument of governance. Many plans to improve sanitation, infrastructure and social inclusion are dependent on particular programmes, but these are at best ephemeral and incremental as they are centrally funded. The discourse tends to blur this distinction and, as a result, obscures the significance of the master plan as the instrument of governance. A further complication is that the master plan is an archaic concept whose sales-pitch is more spectacular than its performance. There are at least four reasons for this.

First, the master plan instrument is dated. The concept, configuration and rationalities of this instrument as well as the institutional structures surrounding it are conceived by template legislations drafted in the 1950s. These were then replicated by States as laws of town planning. These conceptions do not accommodate later sensibilities, such as the imperatives of environmental protection that can be linked to 1974 when the Water Act was enacted. While this is a central legislation focused on industrial pollution, the legal and institutional frame of the master plan remained unchanged with its archaic conceptions of land development for urban service rationalities.

Srinivas Chokkakula

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Master Plans may not be the panacea. India must reimagine spatial planning to address the growing and emerging governance challenges of urbanisation

Second, a master plan is simply a spatial plan of land-use allocation supported by bye-laws and development control regulations. Thus, it essentially embodies a spatial vision for cities.

Third, this spatial vision is at the core of institutional structures, cultures and practices of ULBs. The edifice of urban governance is built around this spatial vision and provision of urban services. The ULBs are cultivated and shaped by the agenda of regulating spatial growth and remain slaves to these ideas and conceptions. As a result, the demands imposed on them by the new visions (of programmatic plans) suffer. These incapacities and tensions often manifest in a multitude of specialist institutional responses - the most recent being outsourced project management units. These responses are often driven by short-term goals and political expediencies. Ideally, these arrangements should lead, but do not necessarily, to the transformation of urban institutional cultures.

Fourth, the statutory and spatial nature of the master plan can pose constraints on the programmatic plans, especially the spatially associated ones such as the plans for protection of water bodies. Most water-body related projects negotiate the challenges of encroachment of floodplains as encroachments in ex-post. So, should the instrument of master plan be reimagined to accommodate these emerging demands and sensibilities of urban governance?

Close to 65% of India's urban settlements do not have master plans, according to NITI Aayog. A quick perusal of related laws reveals that there is no set criteria for mandating a spatial plan to regulate urban growth. The approach is ad-hoc, to be notified by State governments. For a variety of reasons – primarily lack of human and financial resources – such notifications of mandatory spatial plans are delayed. Town planners end up dealing with most urban governance challenges as fait accompli. The encroachments on floodplains are an example.

Reimagine spatial planning

Therefore, urban planning in India must be reimagined urgently. How? First, we must acknowledge that the master plan instrument may be limited by its archaic conceptions and entrenched institutional cultures. To assume that it would serve the expanded scope of urban governance is far-fetched and can be self-defeating. Second, there is no need to go far for lessons to do this. Indian cities offer enough experiences to learn from. For instance, many States have tried supplementing the inadequacies of the master plan with innovative bye-laws. Much of this experimental and experiential understanding is, however, dispersed, and is restricted to the domain of praxis. The scholarship has not done well to translate it to inform policy-thinking. Third, the incapacities in urban planning and governance highlighted by the 2021 report of the NITI Aayog must receive priority. And it should begin with an elevated attention to the spatial (town) planning profession and education.

The era of planetary urbanisation brings spatial planning into sharp focus, and calls for reimaging the spatial planning framework in India. Recent moves such as Gati Shakti and Model Rural Transformation Acts are a reflection of this growing demand. But these are too feeble, remote and limited. The Centre must work with the States to reconsider the spatial planning framework in India.

GS Paper II- Page 7

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1st

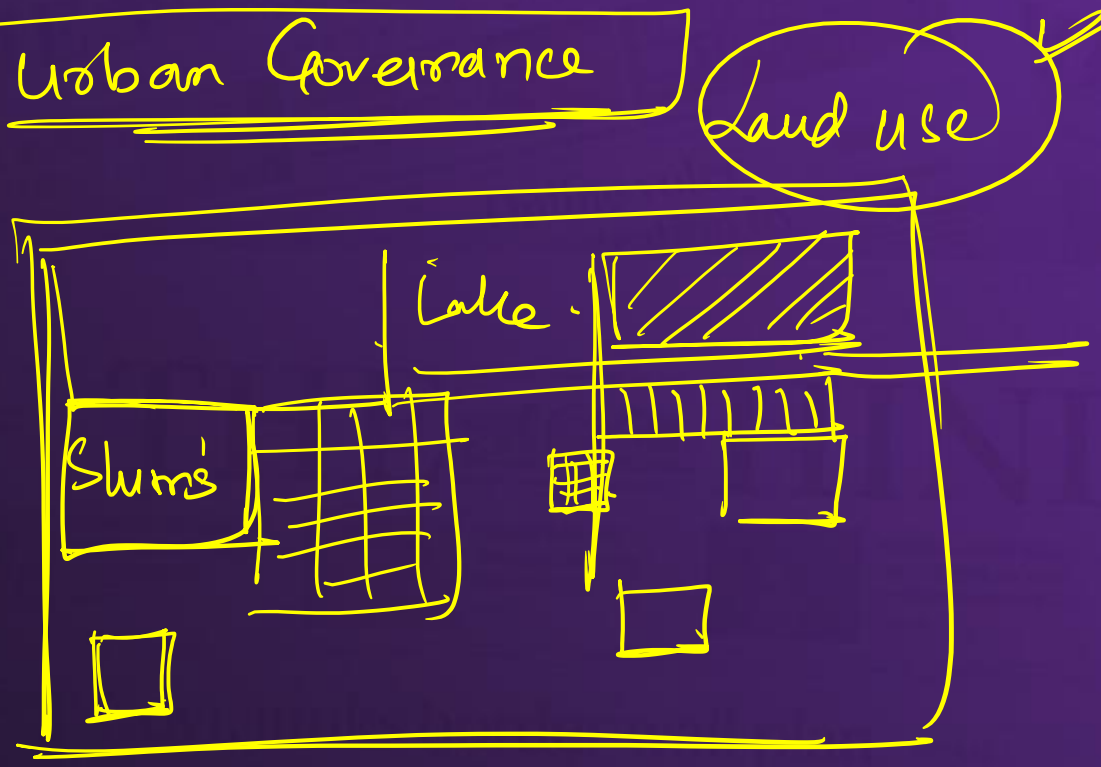
Master Plan ?

Centre → State → ULBs

Planned development

Master Plan for Urbanization

Urban Governance



The Master Plan

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Reimagine spatial planning

Way forward

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Genome-sequencing screening for babies unlocks blueprint of health

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Newborn screening programmes are now in vogue in different countries, and have been deployed in India as well. They are based on the fact that an early diagnosis could allow use of effective treatments and save an infant from death or disability; in the U.S., healthcare workers screen for around 30 diseases, including treatable ones

Vinod Scaria
Sridhar Sivasubbu

Imagine a situation where a severely ill newborn is in the ICU and a fast, effective diagnosis could enable effective treatment – a scenario that plays out practically in every neonatal ICU on a regular basis. The situation is complicated when the disease affecting the baby is not common and known to many clinicians, and could be buried in medical textbooks or databases.

There are 6,000 or so genetic diseases, of which around 3,500 diseases have been documented, and a much smaller number have had their molecular and/or genetic defects mapped.

A significant number of diseases in the population are also treatable but are nevertheless prevalent.

Newborn screening programmes now in vogue in different countries, and which have been deployed in some states in India as well, are based on the fact that an early diagnosis could allow us to use effective treatments and save an infant from death or disability.

For example, in the U.S., healthcare workers screen for around 30 diseases, including treatable ones of the blood, the endocrine system, and metabolism.

Then again, in many cases, they lose the window of opportunity because standard newborn-screening programmes are limited on the menu of genetic tests they cover.

Thanks to recent advances, genomic-sequencing is now available, accessible, and in many ways more affordable. It also offers a much better coverage of genetic diseases to screen for. Importantly, this could help healthcare workers make a fast and effective diagnosis, helped by the fact that sequencing is also a 'single' test, versus the multitude of tests performed as part of routine newborn-screening.

Why is it important?

The rarity of many genetic diseases, the narrow window of opportunity, the long diagnostic paths, and the unfortunate deaths of ill babies makes it very difficult to document and understand these diseases. However, population-scale genome-sequencing efforts have provided insights into the prevalence of many of these diseases in an unbiased manner.

Discoveries in the past three decades have also allowed a small but significant number of diseases to be treated or managed effectively. This in turn opened up a newer opportunity: to diagnose and treat genetic diseases through genomic-sequencing in newborn babies, especially sick ones.

A technician prepares to sequence genetic material at a research facility. NCI/UNSPLASH

Institute, led by Stephen Kingsmore, earlier showed that whole-genome sequencing could provide a much higher number of positive cases with a diagnosis, around 40% (compared with standard genetic tests at 10%), with 26% of the diagnosed children benefiting from reduced severity of illness due to the rapid diagnosis and, consequently, a significant reduction in the cost of treatments.

Another report a year later from researchers in the U.K. also reported numbers consistent with previous reports.

Why screen healthy babies?

The benefits of sequencing may not just be limited to babies who are unwell. The BabySeq project funded by the U.S. National Institutes of Health is one of the most comprehensive studies to evaluate sequencing of newborns for routine newborn care.

One recent study conducted by the project, and published in the *American Journal of Human Genetics*, evaluated the sequences of 127 apparently healthy and 32 sick infants. It found that just over 10% of infants had an unanticipated risk of genetic diseases. When these infants were followed up for three to five years, sequences revealed the causes of disease in three infants; in the remaining 14, a better picture of the risk made way for better medical surveillance.

The sequencing also warranted additional at-risk family members of 13 infants to have their genes sequenced. Three of them benefited from subsequent

> As the vast potential of rapid newborn whole-genome sequencing unfolds, we stand at a crossroads of hope and introspection. There is no doubt that this technology will help clinicians detect genetic disorders

Another recent study, published in *JAMA Network Open*, surveyed over 200 genetic experts. Most of them firmly believed that sequencing babies should be part of routine care.

So it is not surprising that the U.K. National Health Services recently launched a nationwide programme to sequence 100,000 sick babies.

Need for speed

The fight for who can sequence the fastest started with the first Guinness World Records entry: in 26 hours, by Dr. Kingsmore & co., a mark his team broke in 2018 for a time of 19.5 hours. In 2021, Euan Ashley and team got there in just over 5 hours and 2 minutes

Records apart, a large study with more than 100 children with different disease complexities, and published in 2019, suggested a median time for sequencing, clinical interpretation and reporting of just over 20 hours, suggesting the approach could have far-reaching impact in clinical settings.

With technological advances, including better AI-based tools to assist clinical become a diagnostic mainstay for unwell infants in clinics.

Ethics and hope

Newborn whole genome sequencing presents multiple ethical challenges. First: the issue of disclosing and managing incidental and secondary findings raises concerns about privacy and the psychological impact on families. Updated recommendations by the American College of Medical Genetics and Genomics regarding secondary findings could help deal with incidental findings.

The equitable distribution of benefits and burdens associated with accessing and utilising this technology also invoke issues of justice and fairness .

As the vast potential of rapid newborn whole-genome sequencing unfolds, we stand at a crossroads of hope and introspection. There is no doubt that this technology will help clinicians with the means to detect rare genetic disorders, anticipate susceptibility to disease, and give them the evidence required to prescribe better treatments and shape a healthier future. Yet we must also tread carefully, considering the delicate balance between benefits and harm.

If we do, then it may not be far-fetched to imagine that rapid whole-genome sequencing will be the right of every child in the years to come.

The authors are scientists at the CSIR Institute of Genomics and Integrative Biology. All opinions expressed here are personal.

(This article is part of a fortnightly column exploring contemporary concepts

THE GIST

Thanks to recent advances, genomic sequencing is now available, accessible, and in many ways more affordable. It also offers a much better coverage of genetic diseases to screen for. Importantly, this could help healthcare workers make a fast and effective diagnosis, helped by the fact that sequencing is also a 'single' test, versus the multitude of tests performed as part of routine newborn-screening

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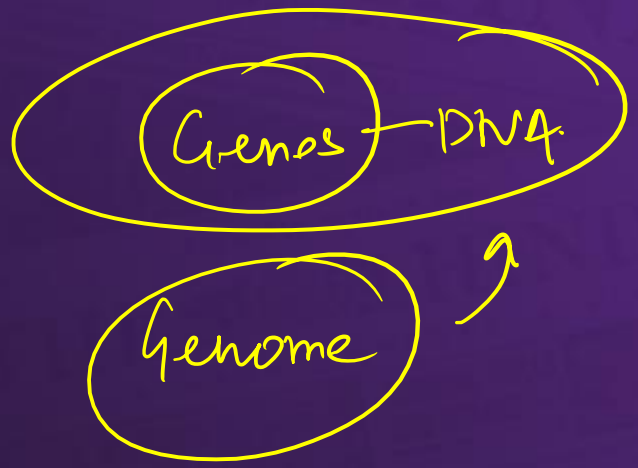
Genetic diseases



Genetic Diseases

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- Newborn screening programmes now in vogue in different countries, and which have been deployed in some states in India as well, are based on the fact that an early diagnosis could allow us to use effective treatments and save an infant from death or disability.

- For example, in the U.S., healthcare workers screen for around 30 diseases, including treatable ones of the blood, the endocrine system, and metabolism. Then again, in many cases, they lose the window of opportunity because standard newborn-screening programmes are limited on the menu of genetic tests they cover.

The Answer

- Thanks to recent advances, genomic-sequencing is now available, accessible, and in many ways more affordable.

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- Discoveries in the past three decades have also allowed a small but significant number of diseases to be treated or managed effectively. This in turn opened up a newer opportunity: to diagnose and treat genetic diseases through genomic-sequencing in newborn babies, especially sick ones

Challenges

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Why has the IMF's view on the crypto market in Latin America changed?

ISTOCKPHOTO

Why has the IMF's view on the crypto market in Latin America changed?

What was the initial stance of the International Monetary Fund on crypto? Why is Latin America's cryptocurrency market important? How has El Salvador's adoption of Bitcoin panned out? What are blockchain-based central bank digital currencies?

Sahana Venugopal

The story so far:

On June 22, the International Monetary Fund (IMF) issued a statement on the use of cryptocurrency in the Latin American and Caribbean market, and about the rising interest in blockchain-based central bank digital currencies (CBDCs). The global monetary authority ended its statement noting that a ban on crypto "may not be effective in the long run" in the region. The international organisation's change in stance on crypto in the LatAm market has raised eyebrows everywhere.

Why is Latin America's crypto economy so significant?

Countries like Argentina, Chile, and Columbia have experienced devaluation of their currency against the U.S. dollar. To preserve the value of their savings, some residents have explored converting their funds to U.S. dollars. However, there are legal restrictions controlling this. Others have chosen to convert their assets to stablecoins – cryptocurrencies designed to reflect the value of fiat currencies such as the U.S dollar. Brazil, Argentina, Colombia, and Ecuador are among the top 20 in Chainalysis' 2022 Global Crypto Adoption Index.

Separately, a number of central banks in the Latin American market are considering CBDCs, meaning that more people could soon be exposed to blockchain-based infrastructure.

Why does El Salvador stand out among crypto economies?

El Salvador is the first country in the world to adopt Bitcoin – the largest cryptocurrency by market capitalisation – as its legal tender. The country with a population of 6.5 million adopted Bitcoin on September 7, 2021 under the leadership of President Nayib Bukele, who is an ardent crypto supporter. He has since bought over 2,000 BTC and continued to buy even as the crypto market suffered crashes, joking about getting the asset for cheap. El Salvador uses a digital wallet known as Chivo to regulate users' crypto transactions. However, there have been complaints about the wallet causing funds to disappear and enabling identity fraud.

Bitcoin reached an all-time high of over $67,000 in November 2021. During this time, Bukele made ambitious plans to issue Bitcoin bonds, build a 'Bitcoin City' and start the volcanic mining of Bitcoin. However, these plans were largely put on hold as Bitcoin suffered multiple crashes through 2022 and the Bukele administration turned its focus to cracking down on gang activity. Around 2% of its adult population was arrested during this process, reported CNN.

On November 17, 2022, Bukele said that he would be buying Bitcoin every day from November 18. And as on June 29, the country's Bitcoin investment value is down 26.3% in total, as per the Nayib Bukele online portfolio tracker. El Salvador's president also predicted that Bitcoin would reach a value of $1,00,000 by the end of 2022. But the asset has not even come close to its previous high. As on June 29, Bitcoin is worth a little over $30,000.

How did the IMF react to El Salvador's Bitcoin adoption?

The IMF said it was against El Salvador's move, citing fiscal risks and consumer protection issues. According to its statement, IMF's executive directors "urged the authorities to narrow the scope of the Bitcoin law by removing Bitcoin's legal tender status." They were further concerned by Bukele's Bitcoin-backed bonds idea. El Salvador was also told that its adoption of Bitcoin might affect its application for a loan of $1.3 billion, reported *Bloomberg* in 2022. This is why the IMF's latest blog post on crypto and CBDC use in Latin America and the Caribbean came as a surprise to many. "While a few countries have completely banned crypto assets given their risks, this approach may not be effective in the long run," said the post, going on to add that the Latin America and Caribbean region should improve the financial infrastructure and lack of support which drove users to crypto in the first place. The post also called for regulation of cryptocurrency and recording crypto transactions for transparency.

What is the difference between cryptocurrency and CBDCs?

Cryptocurrencies and CBDCs are both blockchain-based digital currencies. However, while cryptocurrencies are generally run by private companies or individuals, a CBDC is controlled and tracked by a country's central bank and corresponds to that country's fiat currency.

Bitcoin's price may vary by hundreds or even thousands of dollars in a short period of time, and its founder is a mystery. On the other hand, a CBDC such as the eNaira, issued by the Central Bank of Nigeria, would (ideally) be worth as much as its physical counterpart. While investors often buy large quantities of Bitcoin or other cryptocurrencies and hold them in the hope of making a profit, this doesn't make sense in the case of CBDCs as they are not meant to be investment vehicles.

China's government, meanwhile, has energetically promoted its digital renminbi (e-RMB). Transactions with its CBDC crossed $13.9 billion last year. China has however banned crypto mining and unregulated virtual assets in the country, prompting a large section of the mining population to flee to other countries. The Bahamas in the Caribbean was one of the first countries to officially introduce its Sand Dollar CBDC.

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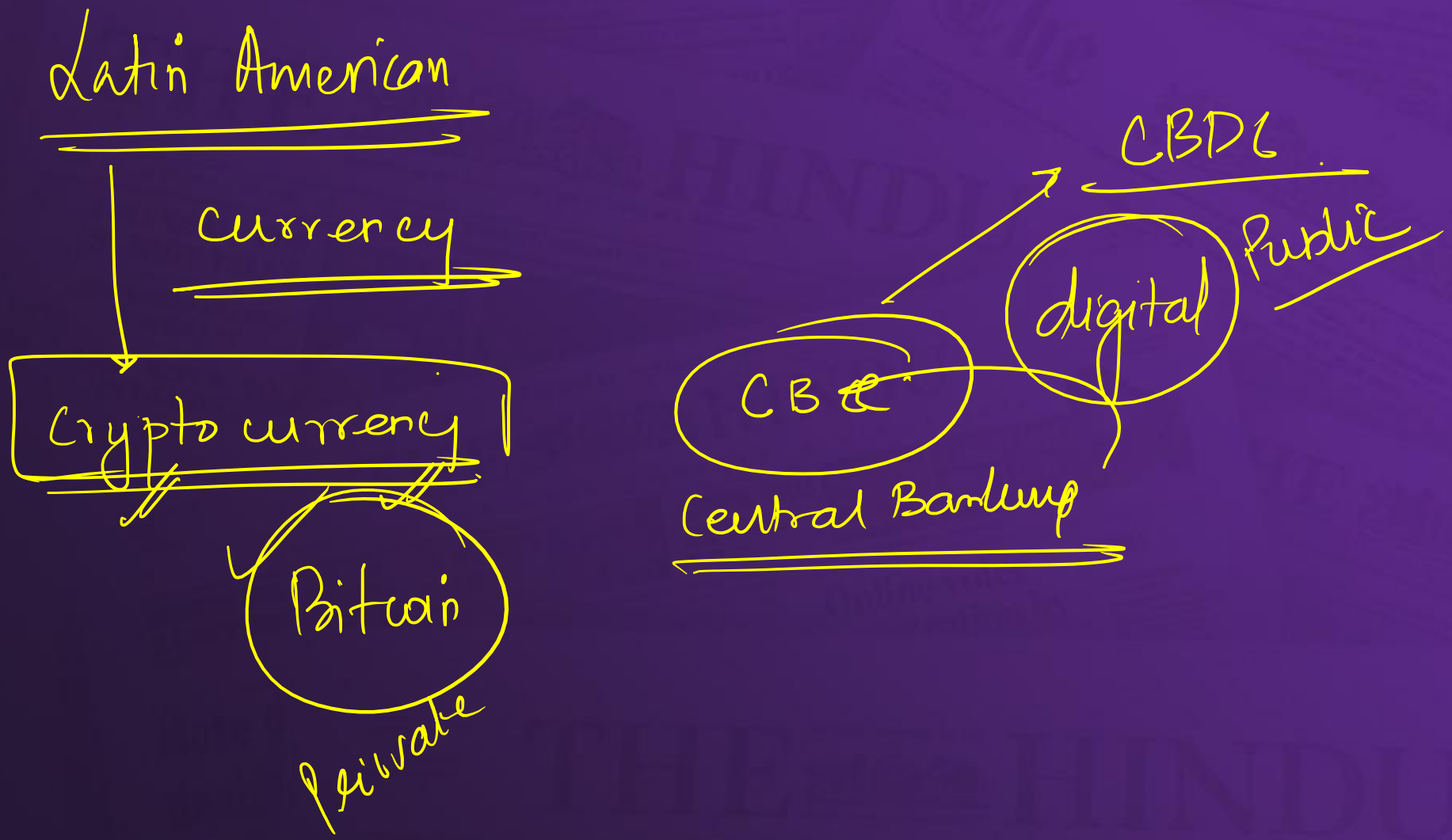
Latin American
Currency
Crypto currency
Bitcoin
Private
CBDC
digital
Public
CBDC
Central Banking

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El Salvador Case

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The U-turn

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Prelims Bytes

‘Work apace on India, Myanmar, Thailand highway’

- Around 70% of the work on the India-Myanmar- Thailand Trilateral Highway has been completed, Union Minister Nitin Gadkari has said.

- India, Thailand and Myanmar are working on a 1,400-km-long highway that links the country with Southeast Asia by land to give a boost to trade, business, health, education and tourism ties among the three countries.

- The highway will connect Moreh in Manipur, India, with Mae Sot in Thailand via Myanmar.

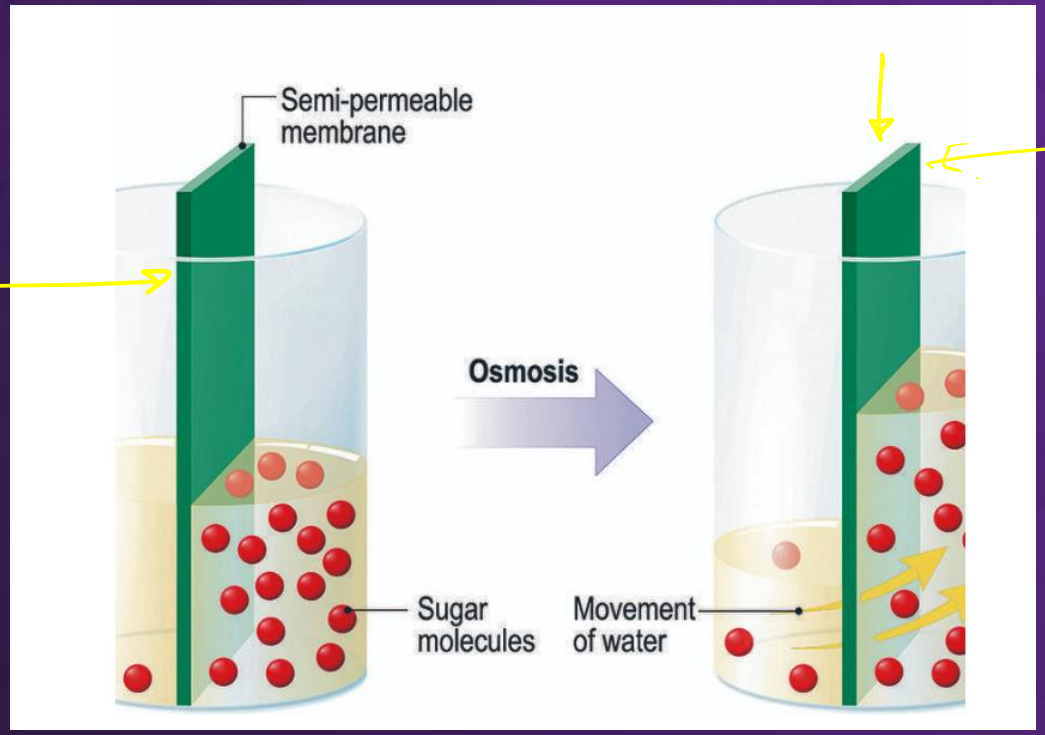
India, China ramp up infra on north bank of Pangong lake

- Three years after the violent clash between Indian and Chinese forces in Galwan followed by tanks facing each other around the Pangong Tso — a lake spanning eastern Ladakh and western Tibet — there is hectic activity in the area from both sides

- While China is rushing to complete a bridge across the Pangong Tso, connecting the north and south banks, India is also building a black-topped road on its side on the north bank.

- Construction of black-topped road towards Finger 4 on our side is on and is expected to be completed by 2025. There is major impetus on infrastructure, road networks, advanced landing grounds and so on

Osmosis: fluid transfer



Ocean currents, subatomic particles, galaxies – almost everything is moving from one place to another. There are different kinds of movement, with different purposes. One type of movement is osmosis, where a fluid moves from a place of higher concentration to a lower concentration through a semipermeable membrane.

- For example, you fill a container with a concentrated sugar solution on one side and a diluted sugar solution on the other of a semipermeable membrane. Water molecules will travel from the diluted solution to the concentrated one through the membrane until the concentration of water is equal on both sides. This is osmosis.

- A German plant physiologist named Wilhelm Pfeffer first thoroughly studied osmosis in 1877, after various other studies by other scholars on leaky membranes.

- This process is incredibly important in biology, where liquids move from one part of an organism to another through cellular membranes that are semipermeable. In trees, osmosis is part of a pumping system that transports water and nutrients up from the roots to the leaves.

- You can observe osmosis in many real-life scenarios, such as in the swelling of raisins or other seeds when they are soaked in water, and in the pruning or wrinkling of your fingers after taking a long bath.

Mains Questions

GS paper II

Q1. “Urban Development and Planning needs to go beyond master plans” Comment (150 words, 10 marks)

Q2. What is the difference between cryptocurrency and central bank digital currencies (CBDCs) ? (150 words, 10 marks)

GS paper III