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1.	OPEN ACCESS IS CRUCIAL FOR SELF-RELIANCE IN SCIENCE
2.	AN OVERVIEW OF THE AMRUT SCHEME
3.	WHY DOES INSTABILITY AND CHAOS PERSIST IN HAITI?

OPEN ACCESS IS CRUCIAL FOR SELF-RELIANCE IN SCIENCE

Open access is crucial for self-reliance in science

Content

A recent editorial piece in *Nature* lauded India's ascent towards becoming a scientific juggernaut, paralleling its burgeoning economic clout. The Indian science ecosystem is indeed on an impressive trajectory, now ranking third globally in research output, and eleventh in quality, according to the *Nature Index*. However, 'ease of doing science' that can lead to great discoveries and innovation hinges on robust infrastructure and resources – a glaring shortfall in India's research landscape.

From 2014 to 2021, the number of universities in India rose from 760 to 1,113. Yet, many lack essential resources such as instrumental access and sophisticated labs, not to mention access to the literature that underpins research. There has been a pioneering initiative, **I-STEM**, to bridge this gap by cataloguing all publicly funded research facilities nationwide and making them available to researchers based on need. This demand-supply mapping aims to democratise the availability of advanced research infrastructure.

Similarly, the call for 'One Nation, One Subscription (ONOS)' proposes a centralised model of subscription to scientific journals, making them universally available to all publicly funded institutions. It is costly to get access to these commercial journals. It is estimated that institutions in India annually spend ₹1,500 crore to access journals and databases. But the fruits of this expenditure are reaped by only the top few institutes. What of the rest? ONOS negotiation by the government is currently underway with the five major commercial publishers who dominate the market.

The optimal solution?

But is ONOS the optimal solution for facilitating access to scientific literature? When it was conceptualised around 2019, a significant portion of scholarly articles was behind paywalls. Now,



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Initiatives

With the evolving landscape of academic publishing, investing in an all-encompassing subscription model is not prudent

a much larger fraction of articles is available via Open Access (OA), which means that articles are available freely for everyone online. An analysis of publications indexed in the Web of Science shows that the fraction of OA publications globally increased from 38% in 2018 to 50% in 2022. This shift raises a query about the necessity and efficiency of paying for content that is increasingly available for free. Currently, there is a strong push for OA by the U.S. and European Union. The U.S. released its updated OA policy in 2023 that mandates immediate open accessibility of all publicly funded research articles by 2025. Similarly, major philanthropic funding sources such as the Wellcome Trust have mandated OA to the research they fund.

Considering this trend, it is reasonable to argue that we should be paying less than before. The oligopolistic academic publishing market, dominated by a handful of powerful publishers in the global north, allows these publishers to set stringent terms, making any negotiation on ONOS a challenge. The entrenched reputation and authority of these publishers also stymie any discussion of alternatives.

In any other government procurement, the use of public funds is stringently regulated to ensure maximum cost efficiency and benefit. Why, then, should the procurement of academic journals be any different? If significant portions of research are already accessible without cost, the rationale for a unified, costly subscription becomes less compelling. It is also important to note that ONOS will not help make Indian research globally accessible; rather, it primarily facilitates access for Indian researchers to journals owned by big publishing oligarchs.

Further, even if one pays and subscribes to the journal, there is no guarantee of continued access. Today, most academic journals are only digitally available. Most articles have a digital object

identifier (DOI), but DOI does not ensure long-term preservation. A recent study highlights that "approximately 28% of academic journal articles with DOIs appear entirely unpreserved." This finding suggests that millions of research papers risk vanishing from the Internet. For example, over 17,000 research papers from a chemistry journal, distributed by Elsevier globally, except in Japan, disappeared when the journal was discontinued in December 2023.

Green Open Access

Considering commercial publishers have not taken up the responsibility of long-term availability of the content they profit from, it is only logical that every article authored by Indian researchers and funded by taxpayer money should be archived in publicly funded OA repositories. This practice exemplifies what we refer to as Green Open Access. This allows authors to deposit a version of their work in a university repository, making it freely accessible to everyone globally. Indian funding agencies have mandated green OA for a long time, but this has never been enforced. However, the recent troubles should catalyse a stronger push for green OA.

Major publishers such as Elsevier (Netherlands), Thomson Reuters (Canada), Taylor Francis (U.K.), Springer Nature (Germany), and Wiley and SAGE (U.S.) have headquarters in the global north. They are extremely profitable enterprises. Much of this profit is derived from the unpaid labour provided by researchers in the form of peer reviews and editorial works. To become *atmanirbhar* (self-reliant), India needs to make its own journal system better, with no burden of payment to authors or readers. Further, with its capabilities in digital technology, India should also become a pioneer for the global south by creating and sharing digital public infrastructure for low-cost, high-quality scientific publishing.



Points To Note

I-STEM

ONOS

Open Access

Sources Down to Earth (Additional Reading):

- ❖ It is an unlikely industry to have become the great success of the digital age when all the pundits were predicting its demise when the Internet era began. But helped by a bizarre business model, it has proved all the doomsayers wrong with astonishing revenues and profit margins that surpass even those of even giant corporations like Apple and Google.
- ❖ It gets its products for free, top notch products that have been assessed for quality by the leading experts in their respective fields, again for free or for a pittance, and then sold them at exorbitant rates to customers. In the process the original makers of the products are themselves barred from accessing their own work because they had been forced to sign away the intellectual property rights on it!
- ❖ Most readers would be surprised to learn that we are talking of the scientific, technical and medical or stm publishing industry. The core of their business is scientific journals which are published weekly or monthly, journals that carry the latest research in a large number of disciplines.
- ❖ And if you think that such a limited business would yield little profit you are in for a further shock. It is an estimated US \$30 billion industry whose market leaders enjoy astonishing profit margins of 35-40 per cent.
- ❖ Knowledge is in their thrall as the fruits of research are behind prohibitive paywalls. Not many can afford all the journals, not even a well-endowed Harvard University. Imagine then the plight of institutions and universities in developing countries. But neither institutions nor governments have been able to alter the system.
- ❖ How exactly does this system operate? Scientists, funded largely by governments, give the results of their research to stm publishers for free; other scientists who peer review the papers, that is, check the scientific validity of the research, also do the work for free.
- ❖ Only the basic editing costs are borne by the publishers who then, bizarrely, sell the product back to the libraries of government-funded institutions and universities because scientists need to keep abreast of developments in their field of study, ranging from agriculture to nursing and chemical engineering.
- ❖ It is as perverse a system as one can find but given the cachet of being published in the top line journals scientists have become slaves to the system. A collective stand by university libraries and government institutions could have ended the bizarre system but that did not happen.
- ❖ Around 2011, many American libraries with dwindling budgets threatened to end subscriptions but the industry stood firm and continued with their high rates. In fact, their profit margins increased.



- ❖ A global revolt against the commercial STM publishing model led to the open access (OA) system based on the ideal that scientific research should be free and open to all and not the preserve of the likes of Elsevier, Wiley, Springer and Nature.

Overview:

- ❖ I-STEM (Indian Science, Technology, and Engineering facilities Map) is launching the Samavesha project at IISc., Bengaluru, on January 16 to enhance research collaboration in India by enhancing accessibility to facilities and labs.

About I-STEM:

- ❖ I-STEM (Indian Science, Technology, and Engineering facilities Map) is an initiative of the Office of Principal Scientific Advisor, Government of India.
- ❖ It is developed with the concept “One Nation One Portal” for the scientific community, aimed at “Linking Researchers and Resources”.
- ❖ It assists users to locate the specific facility they need for their R&D work and identify the one that is either located closest to them or available the soonest.

Practice:

Q.1 With reference to the I-STEM Portal, consider the following statements

1. The portal facilitates researchers to access slots for the use of equipment and share the details of the outcomes, such as, patents, publications and technologies.
2. The portal is launched under the aegis of Prime Minister Science, Technology and Innovation Advisory Council (PM-STIAC) mission.

Select the correct statement.

- (a) 1 only
- (b) 2 only
- (c) Both
- (d) None

One Nation, One Subscription Scheme:

- ❖ #GS-02 Education

For Prelims:

- ❖ One Nation, One Subscription Scheme:
 - One Nation, One Subscription is a proposed Open Access program by the Ministry of Education to improve access to scholarly works.
 - It was proposed in India’s fifth draft of Science Technology and Innovation Policy (STIP) 2020.
 - Its aim is to give people in India access to scientific publications at a fixed and centrally negotiated cost that the government will pay publishers directly.
 - The proposal seeks to buy 3000 to 4000 high-impact journals at an estimated budget of 2000 crore to 3000 crores.



- The Science, Technology and Innovation Observatory will be set up by the Ministry of Science and Technology to store the generated data.
- This data will be provided to public funded research through 'FAIR' (Fair, Accessible, Interoperable and Reusable).
- The primary beneficiaries of ONOS are government institutes, governmentfunded academic institutes, and research and development institutions.

For Mains:

- ❖ The need of ONOS scheme:
 - Duke University in an analysis in 2018, found that 59 of the 100 "most highly cited articles ever published are behind a paywall."
 - The "average cost of one of these articles for an unaffiliated researcher was found to be \$33.41" equivalent to ₹2,285 in 2018.
 - The people of India spend about Rs 1,500 crore in 2018 for journal subscriptions.
 - This can be reduced substantially by the introduction of the scheme.
- ❖ Alternatives to Subscription method:
 - A growing alternative to the subscription method is the use of preprints.
 - A preprint is the manuscript of a paper which has not yet been submitted to a journal.
 - Preprint papers are not peer-reviewed in the conventional sense, but one can use some workarounds such as post-publication peer-review.
 - Another alternative is the Gold OA where the journal charges an article processing charge (APC) from the author instead of the reader.

Q.2 Which of the following is an aim of "One Nation One Subscription" (ONOS) initiative in India?

- (a) To provide countrywide access to National and International Scientific and Academic Content.
- (b) To provide countrywide access to International Scientific and Academic Content only
- (c) To provide selective access to National Scientific and Academic Content
- (d) To provide countrywide access to National Academic Content only

Answer: (a)

- ❖ "To provide countrywide access to National and International Scientific and Academic Content".

Key Points:

- ❖ One Nation One Subscription (ONOS):
 - ONOS is an initiative proposed by the Government of India (GoI), that aims to provide countrywide access to national and international scientific and academic content.
 - It came into force on Apr 1, 2023.
 - This initiative is expected to benefit research and educational institutions including universities, colleges, and research organizations, as well as every citizen of the country through public libraries.



Additional Information

❖ ONOS Objective:

- ONOS is expected to sign national licenses with most of the prominent STEM (Science, Technology, Engineering & Mathematics) publishers and database producers across the world in order to encourage easy access to high-quality academic information, thus stimulating scientific research and innovation in the country.
- Providing country-wide access to electronic resources at an affordable cost and at better terms of licenses.

Question:

Q.3 As India aspires to be the scientific superpower, suggest the areas which the new Science, Technology and Innovation policy should focus on".Examine. (150 W/10M)





AN OVERVIEW OF THE AMRUT SCHEME

An overview of the AMRUT scheme

What was the purpose of the Atal Mission for Rejuvenation and Urban Transformation? What was the revenue set aside for the scheme? What has been its progress so far? What are the various shortcomings and how should they be addressed?

EXPLAINER

Tikender Singh Panwar

The story so far:

Around 36% of India's population is living in cities and by 2047 it will be more than 50%. The World Bank estimates that around \$840 billion is required to fund the bare minimum urban infrastructure over the next 15 years. The AMRUT (Atal Mission for Rejuvenation and Urban Transformation) scheme was a flagship programme launched by the NDA-1 government in June 2015, with its 2.0 version launched on October 1, 2021.

What is the AMRUT scheme?

Some of the challenges in infrastructure development with respect to water, mobility, and pollution were to be met by this scheme with some financial assistance from the Centre and the rest of the share mobilised by both States and respective cities. The mission was drawn to cover 500 cities and towns with a population of over one lakh with notified municipalities. The purpose of the AMRUT mission was to (i) ensure that every household has access to a tap with assured supply of water and a sewerage connection (ii) increase the value of cities by developing greenery and well-maintained open spaces such as parks and (iii) reduce pollution by switching to public transport or constructing facilities for non-motorised transport. The total outlay for AMRUT was ₹50,000 crore for five years from FY 2015-16 to FY 2019-20.

AMRUT 2.0 was aimed at making cities 'water secure' and providing functional water tap connections to all households in all statutory towns. Ambitious targets were set up such as providing 100% sewerage management in 500 AMRUT cities. The total outlay for AMRUT 2.0 is ₹2,99,000 crore, with the Central outlay being ₹76,760 crore for five years, and the rest of the amount to be mobilised by the



At work: The Lions Park being renovated under AMRUT-2 by Kashiode Corporation in 2023. FILE PHOTO

States and cities.

How much money has been utilised?

The AMRUT dashboard shows that as of May 19, 2024, a sum of ₹83,357 crore has been dispersed so far. This amount has been utilised to provide a total of 58,66,237 tap connections, and 37,49,467 sewerage connections. A total of 2,41 parks have been developed, and 62,78,571 LED lights have been replaced. These works include the contributions made by States and cities.

What is the reality?

It is estimated that about 2,00,000 people die every year due to inadequate water, sanitation and hygiene. In 2016, the disease burden due to unsafe water and sanitation per person was 40 times higher in India than in China. This has not

improved much. Huge amounts of waste water and little treatment enhances the vulnerability and incidence of diseases. The 150 reservoirs monitored by the central government, which supplies water for drinking and irrigation, and are the country's key source of hydro-electricity, were filled to just 40% of its capacity a few weeks ago. Around 21 major cities are going to run out of ground water. In a NITI Aayog report it was stated that 40% of India's population will have no access to drinking water by 2030. Nearly 31% of urban Indian households do not have piped water; 67.3% are not connected to a piped sewerage discharge system; and average water supply per person in urban India is 69.25 litres/day, whereas the required amount is 135 litres.

Additionally, air quality in AMRUT cities and in other large urban settlements

continue to worsen. A National Clean Air Programme was launched by the central government in 2019, as AMRUT 2.0 focused only on water and sewerage and because the air quality concerns of AMRUT 1.0 were far from addressed.

What went wrong?

The basic fundamental of the scheme was erroneously constructed. Instead of a holistic approach, it took on a project-oriented attitude. Furthermore, AMRUT was made for cities with no participation from the cities. It was quite mechanical in design, with hardly any organic participation of the elected city governments, and driven by mostly private interests. The project was owned by bureaucrats, parastatals, and large technology-based companies. For example, in the governance architecture, the apex committee is headed by the secretary of the Ministry of Housing and Urban Affairs (MOHUA) and all the members are non-elected. Similarly, the State level high powered committee is headed by the chief secretary with a private nexus of consultants and professionals. Peoples' representatives are completely missing, in violation of the 74th constitutional amendment.

Moreover, water management in cities must factor in climate and rainfall patterns of the area and existing infrastructure of combined sewers. It is no big surprise that most of the sewage treatment plants are designed in such a way that the travel distance of average faecal matter is more than the average commute of a worker to work! Since the drivers are large private players and builders, real estate development has become a proxy for urban planning - disappearance of water bodies and lakes, disrupted storm water flows, and absence of storm water drainage is very common.

The scheme needs nature based solutions and a comprehensive methodology with a people centric approach and empowering local bodies.

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THE GIS

The AMRUT (Atal Rejuvenation and Transformation) flagship program by the NDA-1 government in June 2015.

The purpose of mission was to (i) every household a tap with assured water and a sewer connection (ii) value of cities by greenery and well open spaces (iii) reduce pollution switching to public transport or constructing facilities for non-motorised

AMRUT was made with no participation cities. It was quite in design.

3 way force



Practice:

Q. Consider the following statements on the AMRUT scheme.

1. It has been launched by the Ministry of Housing and Urban Affairs (MoHUA).
2. Odisha bagged the first position in the implementation of the AMRUT scheme.

Which among the above statements is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: (c)

The correct answer is Both 1 and 2.

- ❖ AMRUT- Atal Mission for Rejuvenation and Urban Transformation

Key-Points:

- ❖ AMRUT scheme was launched in June 2015 by PM Modi. It has been launched by the Ministry of Housing and Urban Affairs (MoHUA). Hence, statement 1 is correct.
- ❖ The purpose of Atal Mission for Rejuvenation and Urban Transformation (AMRUT) is to - Ensure that every household has access to a tap with an assured supply of water and a sewerage connection. Increase the amenity value of cities by developing greenery and well maintained open spaces (e.g. parks) and Reduce pollution by switching to public transport or constructing facilities for non-motorized transport (e.g. walking and cycling). All these outcomes are valued by citizens, particularly women, and indicators and standards have been prescribed by the Ministry of Housing and Urban Affairs (MoHUA) in the form of Service Level Benchmarks (SLBs). Odisha retained its top position in the implementation of the AMRUT scheme by scoring 85.67 percent. Hence, statement 2 is correct.
- ❖ Nine cities of Odisha - Bhubaneswar, Cuttack, Sambalpur, Rourkela, Baripada, Balasore, Bhadrak, Berhampur, and Puri - are covered under the scheme. Odisha is followed by Chandigarh, Telangana, Gujarat, and Karnataka in the implementation of AMRUT.
- ❖ Additional Information The Mission of AMRUT covers 500 cities that include all cities and towns with a population of over one lakh with notified Municipalities.
- ❖ The major project components are - Water Supply system, Sewerage, Septage, Storm Water Drainage, Urban Transport, Green Space and Parks, Reforms management and support, Capacity building.



WHY DOES INSTABILITY AND CHAOS PERSIST IN HAITI?

Why does instability and chaos persist in Haiti?

Did the resignation of former Prime Minister **Ariel Henry** stop gang violence in the region?

Dhriti Mukherjee

The story so far:

Following a three-month forced shutdown, Haiti's main international airport in Port-au-Prince reopened, sparking hopes for shipment of essential products. However, gang violence persists in the capital, though most of the gangs' demands have been addressed.

Meanwhile, after months of delay due to legal obstacles and violence, an advance team of the Kenyan special forces police landed in Haiti to combat the instability.

What is being done for stability?

After Prime Minister Ariel Henry's resignation on April 24, the formation of a Council with seven members was the first major development. The Council has been tasked with restoring order in Haiti, setting the agenda of a new Cabinet, forming a national security council, and appointing an electoral commission to help conduct polls. It enjoys the backing

of the Caribbean countries and the U.S. Caricom, a Caribbean trade bloc which helped form the council, said that the installation of the "politically inclusive council signals the possibility of a new beginning for Haiti." While Finance Minister Michel Patrick Boisvert was appointed as interim Prime Minister, on April 30, former Minister Fritz Bélizaire was chosen for the post by the Council.

What is the situation at present?

Though there is a Council, there is also a divide. During its first task of choosing a Prime Minister, four of the seven voting members chose Mr. Bélizaire. This decision to appoint the little-known official was taken without consulting the rest of the council or holding a formal vote. This divide has reportedly strengthened worries of the Council using its position to further its own corrupt needs, following a pattern consistent with previous political officials in Haiti.

Moreover, gang violence continues. The insufficiently armed national police

are still unable to counter the violence. Gang violence has become a part of daily life in Haiti over the last two decades, enabled by a weakened security apparatus, lack of effective law enforcement and widespread impunity. In the first three months of 2024, as per UN estimates, more than one person was killed due to gang violence every hour.

Why does gang violence continue?

One of the driving forces behind gang violence was the continued control exercised by Mr. Henry, and it was expected that his resignation would allow for a semblance of peace and stability. However, not only has the violence continued (though there has been a reduction), there are new concerns.

In May, UNICEF's Representative in Haiti, Bruno Maes, noted that the "health system is on the verge of collapse" as it is faced with "violence, mass displacement, dangerous epidemic and increasing malnutrition." Six out of 10 hospitals that are operational in the country are barely

managing to function, and the biggest problem currently is the "strangling of supply chains." About 1.6 million of the 4.4 million in Haiti face emergency levels of food insecurity, and the expected arrival of the monsoons will bring with it waterborne diseases such as cholera.

What is next for Haiti?

There are three specific challenges for Haiti. First, the divide within the transitional Council underscores the inherently fragile political landscape of the country. A rocky start may set the tone for the rest of its decisions and the country's faith in it. Second, the persistent threat posed by armed gangs continues to loom large over Haiti, perpetuating a cycle of violence and insecurity that hampers efforts to restore law and order. Gangs have warned of more violence if they are not given a seat at the table with the Council, and if their demand for amnesty for their crimes is not granted.

Third, the deployment of a UN-backed security mission, comprised of Kenyan police forces, has sparked controversy and raised concerns about potential violation of human rights. While the mission aims to bolster efforts to combat gang violence and restore stability, there are fears that it may inadvertently exacerbate tensions and contribute to human rights abuses.

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Context:

- ❖ Humanitarian crisis in Haiti as the Caribbean's most populous country may have fallen to armed gangs.

Details:

- ❖ Haiti:
 - ☛ Haiti occupies the western third of island of Hispaniola, which is the second-largest island in the Caribbean Sea. A mountainous country, its name means "high land" in the local Taino language.
 - ☛ The climate is generally tropical but is more temperate in the highlands.
 - ☛ Due to the rapid clearing of Haiti's forests, much of the landscape is now barren.
 - ☛ Haiti has two distinct peninsulas, the northern and southern, separated by the Golfe de la Gonave.
 - ☛ Due to its location along the boundary of the Caribbean and North American tectonic plates, Haiti is prone to seismic activity, including earthquakes.
 - ☛ Hurricanes and flash floods occur periodically, placing pressure on Haiti's infrastructure and population.
 - Capital: Port-au-Prince
 - Area: 27,800 sq km
 - Population: 3 million
 - Languages: French, Haitian Creole.

A Country in Turmoil:

- ❖ Historical events:
 - ☛ The country visited by Christopher Columbus during his first voyage in Columbus founded the first European settlement in the Americas, La Navidad ('The Nativity' in Spanish), in Haiti.
 - ☛ The area known today as Haiti ultimately came under France, as its colony of Saint-Domingue.
 - ☛ Haiti later became the first independent country of Latin America and the Caribbean, the first free black republic in the world and the second republic in the Western Hemisphere after the US.
 - ☛ This happened as a result of the Haitian Revolution (1791-1804) under the leadership of Toussaint Louverture, who did not live to see a free Haiti, although he set in motion its eventual independence.
 - ☛ The country was forced by France to pay 150 million francs in the immediate aftermath of its freedom as 'reparations to French slaveholders'. It took Haiti 122 years to pay the debt.
 - ☛ In the 20th century, the US occupied the country for 19 years and continued to meddle in its internal affairs thereafter by allegedly supporting the Duvalier Dynasty of Francois and Jean-Claude Duvalier and overthrowing Haiti's first democratically elected president, Jean-Bertrand Aristide.

Recent Developments:

- ❖ The country has still not recovered from the 2010 earthquake. A string of unpopular leaders have held power since 2010 and none has run the course. They also maintained armed gangs as their private militia which then turned rogue, giving rise to the gangs that have now reportedly overtaken Haiti.



- ❖ In 2021, the Haitian President Jovenel Moïse was assassinated in his bedroom. His successor, Ariel Henry, can now be overthrown at any moment, according to The Guardian.
- ❖ The unrest has seen 362,000 Haitians internally displaced — more than half of them children, the International Organization for Migration stated on March 9. More than 160,000 people are currently displaced in the Port-au-Prince metropolitan area alone.

PRACTICE QUESTIONS:

Q. Consider the following countries

- 1 Haiti
- 2 Dominican Republic
- 3 Costa Rica
- 4 Cuba

Island of Hispaniola comprise of which of the above two countries?

- (a) 1 and 2
- (b) 2 and 3
- (c) 3 and 4
- (d) 1 and 4

Answer: (a)

