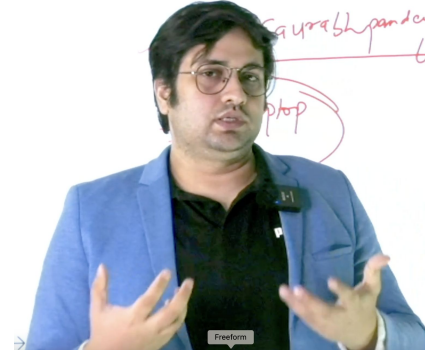


# Topics - MINDS MAPS included (Daily current affairs) -- 15th October 2024



- Nobel Prize in Economics:
- Multilateralism Advocacy and Technological Convergence
- Tuberculosis and Antimicrobial Resistance in India
- WAR AND ENVIRONMENT
- National Law Drafting for Gig Workers
- Union Rights and Collective Bargaining in India
- Haber Bosch Process
- Nile River Basin Agreement
- Mains



By saurabh Pandey



THE HINDU

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# Acemoglu, Johnson and Robinson share Nobel prize on Economics for work on wealth inequality

**Agence France-Presse**  
STOCKHOLM

The Nobel prize in Economics was awarded on Monday to Turkish-American Daron Acemoglu and British-Americans Simon Johnson and James Robinson for research into wealth inequality between nations.

By examining the various political and economic systems introduced by European colonisers, the three have demonstrated a relationship between societal institutions and prosperity, the jury said.

“Reducing the vast differences in income between countries is one of our time’s greatest challenges,” Jakob Svensson, chair of the Committee for the Prize in Economic Sciences, said in a statement.

“The laureates have demonstrated the importance of societal institu-



The three researchers examined the various political and economic systems introduced by European colonisers. REUTERS

tions for achieving this,” Mr. Svensson added.

Mr. Acemoglu, 57, and Mr. Johnson, 61, are professors at the Massachusetts Institute of Technology (MIT).

Mr. Robinson, 64, is a professor at the University of Chicago.

The jury highlighted the laureates’ work in illuminating how political and economic institutions play

a role in explaining why some countries prosper while others do not.

“Although the poorer countries are, of course, becoming richer, they’re not closing the gap,” Jan Teorell, a professor of political science and member of the award committee, told a press conference.

“Acemoglu, Johnson and Robinson have shown that a large part of this in-

come gap is due to differences in economic and political institutions in society,” Teorell said.

## ‘Inclusive institutions’

In a statement explaining the prize, the jury noted the example of the city of Nogales, which is divided by the U.S.-Mexican border, where residents on the U.S. side of the city tend to be better off. “The decisive difference is thus not geography or culture, but institutions,” the Royal Swedish Academy of Sciences said.

The U.S. economic system provides residents north of the border greater opportunities to choose their education and profession, and they are part of the U.S. political system, which gives them broad political rights.

By contrast, south of the border, residents live under other economic conditions, and the political sys-

tem limits their potential to influence legislation.

In addition, the jury noted that the laureates’ research also helped explain why some countries become trapped in a situation of “low economic growth.”

Mr. Acemoglu, who was “delighted” to receive the award, told reporters that the “work that we had done favours democracy.”


Speaking via telephone from Athens as the award was announced in Stockholm, Mr. Acemoglu said that the economies of “countries that democratise, starting from a non-democratic regime” grow faster than non-democratic regimes. “And it’s a substantial gain,” Mr. Acemoglu said.


Mr. Acemoglu is the author of several best-sellers including *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*.


# — Topic → Nobel Prize in Economics: Impact on Wealth Inequality





## Key Highlights


 Award Recipients: Daron Acemoglu, Simon Johnson, and James Robinson received the Nobel Prize in Economics.


 Research Focus: Their work explores the influence of political and economic systems, particularly those established by European colonizers, on societal prosperity.

 Global Challenge: The Nobel committee highlighted the importance of addressing income disparities between countries.

 Academic Affiliations: Acemoglu and Johnson are affiliated with MIT, while Robinson is at the University of Chicago. \_\_\_\_\_

—  Institutional Impact: The research underscores how differences in political and economic institutions lead to varying prosperity levels among nations.

 **Case Study**: Nogales is cited as an example where institutional differences, rather than geography or culture, explain economic disparities between the U.S. and Mexico sides.

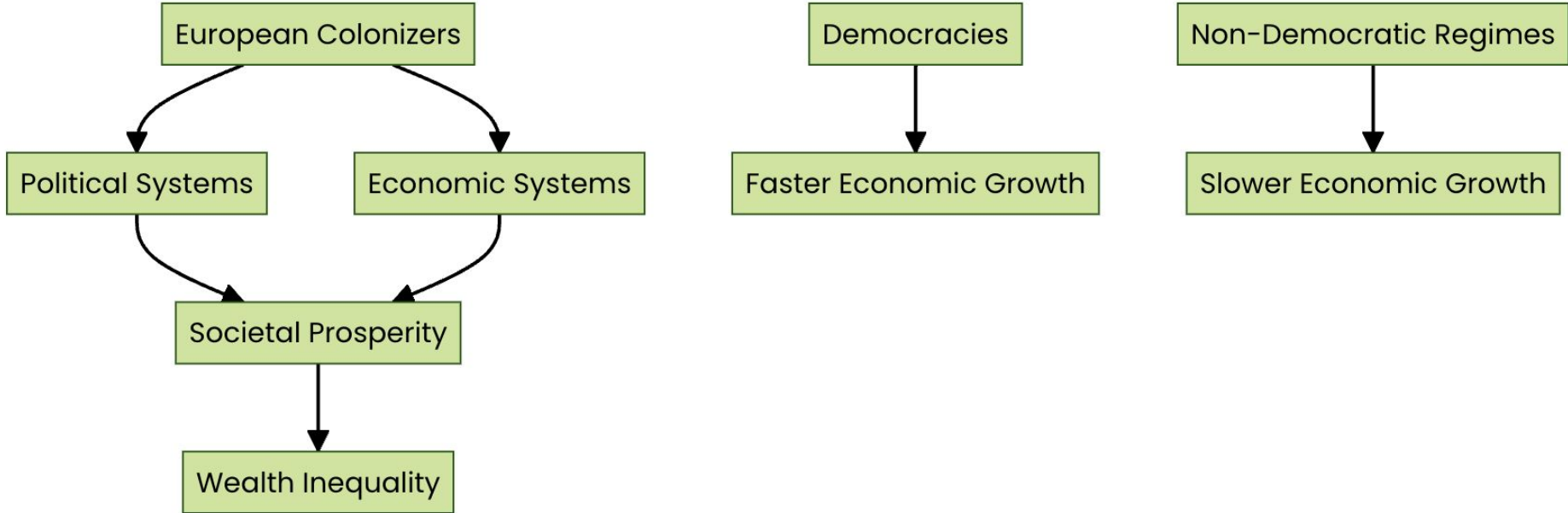
 **Democracy and Growth**: Acemoglu pointed out that democracies generally experience faster economic growth compared to non-democratic regimes.

## Summary

The Nobel Prize in Economics was awarded to three scholars for their research on the impact of political and economic institutions on wealth inequality between nations.

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## Conceptual Overview:



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# Om Birla stresses need for regulatory framework for technologies like AI

**The Hindu Bureau**

NEW DELHI

Dialogue and cooperation amongst Parliaments in the field of science, technology and innovation were essential for greater common good, Lok Sabha Speaker Om Birla said at the 149th Assembly of Inter-Parliamentary Union (IPU) in Geneva on Monday while making a strong pitch for multilateralism.

Mr. Birla was leading an Indian Parliamentary Delegation at the conference, which discussed the theme of “Harnessing science, technology and innovation for a more peaceful and sustainable future”.

According to a statement issued by the Lok Sabha secretariat, Mr. Birla expressed hope that through a forum like the IPU, Parliaments would be able to pave the way for in-



Lok Sabha Speaker Om Birla speaking at an IPU meet in Geneva on Monday. ANI/X

world through shared action plans and joint efforts.

## ‘Protect data privacy’

The Lok Sabha Speaker stressed the need for an appropriate regulatory system in the field of technology, safeguarding data privacy of citizens, ensuring proper use of artificial intelligence (AI), apart from equitable sharing of the benefits of technology. He

well as national Parliaments to take up the issue.

## Joint efforts


In his address, Mr. Birla was unequivocal in stating that the collective endeavour of Parliaments across the world should be to ensure fair and equitable distribution of the benefits of science, technology and innovation.


Calling for convergence of technological advancements, scientific research and innovative approaches so that the fruits of such advancements are shared equitably and leveraged responsibly, Mr Birla referred to the idea of One Sun, One World, One Grid - OSOWOG - initiated by Prime Minister Narendra Modi.


The IPU, founded in 1889 as the first multilateral political organisation, is a global forum of national



## Key Highlights


 Multilateralism Advocacy: Lok Sabha Speaker Om Birla emphasized the importance of dialogue and cooperation among Parliaments for the common good at the 149th Assembly of the Inter-Parliamentary Union (IPU) in Geneva.


 Theme of Conference: The conference focused on "Harnessing science, technology and innovation for a more peaceful and sustainable future."


 Inclusive Development: Mr. Birla expressed hope that the IPU could facilitate inclusive development through shared action plans and joint efforts among Parliaments.


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 Data Privacy Protection: He highlighted the necessity for a regulatory system to protect citizens' data privacy and ensure responsible use of artificial intelligence (AI).

 Equitable Distribution: Birla called for a collective effort to ensure fair distribution of the benefits derived from science, technology, and innovation.

 Technological Convergence: He advocated for the convergence of technological advancements and scientific research to ensure equitable sharing of benefits, referencing the One Sun, One World, One Grid (OSOWOG) initiative.

 IPU's Historical Significance: The IPU, established in 1889, is recognized as the first multilateral political organization and serves as a global forum for national Parliaments.

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## Overview

Definition: (IPU) is a global organization of national parliaments.

Purpose: Promotes democratic governance, cooperation, and peace.

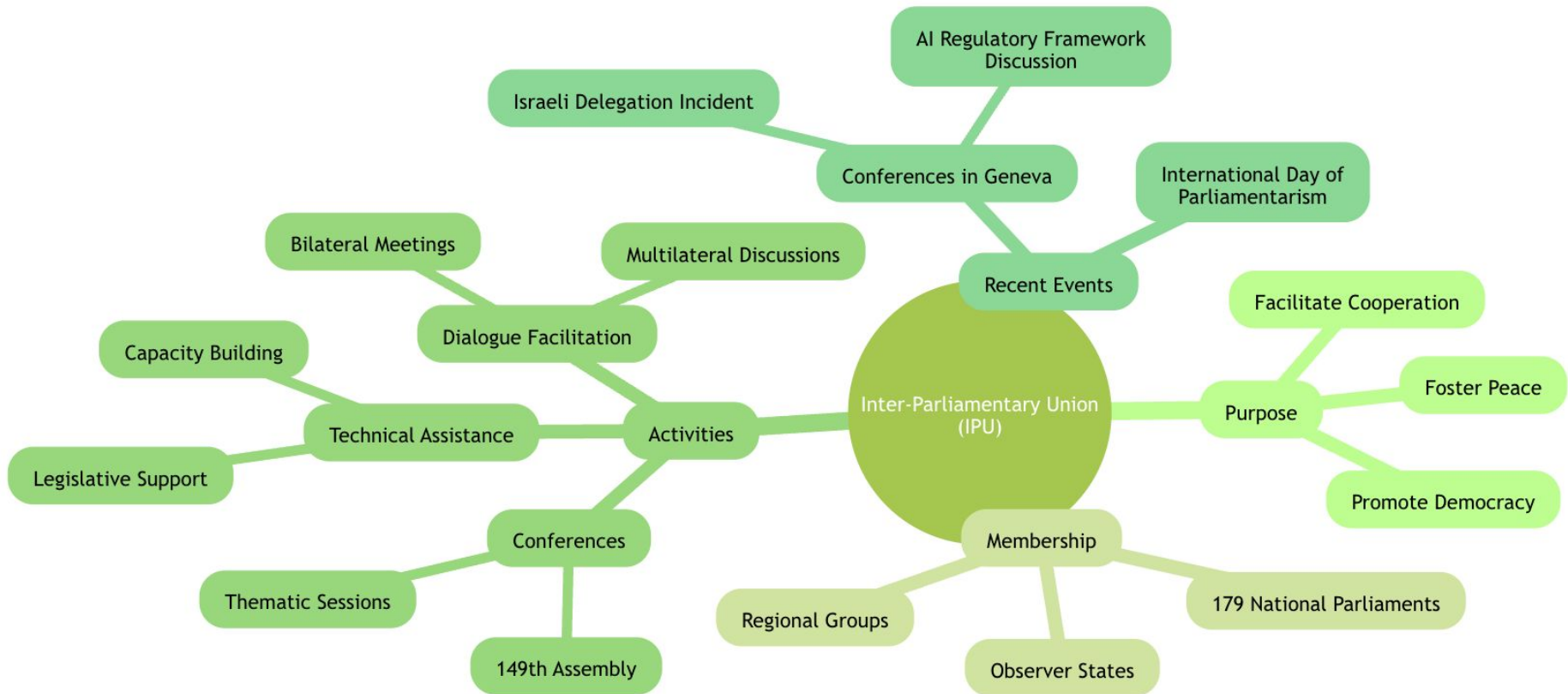
Membership: Comprises 179 national parliaments.

History: Established in 1889 as the first international organization of its kind.

Headquarters: Geneva, Switzerland.

Activities: Organizes conferences, facilitates dialogue, and provides technical assistance.

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# Bacteria zero in on how the TB bacteria evade immune response

*Mycobacterium tuberculosis* bacteria keep themselves protected in clusters called tubercles surrounded by lipids in the lungs. Though it is known as a respiratory pathogen, it can spread to other tissues and also stay dormant in cells for up to a few decades without causing disease

Somdatta Karak

**T**uberculosis (TB) is a major focus in India's healthcare goals. The country is steadily improving its ability to diagnose and track TB patients and help them adhere to the long course of antibiotics required to treat it. But with increasing antimicrobial resistance in *Mycobacterium tuberculosis* (Mtb), the pathogen that causes TB, many existing antibiotics aren't working as effectively to kill it. So researchers are studying Mtb to identify its important proteins and then design new drugs that can act against them.

**A companion over millennia**

This is not an easy problem to solve. The pathogen has coevolved with humans for millennia. Researchers have found the Mtb complex was present as long as 70,000 years ago. Such a long relationship between the two species has allowed the microbe ample time to evolve and trick the human immune system in many ways.

One of them is its ability to grow in macrophages. The first line of human immune cells that destroy many other invading microorganisms are actually Mtb's home. Macrophages are designed to engulf foreign particles, including microbes. They can initiate a plethora of chemical reactions involving peroxidases, free radicals, and other compounds that break down the engulfed particle or microbe. These reactions often collectively induce a state called oxidative stress and alter the chemical nature of molecules, including the DNA, the RNA, and/or the proteins of life-forms, rendering them dysfunctional or even literally broken up. Macrophages also use diverse strategies to starve the engulfed microbes of essential nutrients, eventually killing them.

But these techniques don't work against Mtb. Mtb keeps itself protected in clusters called tubercles (hence the name of the disease) surrounded by lipids (fatty substances) in the lungs. Though it's a respiratory pathogen, it has been known to spread to various other tissues. It can also stay dormant in the cells for a long time, up to a few decades, without causing disease or spreading to other people.

**Enzymes of particular interest**

Researchers believe Mtb's many survival abilities are a result of its large genome, consisting of 4.4 million base pairs. To compare, the respiratory bacteria *Staphylococcus aureus* has 2.8 million base pairs and *Streptococcus pneumoniae*, 1.9 million to 2.7 million.

A larger genome means more proteins. Scientists are yet to understand the role of many Mtb proteins – but they believe Mtb's genetic and protein machinery allows it to lead an independent life once it finds a home inside the macrophages.

Scientists are intrigued by whatever allows Mtb to survive and persist in the macrophage's hostile environment and are on the lookout for proteins that shield it. One category of proteins called the cysteine synthase enzymes is of particular interest. They help cells synthesise cysteine, a sulphur-containing amino acid. Cells use cysteine to make antioxidants, whereby the sulphur



A 3D illustration of *Mycobacterium tuberculosis* bacteria. Researchers believe their survival abilities are a result of its large genome, consisting of 4.4 million base pairs. GETTY IMAGES/ISTOCKPHOTO

disrupts the reactions that cause oxidative stress.

**Where there's a Cys, there's a way**

A study published on August 29 in the journal *eLife* by researchers at the CSIR-Centre for Cellular and Molecular Biology (CCMB), Hyderabad, explored the role of different cysteine synthases in Mtb. The researchers grew Mtb in a bacterial growth medium and restricted its access to nutrients. Then they created oxidative stress conditions in the dish (by adding certain compounds) and looked for genes whose expression patterns changed as a result. This is how they found Mtb's cysteine synthase genes are expressed more during oxidative stress.

Mtb has at least three cysteine synthase enzymes. They make cysteine in cells through different chemical reactions. The scientists found that two of the enzymes, called CysK2 and CysM, significantly influenced the microbe's survival during nutritional deficiency and oxidative stress. They also found Mtb's ability to produce various antioxidants was impaired when the researchers knocked out the genes used to make either of the two synthases.

It is nearly impossible to get human lung tissue infected for an experiment. Instead, the researchers infected mice with the wild-type Mtb and mutant Mtb. After allowing the bacteria time to infect the mice and for the mice's immune systems to respond, they measured the amount of bacteria in the two groups. They found the wild-type Mtb survived better in the mice than the mutant Mtb. They also found similar effects when they infected just macrophages from the lungs

**The Mtb complex was present 70,000 years ago. Such a long relationship between the species has allowed the microbe time to evolve and trick the human immune system in many ways**

and the spleen. (The spleen is the first organ; after the lungs, Mtb infects by moving through the bloodstream.)

When the research team checked the pathogen's survival in mice mutated to not develop oxidative stress, they found it didn't matter if Mtb had the cysteine synthases. That is, Mtb with and without the cysteine synthases grew equally well in such mice.

**Undermining Mtb's survival**

A study in 2017 by researchers at the Karolinska Institute, Stockholm, reported a list of 71 compounds that could inhibit the cysteine synthases. Researchers at Vinay Nandicoori's lab at CCMB tested these compounds against Mtb and found they all inhibited Mtb to some extent. Fortunately, these inhibitors also made isoniazid, a known bacteria-killing drug, more potent against Mtb and together made for a strong antibiotic cocktail. Humans don't have cysteine synthase enzymes, so these inhibitors could be promising targets for new antibiotics.

The study was conducted together with Luiz Pedro Sorio de Carvalho's lab at the Francis Crick Institute, London. In addition to cysteine synthases, scientists around the world are studying other ways Mtb survives the macrophage environment. For example, they are

examining the roles of phosphates and carbon metabolism, which are central to Mtb's life cycle. Some are exploring how Mtb develops a cell wall strong enough to withstand oxidative stress. Some groups are unearthing details about how Mtb stops the production of molecules that lead to oxidative stress; tricks a host macrophage into secreting damage-repair molecules (which macrophages produce to protect and revive immune cells from oxidative stress) sooner; or stays in the macrophages without activating its immune responses.

**Through many doors at once**

Some interesting new studies have also revealed how the bacteria erase the epigenetic memory of macrophages, i.e., healthy macrophages' ability to make chemical changes to their genomes and pass it on to their daughter cells.

This ability allows the new cells to identify an ongoing or a past infection and get rid of it faster. Without this memory, newly formed macrophages aren't preconditioned to face an Mtb infection.

All these studies are together demystifying Mtb, like keeping many doors open through which to chase out the TB menace. For these possibilities to actually translate into treatments on the market, there are many unfulfilled steps – including finding ways to perform these studies with human cells – and India needs to focus on them.

*Somdatta Karak, PhD, is the head, Science Communication and Public Outreach, CSIR-Centre for Cellular and Molecular Biology, Hyderabad. somdattakar@ccmb.res.in*

## -Topic→Tuberculosis and Antimicrobial Resistance in India

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### Focus on TB

Tuberculosis (TB) is a major focus in India's healthcare system. Continuous improvements are being made in diagnosis and patient tracking.



### Antibiotic Resistance

Antimicrobial resistance in *Mycobacterium tuberculosis* (Mtb) is rising.

Existing antibiotics are becoming less effective against TB.



### Research on Mtb

Scientists are studying Mtb to find key proteins.

The goal is to develop new drugs to effectively combat the pathogen.—————



## Historical Coevolution

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Mtb has coevolved with humans for about 70,000 years.

This coevolution has allowed Mtb to adapt and evade the human immune system.



### Macrophage Interaction

Mtb thrives within macrophages, the body's first line of immune defense.

Macrophages are designed to engulf and destroy invading microorganisms.



### Oxidative Stress

The immune response involves oxidative stress.

This stress can damage the DNA, RNA, and proteins of microbes, leading to their dysfunction.

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## Nutrient Starvation

Macrophages use strategies to deprive microbes of essential nutrients.  
This deprivation ultimately leads to the death of the microbes.

Summary: India is enhancing its TB management efforts amid rising antibiotic resistance, while researchers explore new drug targets due to the pathogen's long-standing coevolution with humans.

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-  Mtb Protection: Mycobacterium tuberculosis (Mtb) is protected in clusters known as tubercles.
  -  Lipid Surrounding: These tubercles are surrounded by lipids, which help shield the bacteria.
  -  Respiratory Pathogen: Mtb primarily affects the lungs but can also spread to other tissues in the body.
  -  Dormancy: Mtb can remain dormant in host cells for several decades without causing disease or transmission.
  -  Ineffective Techniques: Common techniques used to combat other pathogens are ineffective against Mtb.
  -  Disease Spread: Despite being a respiratory pathogen, Mtb has the ability to spread beyond the respiratory system.
  -  Long-term Presence: Mtb can exist in a host for long periods, complicating treatment and control efforts
-

Warrior fire, a Firebird, in Canada's Forest Fire at South Hory National Park, Donetsk, Ukraine, in July 19th year. 001118

## War turns Ukraine's forests into a hellscap

### Reuters

Russia's war against Ukraine has denuded the latter's landscape and much of its 100,000 sq. km. of forest. Both Russian and Ukrainian armies blast thousands of shells at each other every day, shredding the earth in grinding combat that echoes the trench warfare of World War One.

The conflict has knocked in destruction, too. Two videos posted in September by a unit from Ukraine's 108th Territorial Defense brigade showed a small drone trying to flush out Russian troops by spraying a glowing, red heat substance onto a long line of trees and setting them alight.

The director of the State Hory national park, Serhiy Prymchuk, said Russian munitions had burnt vast tracts of the area, once a rare and beloved beauty spot in a heavily industrialised region.

Trending in forests is now a perilous occupation, with mines and unexploded shells hidden in the ground posing the biggest threat.

In northern Ukraine's Chernobyl nature reserve, the pre-war population of over 100 Przewalski's horses – a globally endangered species of wild horse – has been hit hard by the conflict, according to Oleh Lytopod, an ecologist with an advocacy group who said landmines were making it difficult to extinguish fires.

Protecting the environment isn't the highest priority for a country fighting to repel an invading army in a conflict that has claimed tens of thousands of lives. The damage to forests is nonetheless part of a broader trail of environmental

**About 425,000 hectares of forest across the country have been found to be contaminated by mines and unexploded ordnance, an area half the size of Cyprus**

destruction caused by the war, which could leave a bleak natural legacy for decades to come, having poisoned the earth and rivers, polluted the air, and left vast tracts of the country riddled with mines, according to experts.

The conflict has compounded destruction of Ukrainian forestland by longstanding factors such as illegal logging, aerial bombardment has sparked large fires, while some forests near the frontline have been thinned so intensively that they have been reduced to a field of stumps.

The dense pine forests common to eastern Ukraine catch alight easily and have been decimated by the conflict, said Brian Mihalowsky, a U.S.-based forester who until recently lived and worked in Ukraine for eight years.

Mihalowsky said the environmental crisis was particularly acute in Russian-held areas – nearly a fifth of Ukraine – where occupation authorities appeared to have little capacity to extinguish forest fires. He estimated that about 85% of the pine forests in the eastern region of Luhansk had been destroyed.


About 425,000 hectares of forest across the country have been found to be contaminated by mines and unexploded ordnance, an area half the size of Cyprus, according to the environment ministry.


The current official estimate is that denuding of contaminated territory, including forests and other areas such as agricultural land, would take 70 years. Four ecologists with expertise in Ukrainian forests said the subsequent process of regenerating damaged areas would be complex and could take more decades, plus require billions of dollars in investment.


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## Topic → **WAR AND ENVIRONMENT**

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 **Destruction of Forests:** The war has devastated approximately 100,000 sq. km. of Ukraine's forests, with extensive damage from shelling and fires.


 **Innovative Warfare:** Ukrainian forces have utilized drones to set fire to trees, showcasing new methods of combat that echo historical trench warfare.


 **Endangered Species Impact:** The conflict has severely affected the population of Przewalski's horses in the Chernobyl nature reserve, complicating fire extinguishing efforts due to landmines.


 **Environmental Hazards:** Mines and unexploded ordnance pose significant threats to forest management and safety, making it perilous for those tending to the forests.

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 **Long-term Environmental Damage:** The war has led to air and water pollution, soil contamination, and a legacy of environmental destruction that could last for decades.

 **Illegal Logging Compounded Damage:** Ongoing illegal logging practices have worsened the destruction of Ukrainian forests, alongside the war's impact.

 **Decades of Recovery:** Experts estimate that demining and regenerating the damaged forest areas could take up to 70 years and require billions in investment.

**Summary:** The war in Ukraine has caused extensive environmental destruction, particularly to forests, with long-term consequences for wildlife and land safety.

---

## Overview

Status: Endangered species 🐎

Habitat: Native to Mongolia, Kazakhstan 🌍

Importance: Key for biodiversity conservation 🌱

Physical Traits: Stocky build, short legs, and a unique dark stripe down their back ⚡

🌍 Native Habitat: Central Asian steppes

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# Ensuring a proper social safety net for the gig worker



The Union Ministry of Labour and Employment is drafting a national law to incorporate gig workers into social security schemes, offering benefits such as health insurance and retirement savings. The government is expected to require aggregators to contribute 1%-2% of their revenue to establish a social security fund, which would provide health insurance and other benefits. The government is also revising the definitions of gig and migrant workers to make them more inclusive and reflective of current employment realities.

The proposed legislation will establish a welfare board model, creating a fund for the social security of gig workers. It mandates the registration of all gig workers and requires aggregators to give a 14-day notice, with valid reasons before termination, while ensuring transparency in automated systems. Dispute resolution mechanisms will also be introduced to protect gig workers' rights.

The Labour Minister also pointed out that aggregator companies that employ gig and platform workers will be asked to take the lead in registering their workers on the portal. Workers registered on the Labour Ministry's e-Shram portal are eligible for life and accidental insurance, along with other benefits.

## Labour codes

In this context, it can be mentioned that India formulated four new labour codes in 2019 and 2020. These codes essentially simplified and rationalised existing labour laws and enabled 29 central labour laws to be merged in four broad codes: namely, wage, social security, industrial relation and occupational safety health working conditions. The only code where gig and platform workers found mention is the Social Security Code 2020.

In this code, gig and platform workers are perceived as a subset of informal sector workers. Accordingly, the said code provided for the formulation of social security schemes for gig and platform workers by the central government. Further, like informal workers, gig workers ought



## Kingshuk Sarkar

a faculty member at the Goa Institute of Management and former labour administrator with the Government of West Bengal

Defining 'employment relation' in gig work is the key

to register themselves under the e-Shram portal through self-declaration.

## Worker definition

The issue arises from the definition of gig workers in the Social Security Code 2020, which places them outside the traditional employer-employee relationship. This is problematic since many gig employers, as in some of the well-known companies, operate as formal entities within the formal sector. The exclusion of gig workers from the traditional employment framework is the crux of the problem.

It is a deliberate ploy on the part of the "aggregator" to demystify employment relations in gig and platform economies such that the application of existing labour laws get pre-empted. In a gig economy, employment relations remain ambiguous and workers are categorised as independent workers or contractors.

Such camouflaging of employment relations leads to the misconception that the gig worker is an independent worker. The Social Security Code 2020 accepts this deception and includes gig workers as part of the informal sector. The Code does not decipher the real employment relation in the gig and employment economy.

Also, there is a huge difference in terms of entitlement between institutional social security and social security schemes. For example, formal workers get 26 weeks of paid leave along with job security for the entire period of maternity under the Maternity Benefit Act, 1961. This is part of institutional social security coverage.

Under social security schemes, for maternity benefits, there is a cash benefit such as ₹5,000-₹10,000 given to registered informal workers. The gap between an institutional social security and a social security scheme in terms of entitlement is very clearly evident. The Social Security Code 2020 sets to provide gig workers with only certain social security schemes but not institutional social security.

Similarly, other forms of institutional protection such as minimum wage protection are

missing for gig workers. Occupational safety and health regulations do not apply for gig workers. Gig workers are not included under the Industrial Relations Code 2020 and are not covered under the dispute resolution mechanism provided thereunder.

The cornerstone of protection under labour laws is the explicit employment relation. This is what is not defined for gig work in the Indian context. Pieces of legislation introduced in recent times in States such as Rajasthan and Karnataka also suffer from this particular lacunae.

## The core issue


If the Union Ministry of Labour and Employment is serious about protecting the interests of an ever increasing number of gig workers in the country, it should define the employment relation in gig and platform in an explicit manner and remove the veil created by so-called "aggregators". Recognising "aggregators" as employer and reclaiming explicit employment relation in gig work is the key factor.


An important precedent here is the ruling by the U.K. Supreme Court on the Uber case in 2021 – Uber was deemed to be an employer, Uber drivers as "workers" and Uber asked to honour the prevailing labour laws of the land.


Once the employment relationship is clearly defined, gig workers can be included under the proposed four labour codes, eliminating the need for separate legislation. The welfare board model, as suggested by the Union Ministry of Labour and Employment has shown limited effectiveness in the past, particularly with construction workers, who were also classified as informal despite working for formal employers. Clarifying the employment relationship in gig work would further promote the formalisation of workers in this sector.

Moreover, the entire labour code was designed for simplification and rationalisation. Introducing separate laws for specific workforce segments undermines this goal. The key is to recognise the employment relationship in gig work. Once this is addressed, the rest will follow.

## Key Initiatives


 **National Law Drafting:** The Union Ministry of Labour and Employment is working on a national law to integrate gig workers into social security schemes, offering benefits such as health insurance and retirement savings.


 **Revenue Contribution:** Aggregators will be mandated to contribute 1%-2% of their revenue to a social security fund dedicated to supporting gig workers.


 **Inclusive Definitions:** The government is updating definitions of gig and migrant workers to better align with current employment realities and ensure inclusivity.


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—  **Worker Rights Protection:** The proposed legislation will establish a welfare board model, require registration of gig workers, and introduce dispute resolution mechanisms to safeguard their rights.

➔  **e-Shram Portal Registration:** Gig workers must register on the Labour Ministry's e-Shram portal to access benefits like life and accidental insurance.

 **Employment Relationship Issues:** The Social Security Code 2020 classifies gig workers as informal sector workers, complicating their access to institutional protections and benefits.

 **Need for Clarity:** There is a pressing need to clearly define the employment relationship in gig work to ensure proper legal protections and integration into existing labour codes.

## Summary

The Indian government is drafting a law to include gig workers in social security schemes, but challenges remain regarding their classification and rights under\_\_\_\_\_ existing labour laws.

## Overview

**Objective:** Incorporate gig workers into social security schemes.

### Key Elements:

Health Insurance 

Retirement Savings 

Aggregators' Contribution (1%-2% of revenue) 

**The proposed law aims to provide a safety net for gig workers, ensuring their rights and benefits.**

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## Key Points

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- Revision of definitions for gig and migrant workers
  - Establishment of a welfare board model
  - Mandatory registration of gig workers
  - Transparency in automated systems
  - Dispute resolution mechanisms
-

## **Labour Codes (2019-2020):**

Merged 29 central labour laws into 4 codes:

Wage

Social Security

Industrial Relations

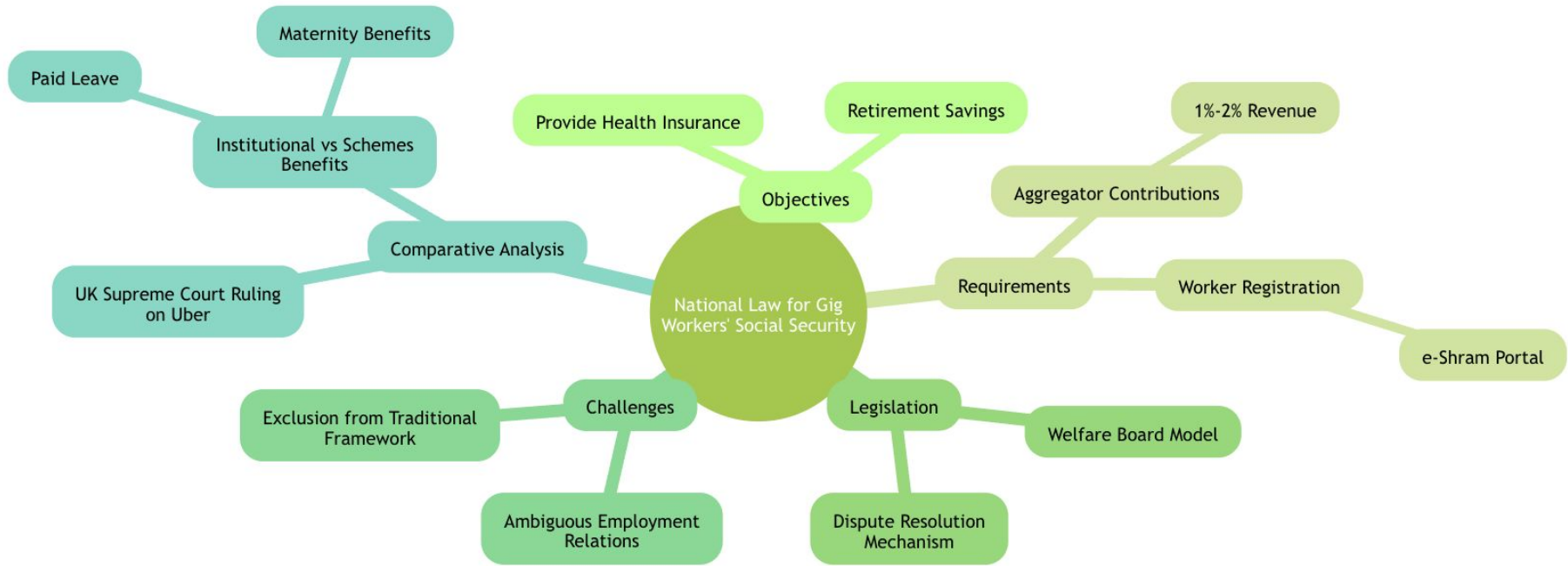
Occupational Safety & Health

## **Social Security Code 2020:**

Gig workers as informal sector workers

Need for self-declaration via e-Shram portal

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# Samsung workers' right to unionise

The necessity to form unions is obviously for voicing the demands and grievances of labour. It is therefore the obligation of the State, acting through the Registrar of Trade Unions, as the regulatory authority under the 1926 Act, to register trade unions and give individual workers their voice

## LETTER & SPIRIT

Krishnasdas Rajagopal

The realisation of their fundamental right to form a registered trade union to collectively bargain for better terms of employment is at the heart of the protests by Samsung India workers at Siprumbudurai in Tamil Nadu. They want to meet the South Korean giant on equal terms across the negotiating table to jointly frame a collective agreement regulating their work conditions.

The State government responded by forming a 'workmen committee' to resolve the problem and resorted to police violence to quell the workers' strike which began on September 9. Labour law expert and Madras High Court lawyer, senior advocate R. Vaigai, pointed out that the State's action was akin to putting the cart before the horse. Legally, she said, the registration of the trade union named Samsung India Workers Union (SIWU) under the Trade Unions Act, 1926 should have preceded the formation of the workmen committee. The unleashing of the police, rather than following the tenets of the 1926 law to register the trade union and facilitate a democratic atmosphere for collective bargaining under the Industrial Disputes Act of 1947, gives the impression that the government is on the side of the Samsung management. On the other hand, the State government and Samsung have alleged that SIWU is backed by the Centre of Trade Unions (CTU). Samsung has further objected to the inclusion of its name in SIWU.

### On the right to form a union

The Supreme Court in *B. R. Singh versus Union of India* in 1989 upheld the right to form associations or unions as a fundamental right under Article 19(1)(c) of the Constitution. The State or the courts could "reasonably" restrict the formation of unions, associations, cooperative societies under Article 19(4) of the Constitution only if there is danger to public order, morality, sovereignty or integrity of India. The restrictions must be based on logic and not arbitrary. The necessity to form unions is obviously for voicing the demands and grievances of labour. "Trade unionists act as mouthpieces of labour," the court noted.

It is the obligation of the State, acting through the Registrar of Trade Unions, as the regulatory authority under the 1926 Act, to register trade unions and give individual workers their voice. The benefits of registration under the 1926 Act include immunity from both civil and criminal action. Section 2 of the Act states that even seven members could apply for registration of their union. Under Section 6, the Registrar has to merely examine whether a trade union's rules conform with the rules of the Act. Speaking to *Proffline*, A. Soundararajan, CTU Tamil Nadu Secretary, has accused the State of "blocking SIWU's registration".

### On collective bargaining

The Madras High Court, in *Ranganasami versus Registrar of Trade Unions*, succinctly defined the history and object of the Trade Unions Act as "the organisation of labour to enable collective bargaining". "Collective bargaining" is defined in Article 2 of the International Labour Organisation (ILO) Collective Bargaining Convention of 1981 as negotiations between employees and employers or their organisations to determine working conditions and terms of employment. The product of successful collective bargaining is a collective



Steadfast protest: Samsung India factory workers enter their 25th day of strike at Sunguvarchattam near Kancheepuram on October 3. VILANNAVARAJ.B

agreement. Collective bargaining is statutorily recognised in the Industrial Disputes Act. The Act provides that in case of failure of collective bargaining, the State steps in to refer the matter to a conciliation officer. The case is further referred to a labour court or an industrial tribunal if the conciliation officer does not succeed.

The roots of collective bargaining trace back to the late 18th and early 19th century when the coal miners struggled for basic conditions. Collective bargaining has protected workers' rights post the economic depression of the 1930s and the Second World War to evolve as a norm along with the emergence of the democratic form of governance globally. In India, traces of collective bargaining could be found in the 1985 Ahmedabad Mills strike led by Mahatma Gandhi in which he initiated the formation of a committee of arbitrators drawn from both the workers, who were seeking a wage raise after the revocation of their plague allowance, and their employers.

Eminent labour law scholar Sir Otto Kahn Freund referred to the level playing field offered by collective bargaining with the expression, "power stands against power". Susan Hayter, in an ILO document, termed freedom of association and the right to collective bargaining as fundamental workers' rights. Former U.S. President Franklin D. Roosevelt in a Senate address in 1937 said the "denial or observance of this right means the difference between despotism and democracy". The National Labour Relations Act or the Wagner Act in 1935, marked the moment when an employer to

bargain with a workers' union as an 'unfair labour practice'. The same spirit is reflected in the Fifth Schedule of India's 1947 Act, which lists an employer's refusal to "bargain collectively, in good faith, with recognised trade unions" as an unfair labour practice. The celebrated U.S. Supreme Court case, *National Labor Relations Board versus Jones & Laughlin Steel Corp* held that employees have a fundamental right to organise and select representatives of their own choosing for collective bargaining. The court said any act on the part of the employer to prevent the "free exercise of this right" would amount to discrimination and coercion to be condemned by the competent legislative authority.

The Indian Supreme Court has recognised the importance of collective bargaining to achieve social justice in modern industrial life (*Karnal Leather Karmchhari versus Liberty Footwear Company*). The court, in *Ram Prasad Vishwakarma versus The Chairman, Industrial Tribunal*, noted how labour was at a "great disadvantage" before the "days of collective bargaining".

### On the right to strike

The right to strike labour is a legal right recognised with certain restrictions under the Industrial Disputes Act. The Supreme Court described strikes as a "form of demonstration" by workers for their rights. For example, they include various forms like 'go-slow', 'sit-in-work', 'work-to-the-rule', 'absenteeism', etc. The court has observed the right to demonstrate and, hence, the right to strike, as important

weapons in the armoury of workers. The right is recognised by almost all democratic countries. The ILO considers the right to strike as a corollary of the right to organise.

However, the 1947 Act does not recognise the right to strike as absolute. Section 22 prohibits strikes in breach of contract or without giving employer notice within six weeks before striking or within 14 days of giving such notice, or before the expiry of the date of strike specified in the notice or during the pendency of proceedings before a conciliation officer and seven days after the conclusion of such proceedings. In the *All India Bank Employees case*, the Supreme Court said the right to form an association was a "guaranteed" one, but the methods used by the unions to achieve their purposes must adhere to the existing industrial laws of the land.

The criticism against the involvement of CITU in the workers' efforts to register a labour union is countermanded by the provisions of the Trade Unions Act itself. Section 6(a) of the Act provides for not only the admission of "ordinary members" from the workforce of a facility in a trade union but also the inclusion of "honorary or temporary members" as office-bearers to form the executive of the union. Section 16 of the same Act permits the constitution of a separate fund for "political purposes". Under this provision, a registered trade union may constitute a separate fund, from contributions separately levied, to promote the "civic and political interests of its members". The action allows these funds to be used to open pay for a candidate to contest elections to any legislative body constituted under the Constitution. The fundamental right to free speech of the workers includes their right to political expression.

### On the 'workmen committee'

The State Industries Minister claimed the discussions with the committee had led to a resolution. The *Hindu* quoted the striking workers saying the 'workmen committee' was composed of employees who backed the company. Sections 17 and 18 of the 1947 Act cover the constitution of a 'workmen committee'. The statute empowers the appropriate government to direct the employer to form a 'workmen committee' consisting of an equal number of representatives of employers and workers engaged in the establishment. The workers in the committee have to be chosen "in consultation with their trade union, if any, registered under the Indian Trade Unions Act, 1926". The provision also replicated in the yet-to-be implemented Industrial Relations Code of 2020. Hence, the law mandates the registration of a trade union before the formation of a workmen committee.

### What is in a name?

Samsung India has complained to the Labour Commissioner that the use of the name 'Samsung' in the SIWU was a violation of the Trade Marks Act, 1999. Section 29(5) of the 1999 Act states that a registered trade mark is infringed if it is used as the name or the part of a trade name or the name or part of the name of a business concern. Trade unions are not trade or business concerns dealing in goods or services. Section 29(b) of the 1926 Act defines 'trade union' as a "combination" primarily formed to regulate relations between workers and employers. U.S. courts have evolved the principle of 'nominative fair use' which involves utilising as much of the distinguishing design elements of a brand logo as reasonably associate the union and the company.

## THE GIST

▼ The Supreme Court in *B. R. Singh versus Union of India* in 1989 upheld the right to form associations or unions as a fundamental right under Article 19(1)(c) of the Constitution.

▼ The Madras High Court, in *Ranganasami versus Registrar of Trade Unions*, succinctly defined the history and object of the Trade Unions Act as "the organisation of labour to enable collective bargaining".

▼ The right to strike labour is a legal right recognised with certain restrictions under the Industrial Disputes Act.



SAURABI PANDEY  
Editor in Chief

# **Topic→Union Rights and Collective Bargaining in India**

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## **Key Aspects of Union Rights and Collective Bargaining**



### **Supreme Court Ruling:**

The Supreme Court upheld the right to form unions as a fundamental right under Article 19(1)(c) in 1989.

Allows reasonable restrictions for public order, morality, or national integrity.



### **Trade Union Registration:**

The State is obligated to register trade unions under the 1926 Act.

Provides workers with a voice and immunity from civil and criminal actions.



### **Collective Bargaining Definition:**

Defined as negotiations between employees and employers to determine working conditions.

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Recognized in the Industrial Disputes Act.

## Historical Context:

Roots trace back to the late 18th and early 19th centuries.

Significant events like the 1918 Ahmedabad Mills strike led by Mahatma Gandhi.



## Legal Framework:

Refusal of employers to engage in collective bargaining is considered an unfair labor practice under both U.S. and Indian law.



## Global Recognition:

Freedom of association and the right to collective bargaining are recognized as fundamental workers' rights by the ILO and various legal frameworks worldwide.





## Judicial Support:


The Indian Supreme Court emphasizes the importance of collective bargaining for achieving social justice in industrial life.


Acknowledges the historical disadvantages faced by labor.\_\_\_\_\_



—  **Legal Right to Strike:** The right to strike is legally recognized under the Industrial Disputes Act, with certain restrictions in place.

 **Forms of Strikes:** Strikes can take various forms, including 'go-slow', 'sit-in-work', 'work-to-the-rule', and absenteeism, serving as demonstrations for workers' rights.

 **Supreme Court's View:** The Supreme Court views strikes as important tools for workers, emphasizing the right to demonstrate as a fundamental aspect of labor rights.

 **Restrictions on Strikes:** The 1947 Act imposes restrictions on strikes, including the requirement for notice and prohibitions during certain conditions, such as ongoing conciliation proceedings.

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**Trade Unions Act Provisions:** The Trade Unions Act allows for the inclusion of ordinary and honorary members in unions and permits the establishment of funds for political purposes.



**Political Expression:** Workers have the fundamental right to free speech, which includes political expression and the ability to support candidates in elections.



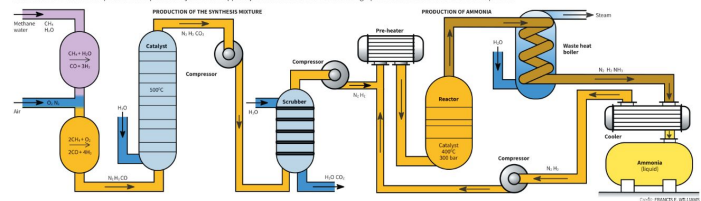
**Works Committee Formation:** The 1947 Act mandates the formation of a 'works committee' with equal representation from employers and workers, chosen in consultation with trade unions.

**Summary:** The right to strike is legally recognized with restrictions, serving as a vital tool for workers' rights, while trade unions play a significant role in political expression and representation.

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Ammonia is made from nitrogen and hydrogen. Under extreme heat, the molecules separate and form a compound, but it is short lived because of the heat. The German chemist Fritz Haber heated the N<sub>2</sub>-H<sub>2</sub> combination to various temperatures in a platinum cylinder and applied pressure to create ammonia. This graphic demonstrates the Haber-Bosch process



# How did the Haber-Bosch process change the world?

The Haber-Bosch method allowed industries to develop cheap synthetic fertilizers, which was a critical component in the sevenfold rise in the world's food supply during the 20th century. But environmentalists have said the utility of fertilizers can't be taken for granted. For one, Haber's nitrogen fertilizer is not harmless

### E.K. Voskresenskiy

**A** hundred million tonnes of nitrogen are now removed from the atmosphere and converted into fertilizer via the Haber-Bosch process, adding 145 million tonnes of reactive nitrogen to the soil. To compare, biological processes replace an estimated 800-840 million tonnes of reactive nitrogen every year. Without the industrial synthesis of ammonia from nitrogen and hydrogen, we would have had no way to meet the world's expanding demand for food.

**What is the nitrogen molecule?**  
Nitrate ions are molecules of oxygen and nitrogen, abundant in the earth's atmosphere. Nearly eight metric tonnes of nitrogen lie on every square metre of the earth's surface, yet it can't feed a single blade of grass. Nitrogen in the air is mostly in the form of N<sub>2</sub>. When two nitrogen atoms join together, they share three pairs of electrons to form a triple bond, rendering the molecule nearly unbreakable.

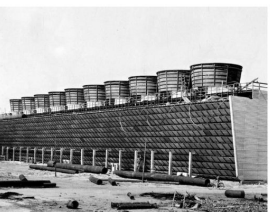
The energy required to break the nitrogen triple bond is so high (945 kJ/mol) that molecular nitrogen is nearly inert, but if the bond is broken, strong nitrogen can form ionic nitrates such as ammonia (NH<sub>3</sub>), ammonium (NH<sub>4</sub><sup>+</sup>) or nitrate (NO<sub>3</sub><sup>-</sup>). Plants need these types of nitrogen, called reactive nitrogen, to synthesize enzymes, proteins, and amino acids. Healthy plants often contain 2-4% nitrogen in their above-ground tissues, significantly more than other nutrients.

**How is nitrogen added to nature?**  
Among natural things, only lightning has enough energy to destroy the N<sub>2</sub> triple bond. In a lightning bolt, nitrogen in the air combines with oxygen to generate nitrogen oxides such as NO and NO<sub>2</sub>. They can then combine with water vapour to create nitric and nitrous acids (HNO<sub>3</sub> and HNO<sub>2</sub>, respectively). Reactive nitrogen-rich droplets fertilize farmlands, woods, and grasslands when it rains. This pathway is estimated to replenish soil at around 10 kg of nitrogen per acre per year.

Apart from lightning, a gentle microbial process carried out by *Azotobacter* bacteria can also create reactive nitrogen. Some microorganisms such as *Rhizobium* have developed symbiotic relationships with legume plants (soy, peas, beans, alfalfa, and so on) to provide reactive nitrogen in exchange for nutrients. *Azotobacter*, a species of aquatic fern with a symbiotic association with the cyanobacterium *Anabaena*, can also do this and convert nitrogen from the air to reactive nitrogen, on land and in water. *Anabaena* is an effective fertilizer for farmland.

**What is the nitrogen cycle?**  
Plants usually get their reactive nitrogen from the soil, where they absorb minerals dissolved in water such as ammonium (NH<sub>4</sub><sup>+</sup>) and nitrate (NO<sub>3</sub><sup>-</sup>).

Humans and animals need nice pre-made nitrogen-rich amino acids from plants. Nitrogen makes up approximately 2-6% of the human body. The nitrogen ingested by plants and animals returns to the soil through excreta and the decomposition of dead bodies. But the cycle is incomplete: some nitrogen is released back into the environment in molecular form. Nitrogen from human



On a large scale: An ammonia plant cooling tower at the Fertilizer Corporation of India's Bargarh plant in Odisha, India. (AP/WIDEWORLD)

**Humans and animals need nice pre-made nitrogen-rich amino acids from plants. Nitrogen makes up approximately 2-6% of the human body. The nitrogen ingested by plants and animals returns to the soil through excreta and the decomposition of dead bodies.**

two atoms molecules. Under extreme heat, the molecules separate and form a compound, but it is short lived because of the heat. The reversible reaction N<sub>2</sub> + 3H<sub>2</sub> → 2NH<sub>3</sub> (the 'g' sign has been used here as a stand-in for the chemical symbol) must be maintained in specific conditions to harvest considerable amounts of ammonia.

The German chemist Fritz Haber heard the N<sub>2</sub>-H<sub>2</sub> combination to various temperatures in a platinum cylinder and calculated the amount of ammonia created. He also used the equilibrium to decompose into nitrogen and hydrogen, attempting to approach the equilibrium point from the opposite direction. At 1,000 degrees Celsius, Haber found that harvestable ammonia made up just one-hundredth of 1% of the mixture – too little for commercial production. Then Haber wondered if pressure could be the answer. He calculated that hydrogen and nitrogen would only remain united in extreme conditions – temperatures of 200 degrees Celsius and pressures of 200 atm that is, 200 times the average air pressure on sea level. But the ammonia production rate was still too slow, so Haber set about looking for a catalyst. He also realised that if he could cool the ammonia to a liquid state, he could collect most of it.

**What is the Haber-Bosch process?**  
A young Englishman named Robert Le Rossignol was a leader for practical engineering problem had recently joined Haber's laboratory. He created the seal required to maintain high pressure in an experimental chamber. Friedrich Kirchnerbauer, a highly competent mechanic, built the corresponding equipment. Haber later congratulated Le Rossignol and Kirchnerbauer on the Haber-Bosch process, sharing patents and later money with both men.

The heated hydrogen and nitrogen combination would circulate in a steel chamber at a pressure of 200 atm. The chamber had a valve that could withstand the high pressure while allowing the N<sub>2</sub>-H<sub>2</sub> mixture to pass through. Haber also built a contraption to ensure the hot gas departing from the reactor and chamber passed their heat to the cooler incoming gases. Thus the departing combination would rapidly cool while the ingested gas would be heated. At that time innovators were looking for a material to use as a lightweight filament and Thomas Edison had just set to work on tungsten. A metallurgist of Berlin, a German gas lamp and electric light manufacturing company, had asked Haber to recommend a material and supplied his laboratory with various hard-to-find materials. Haber soon began testing each of them as ammonia catalysts.

One of them was osmium, a rare and dense metal found in only two places in the world. It was osmium that was used in the Haber-Bosch process.

When Haber inserted an osmium sheet into the pressure chamber, filled it with a N<sub>2</sub>-H<sub>2</sub> mixture, and heated them, the nitrogen triple bond cracked away, leaving reactive nitrogen to fuse with hydrogen and produce a very large amount of ammonia. German propagandists soon hailed the feat as "heat an ally" – producing instead of air, as Jesus is fabled to have done.

Haber went on to test several catalysts and discovered osmium worked well, too. However both osmium and iridium were very expensive for large-scale use. When Ludwig Amberg and Soda-Fabrik (SAS) a leading German chemical company, decided to upscale Haber's experiment to a factory-scale operation, he asked his own chemist Alwin Mittsch to find a cheap and readily available catalyst. Mittsch conducted thousands of experiments with 4,000 materials and found that certain iron oxides were good catalysts. Finally, some ferric engineering by BASF's Carl Bosch turned Haber's osmium setup into an industrial process to produce fertilizer.

Four years after Haber's a/c's accomplishment, BASF opened its first ammonia factory in 1913.

**What are the downsides of fertilizers?**  
A century ago, the average lifespan at birth of a human was 39 years, compared to 67+ years today. The Haber-Bosch method allowed industries to develop cheap synthetic fertilizers, which was a critical component in the sevenfold rise in the world's food supply during the 20th century. According to one estimate, one-third of the world's population – almost two billion people – would be without food if the Haber process for nitrogen fixation did not exist. But environmentalists have also said the utility of fertilizers can't be taken for granted. For one, Haber's nitrogen fertilizer is far from harmless. The average adult carries 1.2 kg of nitrogen in human tissues, but in many countries, the yearly fertilizer application currently exceeds 50 kg of nitrogen per capita. The global average is around 16.

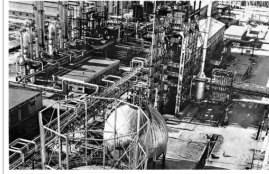
The 'best' nitrogen is drawn up by plants along with a greater quantity of other minerals. It also over-saturates bacteria and eukaryotic biochemical processes that release reactive nitrogen into the atmosphere, where it acidifies rain, corroding and destroying land. Nitrogen fertilizers are also part of the surface runoff into fresh and coastal waters, accidentally fertilizing and deoxygenating it. Even a small amount of moisture here causes toxic blue-green algae.

In sum, Haber's work was essential but insufficient to feed humanity. Scarcity, hunger, and industrialisation coexist with pollution begetting with grain abundance, sometimes even within the same country. The sign of nitrogen fixation reaches us in a more significant lesson: technological firsts don't just solve people's problems. We also need political, cultural and social innovations.

**F.Y.** Metallurgists are a science communicator and visiting faculty member at IIT Bombay. He teaches Science, Education and Robotics, Mumbai.

For feedback and suggestions for 'Test & Comment' please write to [feedback@thehindu.co.uk](mailto:feedback@thehindu.co.uk) with the subject 'Test & Comment'

For the soil: A village farmer applying fertiliser after replanting paddy, saplings in the outskirts of Bhubaneswar in Odisha. (AP/WIDEWORLD)



Production of the ammonia synthesis unit of the Bargarh plant in Odisha, India. This was published in the Survey of Indian Industry 2003. (AP/WIDEWORLD)

waste is also rarely returned to the fields. Although legumes can produce nitrogen independently, important food crops such as rice, wheat, corn, and potatoes are less well-known crop like cassava, banana, and common fruits and vegetables draw nitrogen from the soil. As the human population multiplies, nitrogen is an important soil depleter. Farmers need fertilizers to compensate.

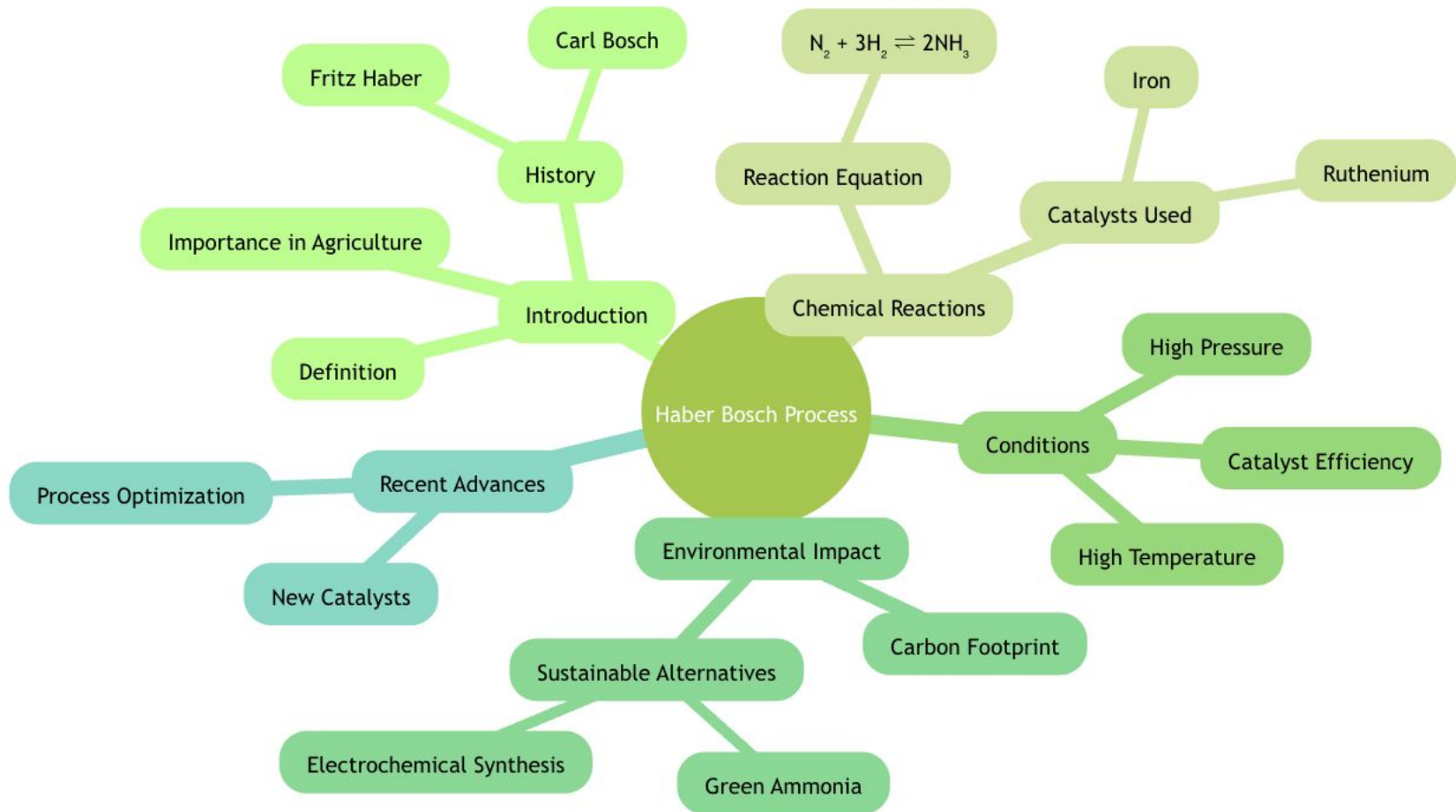
**How is ammonia made?**  
Ammonia (NH<sub>3</sub>) is made of nitrogen and hydrogen, both of which exist naturally as diatomic molecules. It is made by combining nitrogen and hydrogen under extreme heat and pressure. The reaction is reversible and the ammonia produced is short-lived. It is used as a fertilizer. It is also used in the production of explosives and other chemicals.

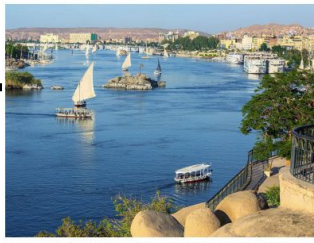
## Overview

The Haber Bosch Process is crucial for ammonia production. It combines nitrogen and hydrogen to create ammonia, key for fertilizers.

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Figure 1.1: Mindmap





The accord is a testament to collective determination to harness the Nile River, says Nile Basin Initiative. FILE PHOTO

## Nile nations agree on water-sharing without Egypt's nod

**Associated Press**

KAMPALA

A regional partnership of 10 countries said an agreement on the equitable use of water resources from the Nile River basin has come into force despite the notable opposition of Egypt.

The legal status of the “cooperative framework” was formally confirmed by the African Union after South Sudan joined the treaty, the Nile Basin Initiative said in a statement on Sunday.

Ethiopia, Uganda, Rwanda, Burundi, and Tanzania have ratified the accord. Egypt and Sudan declined to sign, while Congo abstained. Kenya has not yet deposited its ratification documents with the African Union.

The accord, which came into force on Sunday, “is a testament to our collective determination to harness the Nile River for the benefit of all, ensuring its equitable and sustainable use for generations to come,” the Nile Basin Initiative said in its statement. “This is a moment to congratulate the governments and people of the Nile riparian countries, and all partners and stakeholders, for their patience, resolve, and dedication to this cause.”


The lack of ratification by Egypt and Sudan – desert nations that have raised concern over any attempts to diminish their shares of Nile water – means the accord will prove controversial.


Tensions in the region have increased, stemming in part from Ethiopia's construction of a \$4 billion dam on the Blue Nile, a key tributary of the Nile River. Egypt fears the dam will have a devastating effect on water and irrigation supplies downstream unless Ethiopia takes its needs into account.


## Topic → Nile River Basin Agreement Overview


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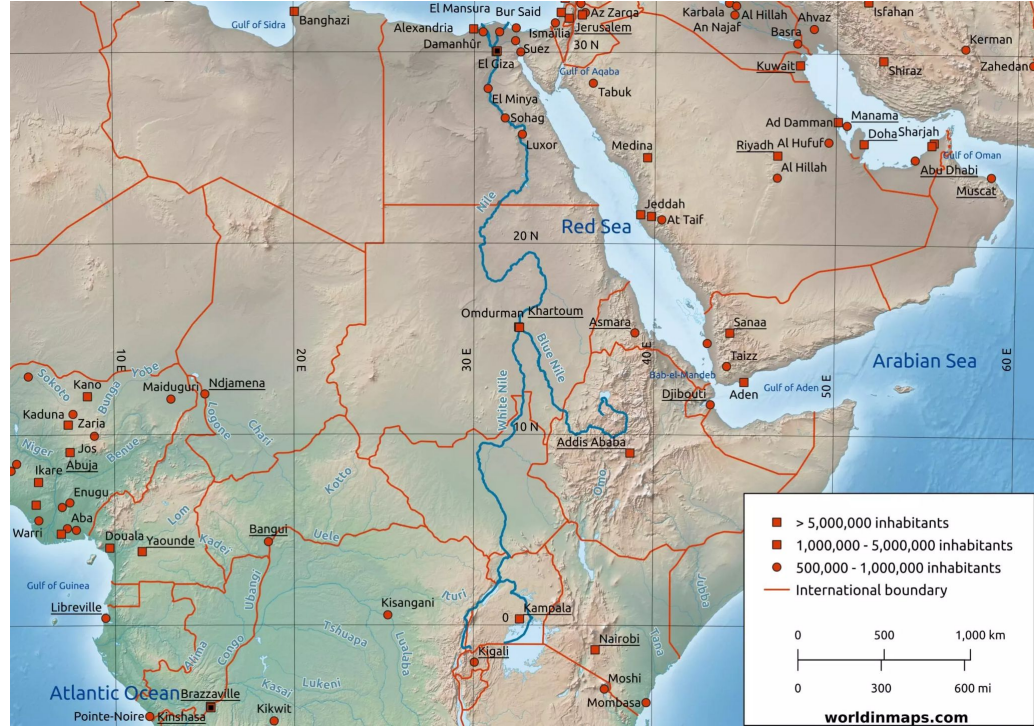
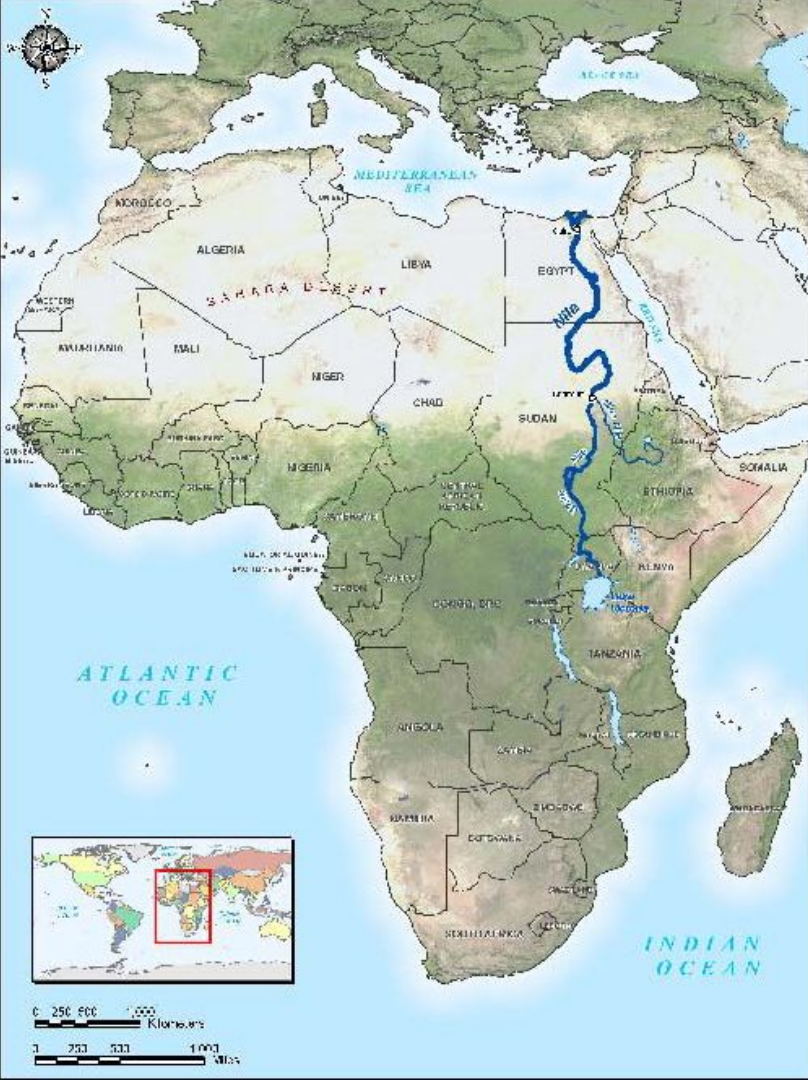
 A regional partnership of 10 countries has established an agreement on the equitable use of Nile River basin water resources.

 The agreement, known as the "cooperative framework," was confirmed by the African Union after South Sudan joined the treaty.

 Countries that have ratified the accord include Ethiopia, Uganda, Rwanda, Burundi, and Tanzania.


 Egypt and Sudan have declined to sign the agreement, while Congo abstained and Kenya has not yet submitted its ratification documents.


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 The accord aims to ensure the sustainable and equitable use of the Nile River for future generations.

 The lack of ratification by Egypt and Sudan raises concerns and may lead to controversy over water resource distribution.

 Tensions have escalated due to Ethiopia's construction of a \$4 billion dam on the Blue Nile, which Egypt fears could impact its water supply.

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## Key Points

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**Regional Partnership:** Involves 10 countries focusing on equitable water resource use.

**Cooperative Framework:** Confirmed by the African Union, with South Sudan's participation.

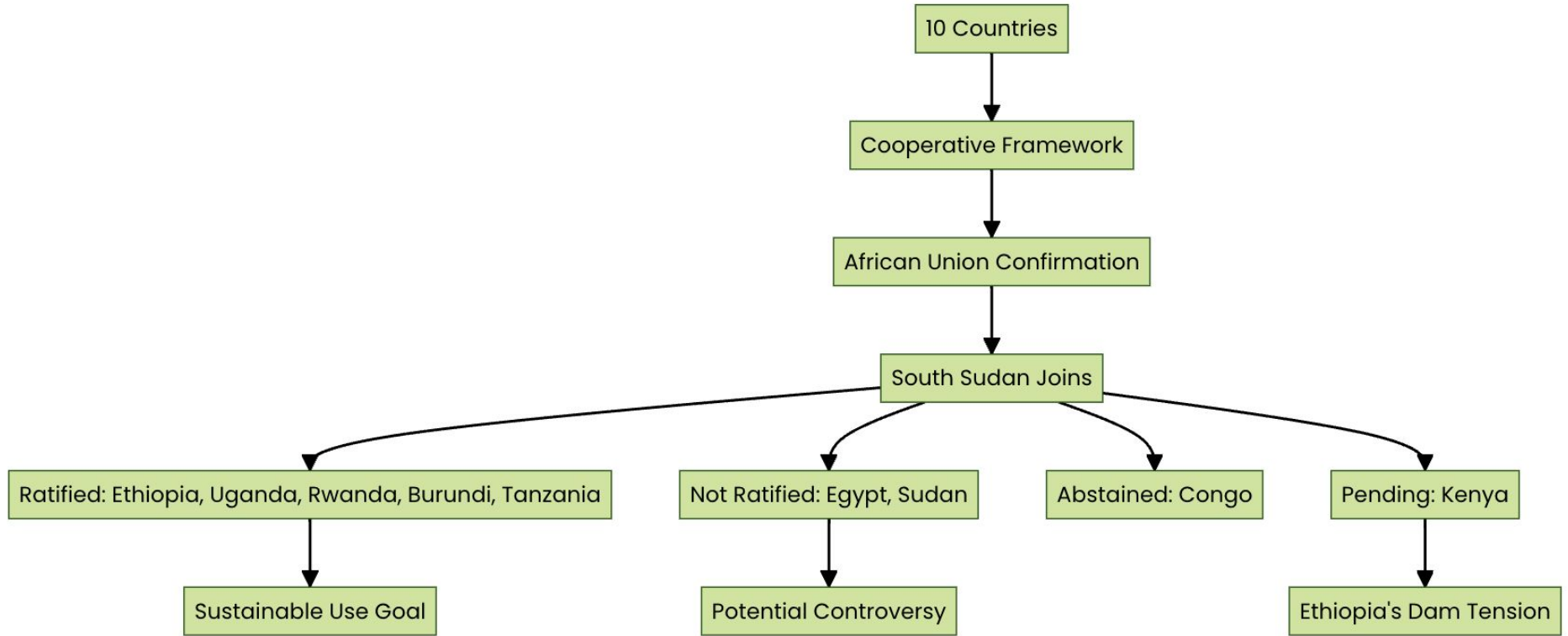
**Ratification Status:** Ethiopia, Uganda, Rwanda, Burundi, and Tanzania have ratified; Egypt and Sudan have not.

**Sustainability Goal:** Aims for sustainable and equitable use of the Nile River.

**Controversy:** Egypt and Sudan's non-ratification could lead to disputes.  
Ethiopia's Dam: A \$4 billion project on the Blue Nile causing tension with Egypt.

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# Nile River Basin Agreement Status:



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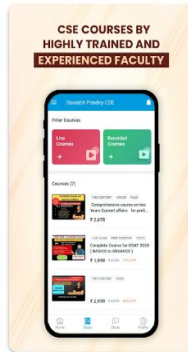
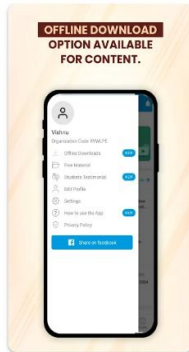
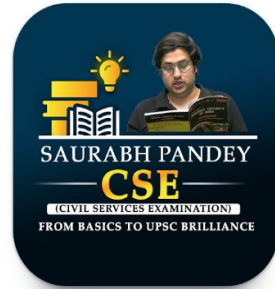
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