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## National Research Foundation

**News:** The Union Cabinet, chaired by the PM Modi approved the National Research Foundation (NRF) Bill 2023, to give the nation's scientific research a strategic direction.

### Key Highlights:

- The approved Bill will pave the way to establish NRF that will seed, grow and promote Research and Development (R&D) and foster a culture of research and innovation throughout India's universities, colleges, research institutions, and R&D laboratories.
- The bill, after approval in the Parliament, will establish NRF, **an apex body** to provide **high-level strategic direction** of scientific research in the country as per **recommendations of the National Education Policy (NEP)**, at a total estimated cost of Rs. 50,000 crore during five years (2023-28).
- The **Department of Science and Technology (DST)** will be the administrative Department of NRF which will be governed by a **Governing Board** consisting of eminent researchers and professionals across disciplines.
- Since the scope of the NRF is wide-ranging – impacting all ministries - the **Prime Minister will be the ex-officio President of the Board** and the **Union Minister of Science & Technology & Union Minister of Education** will be the **ex-officio Vice-Presidents**.
- NRF's functioning will be governed by an **Executive Council** chaired by the Principal Scientific Adviser to the Government of India.
- **NRF will forge collaborations** among the industry, academia, and government departments and research institutions, and create an **interface mechanism** for participation and contribution of industries and State governments in addition to the scientific and line ministries.
- It will focus on creating a policy framework and putting in place regulatory processes that can encourage collaboration and increased spending by the industry on R&D.
- **The bill will also repeal the Science and Engineering Research Board (SERB)** established by an act of Parliament in 2008 and subsume it into NRF which has an expanded mandate and covers activities over and above the activities of SERB.

TOP 10 R&D SPENDING COUNTRIES FOR 2021							
Top 10	Country	2020 Estimated			2021 Forecast		
		GDP	R&D	GERD	GDP	R&D	GERD
		PPP Bil, US\$	as % GDP	PPP Bil, US\$	PPP Bil, US\$	as % GDP	PPP Bil, US\$
1	China	29,010.7	1.98%	574.40	31,389.6	1.98%	621.50
2	United States	20,145.1	2.88%	580.20	20,789.7	2.88%	598.70
3	Japan	5,174.2	3.50%	181.10	5,210.4	3.50%	182.36
4	Germany	4,283.5	2.84%	121.65	4,480.5	2.84%	127.25
5	India	9,991.1	0.86%	85.92	10,870.3	0.86%	93.48
6	South Korea	2,002.6	4.35%	87.11	2,102.7	4.35%	91.47
7	France	2,864.7	2.25%	64.46	2,979.3	2.25%	67.03
8	Russia	3,927.7	1.50%	58.92	4,037.7	1.50%	60.57
9	United Kingdom	2,876.7	1.73%	49.77	2,983.1	1.73%	51.61
10	Brazil	3,199.3	1.16%	37.11	3,288.9	1.16%	38.15

## IMD World Competitiveness Ranking 2023

**News:** India slipped three spots to secure the **40th position** in the latest world competitiveness ranking published by the International Institute for Management Development (IMD)

### What is IMD World Competitiveness Ranking 2023?

- The IMD World Competitiveness Ranking 2023 is a ranking of 64 economies based on their competitiveness, which is defined as the extent to which a country promotes the prosperity of its people by measuring economic well-being through hard data and survey responses from executives.
- The ranking is published by the **IMD Business School**, a **Swiss-based institution** that specializes in executive education and applied research.

## Key Findings:

- Denmark, Ireland, and Switzerland are the top three most competitive economies in 2023.
- India **slipped to the 40th spot** from the 34th spot in 2022.
- **Europe dominated the top spots**, China rose to the 17th position, and the US remained stable at the 10th position.
- The ranking showed that **economic performance, government efficiency, business efficiency, and infrastructure** are the four key factors that determine competitiveness.
- The ranking also considered the impact of the COVID-19 pandemic on the economies and their resilience

## India specific findings:

- The IMD report highlighted that India witnessed improvements in government efficiency but slightly underperformed in business efficiency, infrastructure, and economic performance when compared to other countries.
- **Exchange rate stability, compensation levels, and advancements in pollution control** were the top three contributing factors that positively impacted India's score.
- The report emphasized the **challenges faced by India** in 2023, which include sustaining high GDP growth, managing financial market volatility, controlling inflation and fiscal deficit, accelerating digital transformation, and mobilizing resources for infrastructure development.

## The problem of Child Labor in India

**News:** The 111th annual conference of ILO, held in Geneva from June 5-16, 2023, served as a platform for worker, employer and government delegates from the organisation's 187 member states to discuss a wide range of issues, including a just transition towards sustainable and inclusive economies, quality apprenticeships and labour protection.

### Background:

- World Day against Child Labour was observed on **12<sup>th</sup> June**. **Theme – Social Justice for All, End of child Labour.**
- The **agriculture sector** accounts for **70 per cent of child labour** (112 million), followed by 20 per cent in services (31.4 million) and 10 per cent in industry (16.5 million). Nearly 28 per cent of children aged 5-11 years and 35 per cent of children aged 12-14 years involved in child labour are out of school. (Census 2011)
- A total of **10.1 million child laborers** are found in India. (Census 2011)
- **India's biggest child labour employers** are – Uttar Pradesh, Bihar, Rajasthan, Madhya Pradesh, and Maharashtra.



### What is Child Labour?

- A form of modern slavery, child labour includes any work that deprives children of their childhood, potential and dignity, and physical or mental development. (ILO)
- The practice includes **trafficking, sexual exploitation, debt bondage, and exploitation in armed conflicts.**
- **Article 24** of the Indian constitution prohibits the employment of children below the age of 14 years in any factory or mine or employed in any hazardous employment.

## What is the impact of Child labour?

- It diminishes children's ability to accumulate skills and knowledge, affecting their future productivity and income.
- It perpetuates the vicious cycle of poverty (child labour → poor education, health → less economic opportunities → poverty), denying children their fundamental rights and a better future.
- It weakens social development and cohesion within a country, impacting stability and democracy.
- It exposes children to physical (injuries, health complications and long-term developmental issues) and mental harm (anxiety, emotional trauma and a sense of hopelessness).

## How has pandemic exacerbated the issue of Child Labour?

- Rise in informal jobs, loss of Guardianship, migration, school closures and factors such as unemployment, inequality and hunger issues has forced children to work.

## What are the initiatives taken to curb Child labour in India?

- **Child Labour (Prohibition and Regulation) Act (1986)** - Bans the employment of children below 14 years and adolescents below 18 years in hazardous occupations and processes.
- **The Bonded Labour System (Abolition) Act 1976** - It prohibits systems of labour where people, including children, work under conditions of servitude to pay off debt, and also provides a framework for rehabilitating released labourers.
- **Protection of Children from Sexual Offences (POCSO) Act 2012** - It seeks to prevent commercial sexual exploitation of children.
- **National Child Labour Project (NCLP) Scheme** - It seeks to provide non-formal education, vocational training, mid-day meal, stipend and health care to the rescued children and then mainstream them into formal schooling system.
- **Pencil Portal** - The platform aims at engaging the Central Government, State Government, District, civil society and the public in eradicating child labour to achieve the target of a child labour free society. It was launched by the Ministry of Labour and Employment.
- **The Trafficking in Persons (Prevention, Care and Rehabilitation) Bill** - The MWCD published the Draft of the Bill in 2021, detailing measures to prevent, protect and rehabilitate victims. There are specified penalties for offences divided into "trafficking" and "aggravated trafficking". It widened the scope of "victims" to include transgender persons.

## Way Forward

- Sufficient measures to ensure that all children have access to free and compulsory education up to the age of 14 years, as per the **Right to Education Act 2009** and **Article 21A** of the Constitution.
- **Increased collaboration** with civil society organizations, media, corporations and citizens to raise awareness about the harmful effects of child labour and the importance of child rights.
- Be prepared for instances that increases the incidence of children ending up doing child labour – For example, war like situation, pandemic, natural disasters, extreme poverty and health care.

## Reforms in WTO

**News:** The recently concluded meeting of the G20 working group on trade and investment focused on the important issue of WTO reform.

### Why was WTO started? What are the modern day concerns?

- The world around 50 years ago **valued economic interdependence** with the belief that such interdependence would deter security confrontation. The WTO, created in that era, was aimed at legalising and policing economic interdependence.
- However, today's world is dominated by geoeconomic considerations and heightened securitisation of international economic relations.

### Which challenges faced by WTO require reforms?

- The **rise of unilateralism** in international economic relations, particularly by developed countries like the US
- **Economic policies** such as **industrial subsidies** and **local content requirements** that violate WTO rules
- **Weakening of trade multilateralism** in favor of external plurilateral alignments, and neglect and disregard for WTO laws and rules by certain countries.
- The presence of **special and differential treatment (SDT) principles** in WTO agreements. SDT provisions give special rights to developing countries and obligate developed countries to treat the former more favourably. However, **only 21%** of the SDT provisions in various WTO agreements oblige developed countries to actually provide differential treatment to developing countries. Therefore, SDT provisions need to be given more teeth and any effort to weaken this treaty-embedded right in the name of WTO reform should be opposed.
- To reinvigorate the WTO, reform needs to cover all three pillars.
- Of particular note is the need for a **permanent solution to the crisis of the WTO's Appellate Body and dispute settlement system.**

### What is the WTO's appellate body?

- The WTO Appellate Body is a **standing body of seven members** that hears appeals from reports issued by panels in disputes brought by WTO members.
- The members are appointed by the DSB for **four-year terms** and have expertise in law, international trade and the covered agreements.
- The Appellate Body can uphold, modify or reverse the legal findings and conclusions of a panel, and its reports are adopted by the DSB unless all members decide not to do so.
- However, the body remains paralysed since 2019 which is part of the US's overall game plan to dilute the policing part of the WTO to pursue trade unilateralism without many checks. The remaining G20 countries need to either persuade the US or resurrect the appellate body without the US.

### Way Forward

- Trade multilateralism might be out of fashion, but remains of vital salience for countries like India. Therefore, under its Presidency of the G20, India should work with others to drive the WTO reforms agenda aimed at making trade multilateralism inclusive.



## Rockies, Alps, Himalayas – More rain, less snow

**News:** Climate change could cause a shift in snowfall to rainfall in mountain regions across the Northern Hemisphere, amplifying rainfall extremes lasting over a few hours to a day, the study published in Nature stated.

### Key Findings:

- The Himalayas and other mountains across the Northern Hemisphere are likely to see 15 per cent more rain for every 1-degree Celsius rise in temperature due to climate change, according to a new study.
- This switch from snowfall to rainfall could increase the risk of disasters such as floods, landslides, and soil erosion.
- The Himalayas and the North American Pacific Mountain ranges, including the Cascades, Sierra Nevada, and coastal ranges from Canada to Southern California are more threatened than the Rockies or the Alps.
- The Himalayas is one of those hotspot regions where an increased risk (due to changes in atmospheric dynamics) of rainfall extremes is witnessed.
- Earlier this month, a report from International Centre for Integrated Mountain Development (ICIMOD) found that the Hindu Kush Himalayas have seen a 65 per cent faster loss of glacier mass.

## Green Credits scheme launched for Eco push

**News:** The Environment Ministry has issued a draft notification detailing a proposed ‘Green Credits Scheme’.

### What is the Green Credit Programme/Scheme?

- Under this, individuals, industries, FPOs, ULBs, gram panchayats and private sectors, etc., will be able to earn “green credit” for **undertaking environment-friendly actions**. The **green credits will be tradable** on a proposed domestic market platform.
- It follows the principle of LiFE – Lifestyle for Environment.
- The overall administration of the scheme will be under the **Indian Council for Forestry Research and Education** – an autonomous organisation/ governmental agency under the MoEFCC.

### Which are the Focus sectors/activities that can qualify for Green credits?

- **Tree Plantation based Green Credits**
- **Water based Green credit** – To promote water conservation, water harvesting, water use efficiency/savings
- **Sustainable agriculture-based green credit** to promote natural and regenerative agricultural practices and land restoration to improve productivity.
- **Waste management-based Green Credit** - To promote sustainable and improved practices for waste management, including collection, segregation and treatment.
- **Air pollution reduction-based Green Credit** - To promote measures for reducing air pollution and other pollution-abatement activities.
- **Ecomark-based Green Credit** - To encourage manufacturers to obtain an eco-mark label for their goods and services
- **Mangrove conservation and restoration-based Green Credit** - To promote measures for the conservation and restoration of mangroves.
- **Sustainable building and infrastructure-based Green Credit** - To encourage the construction of buildings and other infrastructure using sustainable technologies and materials.

### What is the overall observation of the scheme?

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Areas which will be part of the credit system	■ The mechanism will be implemented in a phased manner
■ Tree plantation	■ Initially, two to three activities from the eight sectors are under consideration for designing and piloting the Programme
■ Water	■ Further, more activities will be added from the selected sectors
■ Sustainable agriculture	
■ Waste management	
■ Air pollution reduction	
■ Mangrove conservation and restoration	
■ Ecomark	
■ Sustainable building and infrastructure	

- It's a first-of-its-kind instrument that seeks to value and reward multiple ecosystem services to allow green projects to achieve optimal returns beyond just carbon. The scheme will allow project proponents to also access carbon markets additionally.
- The scheme will incentivise a host of activities including afforestation programmes, water conservation, waste management and remedying air pollution by allowing individuals and organisations to generate 'green credits'.
- Unlike carbon markets, where only greenhouse gas emissions were traded, the Green Credit Scheme was "trickier" as it involved accounting for a wide range of actions. For example, how much water one saved is equivalent to a tonne of CO<sub>2</sub> prevented from emissions is difficult to establish.
- Possible risk of Greenwashing

### Way Forward

- Capacity needs to be built to monitor these systems and prevent fraud. It will save resources that could be diverted to more transformational pollution control and biodiversity protection efforts.

## Facts for Prelims

### Synthetic Hydrocarbon Fuel

**News:** Germany has proposed transitioning to carbon-neutral synthetic fuels for existing internal combustion vehicles instead of phasing them out completely.

#### What is Synthetic Hydrocarbon Fuel?

- Synthetic hydrocarbon fuel is a type of fuel that is artificially created through chemical processes using carbon-based feedstocks.
- It is produced by **combining carbon dioxide (CO<sub>2</sub>) captured from the atmosphere with hydrogen**. The carbon dioxide is typically sourced through direct air capture or other methods, while the hydrogen can be generated using renewable energy sources like the electrolysis of water.

#### Why was such proposal made?

- Even though electric vehicles and hydrogen fuel cells have zero-emission during usage, their manufacturing processes have significant environmental impacts.
- Approximately 90% of the world's vehicles are expected to be internal combustion by 2030, and replacing them entirely would not be a zero-carbon solution.

### Aspartame

**News:** The cancer research arm of the World Health Organization (WHO), the International Agency for Research on Cancer (IARC), is reportedly set to list the artificial sweetener aspartame as "possibly carcinogenic to humans."

#### About:

- **Aspartame** is a low-calorie artificial sweetener that is 200 times sweeter than ordinary sugar. It is commonly used as a sugar substitute in foods and beverages.
- It is an artificial non-saccharide sweetener made from two amino acids, aspartic acid and phenylalanine. Aspartame is used in many diet drinks and foods as a sugar substitute.
- Some other important artificial sweeteners include saccharin, sucralose, and stevia.

## Places in News

### Mali

**News:** Mali's military junta conducted a referendum on a new draft constitution, presenting it as a step toward holding elections in 2024.

#### About Mali:

- Mali is a **landlocked country** in West Africa, with an area of over 1.2 million square kilometers.
- Mali's most important rivers are the **Niger River** and the **Senegal River**, which provide water, transportation, and fertile soil for agriculture.
- Capital – Bamako
- The countries that border Mali are Algeria to the north-northeast, Niger to the east, Burkina Faso to the southeast, Ivory Coast to the south, Guinea to the southwest, Senegal to the west, and Mauritania to the northwest.

#### Cities in Mali that experience Conflict:

- Kidal, Gao, and Timbuktu, Ménaka, Aguelhok, and Tessalit and its capital Bamako which has witnessed several coups, protest.



### Zambia

**News:** Lion and leopard populations have experienced a remarkable recovery in **Zambia's Kafue National Park (KNP)**, Africa's third-largest national park, after decades of poaching, according to a report by Panthera and its partner.

#### About Zambia:

- Zambia is a landlocked country in south-central Africa that takes its name from the Zambezi River, which drains all but a small northern part of the country.
- **Capital – Lusaka**
- Copper is the mainstay of Zambian economy.
- Zambia is also home to diverse wildlife and natural attractions, such as **Victoria Falls**, **Lake Kariba**, and the **Luangwa Valley**.
- **Important rivers** – The Zambezi, Kafue river, Luangwa river, Luapua river and Chameshi river.
- **Important cities** – Kitwe, Ndola, Livingstone, Chipata

#### Which are important lakes and National parks in Zambia?

- **Lake Tanganyika** - This is the **longest lake** in the world and **the second-deepest**. It is shared by Zambia, Tanzania, Burundi, and the Democratic Republic of the Congo.
- **Lake Kariba** - This is **Africa's largest man-made lake and reservoir**. It was created by the construction of the Kariba Dam on the Zambezi River in the 1950s.





- **Mosi-oa-Tunya National Park** -This is a small park that encompasses the Victoria Falls, one of the natural wonders of the world. The falls are also known as Mosi-oa-Tunya or “the smoke that thunders” in the local language.
- **Kafue** (As already mentioned) and South Luangwa NP.

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