Topics - MINDS MAPS included (Daily current affairs )--2nd November 2024

- Nilgiri Biosphere: A Rich Tapestry of Nature and Culture
- Methane's Climate Impacts and Global Cooperation
- Industrial Output Trends in India
- Samhuinn Fire Festival
- Hwasong-19 ICBM Test
- Mains



## By saurabh Pandey





Target Mains -2025/26 -

Q Essay topic -- > "Role of technology in shaping Women freedom "

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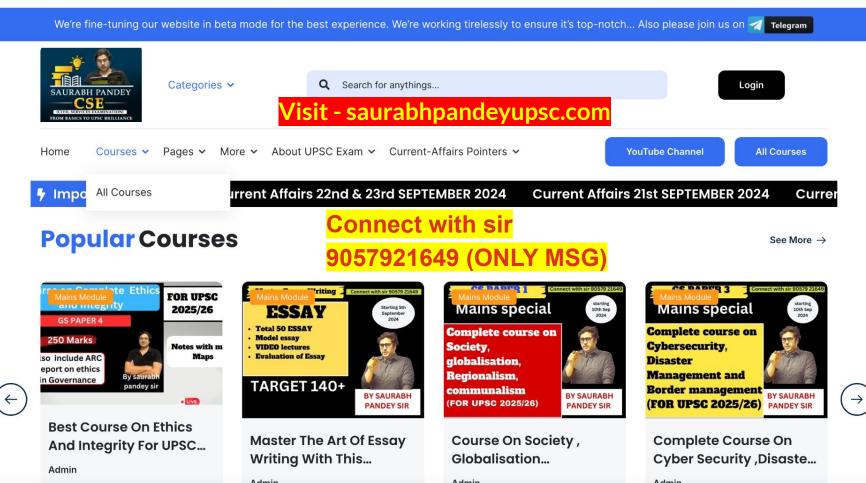
# FOR UPSC 2025/26

# NEW BATCH

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#### The Nilgiris as a shared wilderness



The Nigiri biosphere is the first UNESCO-declared biosphere in the country, covering over 5,500 square kilometres across the three States of Karnataka, Kerala and Tamil Nadu. From the iconic boddabetta, rising 2,637 metres into the sky, to the 260-m depth of the Moyar gorge, it encompasses a rich biodiversity. It has endemic flora and fauna seen nowhere else in the world, such as the medicinal *Baeolepis nervosa* plant used by the Irula tribe, the Nilgiri Chilappan, and the star-eved bush frog.

#### More human activity, new challenges

Of late, this biosphere has seen more human activity than ever before. Known primarily for its colonial-era tea plantations, it now boasts a thriving agriculture and tourism economy. While both sectors bring in much needed livelihoods, they have also brought in new challenges.

The tourism is less sustainable than local communities and the State would like, with day-trippers adding to the waste and the traffic snarks. Farmers increasingly use heavy pesticides and fertilizers, which contaminate once pristine water sources.

In the face of such rapid change, local communities have galvanised themselves to protect their home. Many civil society organisations in the district have innovated for sustainability, such as 'Clean Coonoor', a public-private partnership that creates a circular economy for growing solid waste. And the Keystone Foundation, which empowers indigenous and local communities for climate resilience.

The State government and the district administration too have advanced aspirations for the Nilgiris, including the three hill stations of Ooty, Coonoor and Kotagiri, which attract visitors from across the country.

They plan to go carbon neutral, stop plastic waste, conserve endemic species such as the Nilgiri tahr that roam the high shola grasslands and reduce invasives such as *Lantana camara* and



Rohini Nilekani

Chairperson, Rohini Nilekani Philanthropies and the author of 'Samaaj, Sarkaar, Bazaar – A Citizen First Approach' culture and the history of the ancient Nilgiris. The settlements of the indigenous Toda community, who have lived in the Blue Mountains for millennia, are a must on the tourism trail. Unfortunately, only a few hundred people remain today, a frail link to the ecological knowledge of ancestors past.

#### Conservation success, helping the state

A measure of the success of conservation efforts is in the numbers of wild animals that thrive in the Nilgiri Biosphere, the largest protected forest expanse in the country with safeguarded areas including Mudumalai and Mukurthi.

Increasing wildlife numbers have led to wide dispersal outside protected areas. Wildlife is everywhere now, in new ecological niches created by global warming. Plants and animals have successfully adapted to living almost incognito among us. The best example is that of the elusive leopard, which has developed quite an appetite for domestic dogs.

You can find the Indian gaur in the tea plantations, wild pigs in the garbage dumps, and sloth bears and leopards prowling around bungalows at night. Last year, a rather clever sloth bear broke into our home, wandered around the house, and, no doubt, disappointed by the lack of food, left the house by jumping from the first-floor balcony. We were away, but our CCTV cameras recorded the entire adventure

Neighbours have had wild encounters too, with porcupines and mouse deer, dephants and leopards. Surprisingly, people seem to have adjusted to this development, though human-wildlife conflicts hit the news ever so often.

This is part of an emergent global culture where billions of people are becoming nature lovers. They are rediscovering wonder. Citizen science has become a movement. Thanks to democratising technologies, people can share the beauty around them with one click; they can raise issues of concern, about shrinking habitats and human-animal conflict.

Clear evidence has emerged through the work of non-governmental organisations such as the Nature Conservation Foundation and WWF, that simple, yet powerful, technologies, which include early warning systems through mobile phone-based alerts, cameras and GPS tracking of animals, have helped reduce dangerous wildlife encounters.

When animals are so widely loved and so closely tracked, poaching becomes much riskier. Poaching thrives in secrecy, away from the public gaze. When tourists and wildlife enthusiasts wish to immerse themselves in wilderness, there is economic incentive locally to ensure that nature flourishes. the samaaj. We have to align also with the bazaar – represented by plantations, farmers, traders and the tourism industry. The state, including the Forest Department, cannot be the sole steward of the wild.

It is impossible for sarkaar to take whole and sole accountability, even if the Wildlife (Protection) Act 1972/The Wildlife (Protection) Amendment Act, 2022 says all wild animals belong to the state. The perception that animals are the government's responsibility creates a great disaffection in the public mind. Farmers get angry with the forester. Plantation owners become wary. "If these are your animals, you keep them. Why are they eating my crops, or injuring our workers?"

Yet, hard boundaries, fences and walls are neither feasible nor desirable to keep animals inside the forests.

Instead, what if we assumed that we are all in this together? What if we created a trust network of everyone interested in the conservation of our biodiversity? What if we took advantage of all emerging technologies such as sensitive cameras, satellite imagery, sensors and artificial intelligence, both within and outside of protected areas? What if all citizens of our country were engaged in the regeneration of our natural wealth?

#### The pivotal role of storytelling

As I have discovered in my 40-year ecological journey, to conserve nature, we first must learn to love. To love, we have to sense. It is not a mere intellectual exercise. If we see the beauty and the frailty of the wild, its flora and fauna – from the tiniest ant to the mightiest elephant, our wonder is ignited. We want to protect, to nurture and be nurtured.

Not everyone can visit every area of wilderness they wish to explore.

Storytelling by the few who can is critical to the process of creating communities for conservation. Our ancestors in the Nilgiris knew this well. In Sigur and Vellerikombai, the rock art created thousands of years ago still celebrates the relationship between humans and animals.

Charcoal and chalk have been replaced by cameras and pixels, but the urge remains the same. To share, to connect, to preserve.

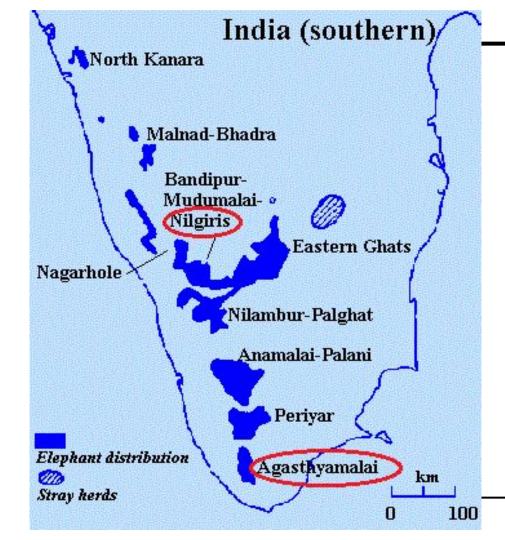
Tomorrow, November 3, is International Day for Biosphere Reserves. In a first such documentary, we at Rohini Nilekani Philanthropies, together with Felis Films, are proud to present *The Nilgiris – A Shared Wilderness*. We have dedicated this film to the communities of the Nilgiris and to Forest Departments across the biosphere.

We hope it will spark more curiosity, evoke more affection and spur more action across



The state alone cannot undertake the

undertake the task of protecting India's first UNESCOdeclared biosphere; communities



## Topic → Nilgiri Biosphere: A Rich Tapestry of Nature and Culture\_\_\_\_ Overview of the Nilgiri Biosphere



UNESCO Biosphere: The Nilgiri biosphere is the first UNESCO-declared biosphere in India, covering over 5,500 square kilometers across Karnataka, Kerala, and Tamil Nadu.

#### **Biodiversity and Unique Species**

Y Biodiversity: Home to unique flora and fauna, including the medicinal Baeolepis nervosa plant, Nilgiri Chilappan, and the star-eyed bush frog, endemic to the region.

#### **Human Impact and Challenges**

Human Activity: Increased human activity, especially from colonial-era tea plantations, agriculture, and tourism, poses new challenges to the biosphere.
 Environmental Challenges: The use of heavy pesticides and fertilizers by farmers contaminates water sources, while tourism contributes to waste and traffic issues.



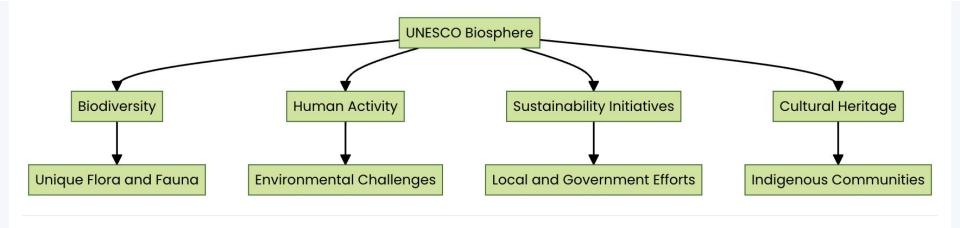
Sustainability Initiatives: Local communities and organizations like 'Clean Coonoor' and the Keystone Foundation are working towards sustainability and climate resilience.

Sovernment Aspirations: The state government aims for carbon neutrality, reduction of plastic waste, and conservation of endemic species like the Nilgiri tahr.

## **Cultural Heritage and Indigenous Communities**

Cultural Heritage: The ancient Nilgiris are culturally rich, with the indigenous Toda community playing a significant role in the region's history, despite their dwindling numbers.





#### Nilgiri Biosphere Conservation\_



#### Conservation Success

Largest Protected Forest: The Nilgiri Biosphere is the largest protected forest in India.

Wildlife Populations: Successful conservation efforts have led to increasing wildlife populations.

#### 5 Wildlife Adaptation

Urban Adaptation: Animals like leopards have adapted to urban environments. Human Encounters: Leopards preying on domestic dogs highlight these adaptations.

#### 🏡 Human-Wildlife Encounters

Frequent Encounters: Residents report frequent encounters with wildlife such as sloth bears and elephants.

Behavioral Shifts: Indicates a shift in wildlife behavior and habitat use



Global Movement: A growing global movement towards nature appreciation. Citizen Science: Technology enables engagement and reporting on wildlife issues **Technology in Conservation** 

NGO Utilization: NGOs use technologies like mobile alerts and GPS tracking. Conflict Reduction: Aims to reduce human-wildlife conflicts and enhance conservation

## **Economic Incentives**

Tourism and Economy: Increased tourism and local economic benefits from conservation.

Community Protection: Encourages communities to protect natural habitats



Collaboration Needed: Effective conservation requires collaboration between government, communities, and stakeholders. Beyond State Authority: Relies on more than just state authority.

Summary: The Nilgiri Biosphere's conservation success is marked by increasing wildlife populations adapting to human environments, necessitating collaborative efforts and technology to manage human-wildlife interactions

## *Zeroing in on methane diplomacy, at COP29*

rom November 11 to 22, 2024, world leaders will gather in Baku, Azerbaijan, for the 29th Conference of Parties (COP29) to the United Nations Framework Convention on Climate Change (UNFCCC). Dubbed the "Finance COP", representatives from every country will, for the first time in 15 years, set a new global climate finance goal, known as the "new collective quantified goal" or NCQG. The host country, Azerbaijan, has put forward an action agenda, which includes pledges to increase battery storage capacity six-fold, dramatically expand electricity networks, and cut methane emissions from organic waste.

Methane's climate impacts are severe, accounting for around 30% of global warming since the pre-industrial era, and its atmospheric concentration is rising rapidly. Crucially, on a 100-year timescale, methane has 28 times greater global warming potential than carbon dioxide and is 84 times more potent on a 20-year timescale.

This means that cutting methane is one of the most effective levers we have to slow near-term temperature rise and buy time for the longer-term  $CO_2$  reductions needed to stabilise climate change.

#### Common ground between U.S., China

Despite tensions in their relationship, the United States and China have found common ground in addressing non-CO<sub>2</sub> greenhouse gases such as methane. The two countries joined hands with the United Arab Emirates at COP28 (in Dubai, in November-December 2023) to sponsor a summit on methane and other non-CO<sub>2</sub> emissions.

That month, in November 2023, China also released its first national plan for controlling methane emissions. While the plan eschewed specific mitigation targets in favour of capacity building, it signalled China's acceptance of methane as an area for action and cooperation with the U.S.

India, the world's third-largest source of anthropogenic methane emissions behind China and the U.S., has an opportunity to leverage the U.S.-China methane partnership to gain



**Rakshith Shetty** 

a Research Analyst at the Takshashila Institution, Bengaluru sector-specific financing and capacity-building support.

According to the India Third Biennial Update Report to the United Nations Framework Convention on Climate Change, the country emitted 409 million tons of CO<sub>2</sub>-equivalent methane in 2016 (excluding land use and forestry), with agriculture accounting for 74%, waste for 14%, energy for 11%, and industrial processes for 1%. Methane's detrimental effects go beyond its impact on climate change. Fires at waste dumpsites, for example, can cause significant spikes in air pollution. In 2022, a two-week fire at Delhi's Bhalswa dumpsite led to particulate matter concentrations reaching 30% to 70% above baseline levels at nearby air quality monitoring stations.

But the dominance of agriculture, particularly livestock and rice cultivation, is what makes India hesitant to announce economy-wide methane reduction targets or sign the Global Methane Pledge championed by the U.S. and the European Union at COP28, which seeks to cut emissions by 30% from 2020 levels by 2030. However, the U.S.-China focus on methane creates an opening for India to seek targeted assistance for reducing emissions from specific sectors such as waste management.

#### Waste management programmes

The Indian government has developed a strong regulatory framework for waste management, but weak local capacity hampers implementation. However, it is working to expand innovative solutions across the country. A notable example is the model pioneered in Indore, Madhva Pradesh, which pairs citywide organic waste sorting with a large biomethane plant that produces fuel for buses. The government is also promoting the Galvanizing Organic Bio-Agro Resources Dhan (GOBARdhan) scheme, which incentivises cattle waste utilisation and clean energy production in villages. These initiatives are part of the broader Swachh Bharat Mission-Urban 2.0 programme to improve solid waste management. However, cities need more support to scale up organic waste management to

its full potential. In the agriculture sector, the government is implementing climate-resilient practices through the National Mission for Sustainable Agriculture (NMSA). These include methane reduction techniques in rice cultivation, which can contribute to substantial emissions reductions. The National Livestock Mission also promotes practices such as green fodder production, silage making, chaff cutting, and total mixed ration to reduce methane emissions from livestock.

#### An opportunity in the U.S.'s plan

This is where COP29 and India's methane diplomacy come in. The U.S.-China methane partnership, while limited compared to their past cooperation, still creates an opening for India to seek concrete assistance for its methane mitigation efforts. In particular, India can leverage the U.S. methane push to gain financing and capacity-building support for reducing emissions from its waste sector, which produces over 14% of its methane. India's 2016 inventory estimates these sources as producing around 4% of India's methane emissions. But underlying data quality (emissions factors as well as waste stream volumes) is poor. Satellite monitoring on Delhi and Mumbai, for instance, suggests that emissions levels are 50%-100% above commonly used estimates and that dumpsites alone account for more than a quarter of Mumbai's greenhouse gas emissions.

Methane may be a side issue in the overall COP29 agenda, but it presents a significant opportunity for India to fast-track its efforts in reducing methane emissions. The Government of India has laid the groundwork with its existing policies and initiatives.

However, to effectively scale up the implementation of proven technological solutions worldwide, India now requires targeted international support in financing, capacity building, and technical assistance. By leveraging the U.S.-China methane partnership and proactively seeking this support at COP29, India can tap into the resources needed to accelerate its progress in methane abatement.



The Baku meet is an opportunity for India to

India to fast-track its efforts in reducing

methane

emissions

#### **Overview of Methane's Climate Impact**

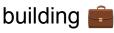
- Methane accounts for 30% of global warming since pre-industrial times 1/2
- 28 times more potent than CO2 over a 100-year period
- 84 times more potent than CO2 over a 20-year period
- Effective methane reduction can slow near-term temperature rise and aid long-term CO2 reduction strategies

#### **Global Cooperation on Methane Reduction**

U.S. and China collaboration despite tensions 🤝

- Partnership at COP28 with UAE to address methane and other non-CO2 emissions m
- China's first national plan for methane emissions released (Nov 2023) 1

India as the 3rd largest emitter of anthropogenic methane 🌾 Opportunity to leverage U.S.-China partnership for financing and capacity



## 409 million tons of CO2-equivalent methane emitted in 2016:

Agriculture: 74% Waste: 14% Energy: 11% Industrial Processes: 1%

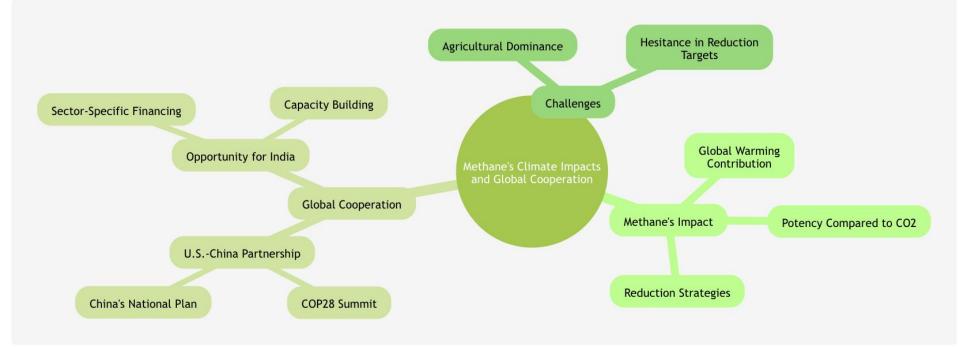
#### **Challenges and Opportunities**



- Dominance of agriculture (livestock, rice) makes India hesitant to commit to economy-wide reduction targets \*\*\*\*
- U.S.-China focus creates openings for targeted assistance in waste management and sector-specific financing







Strong regulatory framework

Weak local capacity hampers implementation

Innovative solutions being developed

**Notable Example** 

#### Indore, Madhya Pradesh:

Citywide organic waste sorting Large biomethane plant for bus fuel Key Initiatives

GOBARdhan Scheme: Incentivizes cattle waste utilization and clean energy in villages

Part of Swachh Bharat Mission-Urban 2.0 for solid waste management

Need for more support to scale organic waste management\_





#### **Agriculture Sector**

Climate-resilient practices via National Mission for Sustainable Agriculture (NMSA) Methane reduction techniques in rice cultivation

## National Livestock Mission:

Green fodder production Silage making Chaff cutting Total mixed ration to reduce methane emissions

#### International Opportunities

## **COP29 and India's Methane Diplomacy**

U.S.-China methane partnership creates openings for India
Seek assistance for methane mitigation in waste sector
Waste sector contributes over 14% of India's methane emissions
2016 inventory estimates around 4% of total methane emissions from waste sources





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#### **Data Quality Issues**

- Poor emissions factors and waste stream volume data
- Satellite monitoring in Delhi and Mumbai shows emissions levels up to 100% higher than estimates
- Dumpsites account for more than 25% of Mumbai's greenhouse gas emissions

#### **Core correction**

Infrastructure sectors' ebbing output

triggers capex growth concerns

eavy August rains dampened industrial activity, resulting in the first contraction in India's factory output since October 2022. The signals for a significant September resurgence do not appear very promising, with the late withdrawal of the southwest monsoon also skewing some activity such as power demand. Output from India's eight core sectors declined 0.8% in September relative to August, and was an insipid 2% higher than last September. These infrastructure sectors constitute about 40% of industrial production, and had contracted for the first time in 42 months in August - the Ministry has revised the de-growth level to 1.6% from 1.8% estimated initially. These sectors have now grown just 4.2% in the first half of 2024-25, almost halving from 8.2% in the first half of last year, and significantly under the 2023-24 growth pace of 7.6%. While year-on-year growth numbers may swing due to base effects, of concern is a consistent decline in the Index of Core Industries (basically the absolute production levels) since May. In September, the index slipped for the fourth successive month - 8% below May's value. Overall industrial output, economists reckon, may come out of the August trough in September but with a weak growth print at best. This slowdown in industrial activity is worri-

some amid anxiety about weakening urban consumption of durables such as cars as well as daily use items, reflected in weak second quarter results of fast-moving consumer goods firms. Though rural demand is seen to be improving after a healthier monsoon, tremors in urban spends will pull the domestic consumption engine of India's growth to sub-optimal levels. Government accounts show that capital spending on public infrastructure projects by the Centre has shrunk 15% this year - although capex spiked in July after the 2024 general election dented the first quarter numbers, the pace receded in August and September. This may explain some of the weak output trends for core sectors such as steel that hinge on construction activity. Poor vehicle sales and cheaper imports may have also weighed in to drag steel output growth to a 33month low of 1.5% in September, with output at its lowest since December 2023. There may be a tentative recovery afoot in private investments, but public infra spends that have spearheaded growth in recent years need to lead the way. The Centre's ₹11.11 lakh crore capex goal for the year acknowledges this, and it must now ramp up these spends to get closer to, if not entirely meet, that target. This would be critical to keep growth ticking along and push back concerns about India entering a cyclical slowdown.



## \_Topic →Industrial Output Trends in India\_



#### **Overview of Industrial Activity**

#### Heavy August Rains 🜧

Damped industrial activity

First contraction in factory output since October 2022

#### September Resurgence 🔄

Signals for recovery appear weak

Late southwest monsoon withdrawal affects power demand

#### Output Decline

0.8% decline in September relative to August2% higher than last September

#### Long-term Trends 📊

40% of industrial production from infrastructure sectors First contraction in 42 months in August Revised de-growth level: 1.6% from an initial 1.8% Growth: 4.2% in the first half of 2024-25 (down from 8.2% last year)

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#### **Economic Concerns**

## Urban Consumption

Weakening demand for durables (e.g., cars) Impact on FMCG firms' second-quarter results **Rural vs Urban Demand** 

Rural demand improving post-monsoon Urban spending remains subdued

#### Capital Spending Decline 💰

15% reduction in public infrastructure projects

Spiked capex in July post-election but receded in August and September

#### Core Sector Impact 🟗

Weak output trends in steel due to construction activity

Poor vehicle sales and cheaper imports affecting steel growth (1.5% in September)

#### **Future Outlook**

## Tentative Recovery 📈

Possible private investment recovery

Public infrastructure spending crucial for growth

Centre's ₹11.11 lakh crore capex goal



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#### $\textbf{Topic} \rightarrow \textbf{Samhuinn Fire Festival}$

Cultural Significance: Marks the transition from autumn to winter.

Location: Edinburgh, Scotland. Traditions: Involves fire, music, dance, and storytelling

## N. Korea boasts of 'world's strongest' missile, but experts say it's oversized



#### Associated Press SEOUL

North Korea boasted on Friday that the new intercontinental ballistic missile it just test-launched is "the world's strongest," a claim seen as pure propaganda after experts assessed it as being too big to be useful in a war situation.

The ICBM launched on Thursday flew higher and for a longer duration than any other weapon North Korea has tested. But foreign experts say the test failed to show North Korea has mastered some of the last remaining technological hurdles to possess functioning ICBMs that can strike the mainland U.S.

The North's Korean Central News Agency identified the missile as a Hwasong-19 and called it "the world's strongest strategic missile" and "the perfected weapon system." The official media outlet said



With full force: The test launch of the new intercontinental ballistic missile 'Hwasong-19' in North Korea on Thursday. AP

leader Kim Jong-un observed the launch, describing it as an expression of North Korea's resolve to respond to external threats to North Korea's security.

#### **Missile's features**

The color and shape of the exhaust flames seen in North Korean media photos of the launch suggest the missile uses preloaded solid fuel, which makes weapons more agile and harder to detect than liquid propellants that in general must be fueled beforehand.

But experts say the photos show the ICBM and its launch vehicle are both oversized, raising a serious question about their wartime mobility and survivability.

"When missiles get bigger, what happens? The vehicles get larger, too. As the transporter-erector launchers get bigger, their mobility decreases," Lee Sangmin, an expert at South Korea's Korea Institute for Defense Analyses.

The Hwasong-19 was estimated to be at least 28 meters long while advanced U.S. and Russian ICBMs are less than 20 meters long, said Chang Young-keun, a missile expert at Seoul's Korea Research Institute for National Strategy. He suggested that the missile's size likely helped South Korean intelligence authorities detect the launch plan in advance. "In the event of a conflict, such an exposure makes the weapon a target of a pre-emptive attack by opponents so there would be a big issue of survivability," Mr. Chang said.

Many foreign experts believe North Korea likely has missiles that can deliver nuclear strikes on all of South Korea, but it has yet to possess nuclear missiles that can strike the mainland U.S.

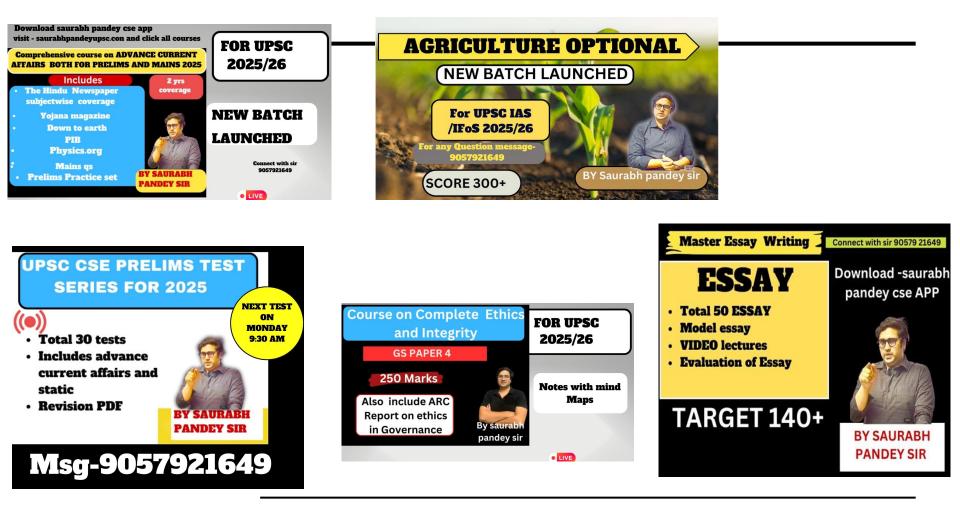
#### **Overview of the ICBM Test**

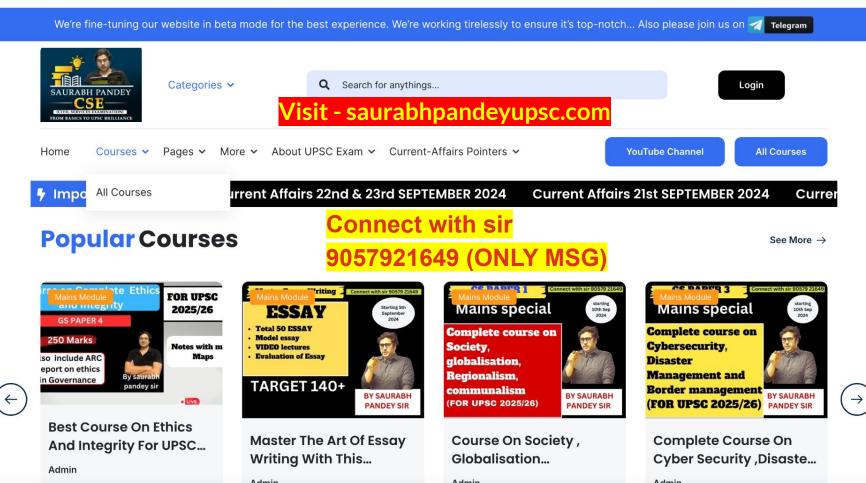
North Korea claims the Hwasong-19 is the *world's strongest* missile *<sup>4/2</sup>* The missile test was conducted on Thursday, flying higher and longer than previous tests.

Experts argue the test's effectiveness is limited due to technological hurdles.

#### Key Insights:

Claim of Strength: North Korea's propaganda highlights the missile's capabilities. Expert Opinions: Some experts believe the missile is too large to be practical in warfare



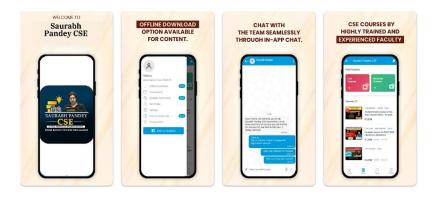




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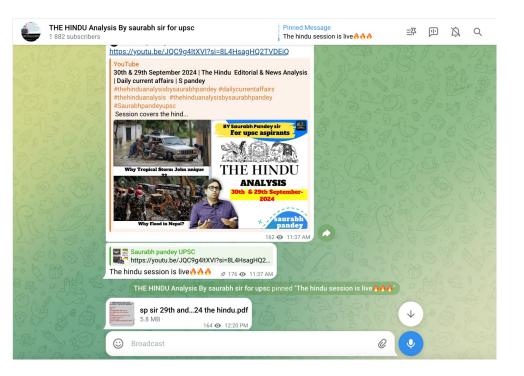
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