



DAILY CURRENT AFFAIRS 19-12-2024

GS-2

1. The challenge of universal health coverage

GS-3

2. Comprehensive and Progressive Agreement for Trans-Pacific Partnership
3. Green hydrogen and the financing challenge
4. What is AI Agents?
5. Delhi - India's most polluted city

The challenge of universal health coverage

Syllabus: GS-2: Social Sector – Health.

Context:

- A universal health coverage plan in India must be developed considering the very different realities in each State

Universal Health Coverage (UHC) in India: Challenges and Insights

Multiple Health Systems in India

- India exhibits almost every type of health system globally, sometimes even within the same State.
- These varying systems create complexities in implementing a one-size-fits-all Universal Health Coverage (UHC) plan.

Government Health Expenditure: State Variations

- **Per Capita Expenditure (2019-20):**
 - Himachal Pradesh: ₹3,829
 - Kerala: ₹2,590
 - Tamil Nadu: ₹2,039
 - Uttar Pradesh: ₹951
 - Bihar: ₹701
- **Challenges:** Wide disparities in spending across States hinder uniform healthcare access.

Divergent Health Metrics

- **Teenage Pregnancy Rates (National Family Health Survey-5, 2019-2021):**
 - West Bengal: 16%
 - Kerala: 2.4%
 - Himachal Pradesh: 3.4%
- **Key Insight:** A UHC plan must address specific health challenges unique to each State.

Government Expenditure vs. Outcomes

➤ **West Bengal:**

- Per capita health expenditure in 2019-20: ₹1,346 (61% of the estimated ₹2,205 needed for UHC).
- Out-of-pocket expenditure: 67% (reduced only marginally over the years).
- High C-section rates in public hospitals suggest sufficient public hospital supply but inadequate primary healthcare support.

➤ **Andhra Pradesh:**

- Per capita expenditure increased by 3% in 2019-20.
- Out-of-pocket expenditure remains high at 64%.

Key Challenges

- Growing government expenditure alone does not reduce out-of-pocket expenditure.
- Persistent high out-of-pocket expenditure (>50%) is observed even in relatively prosperous States like Kerala and Punjab.

Deeper Health System Challenges

➤ **Structural Issues:**

- Out-of-pocket expenditure dominates health spending in most States, reflecting systemic design flaws.
- High shortfalls in primary health infrastructure (e.g., 58% shortfall in primary health centres in West Bengal).

➤ **Non-Communicable Diseases (NCDs):**

- West Bengal: High prevalence of high blood sugar with relatively low hypertension rates, indicating insulin insufficiency.
- Bihar and Gujarat exhibit similar trends, contrasting with Kerala, Tamil Nadu, and Telangana, where both conditions are prevalent.
- Income gradient in NCD prevalence is weak, highlighting the universal impact of lifestyle diseases.

Implications

- Current out-of-pocket-driven health systems fail to address chronic disease management.

- Tailored strategies and primary care improvements are essential to combat region-specific NCD patterns.

Holistic Healthcare Reform

- **Systemic Approach Needed:**
 - Solutions must account for local health profiles, cultural contexts, and systemic histories.
 - Blanket solutions or mere resource infusion may exacerbate existing issues.
- **Policy Directions:**
 - Strengthen primary healthcare systems with a focus on health and wellness centres.
 - Develop region-specific public health messaging for better disease management.
 - Integrate public health initiatives with regional policy adaptations and climate resilience measures.

Conclusion

- Healthcare in India presents a complex mosaic of challenges requiring nuanced, holistic, and region-specific strategies to achieve UHC.

Comprehensive and Progressive Agreement for Trans-Pacific Partnership

Syllabus: GS-3: Trade Groupings.

Context:

- Britain has officially become the first European nation to join the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), making the UK the 12th member of this influential trade group.

Background of CPTPP

- **Established:** 2018
- **Objective:** Promote trade, economic integration, and cooperation among member nations.

➤ **Strategic Importance:**

- Serves as a counterbalance to China's growing economic influence in the Asia-Pacific.
- Reduces tariffs and strengthens economic ties.

UK's Trade Strategy Post-Brexit

➤ **Diversification:** Post-Brexit, the UK has pursued trade partnerships beyond the EU.

➤ **Alignment with CPTPP:**

- Reflects the UK's strategy to access new markets.
- Strengthens trade relationships globally.

➤ **Accession Treaty:** Demonstrates the UK's focus on maintaining robust trade ties while exploring global opportunities.

Economic Impact of Joining CPTPP

➤ **Market Access:**

- Provides access to over 500 million consumers.
- Covers more than 15% of global GDP.

➤ **Benefits to UK Businesses:**

- Enhanced trade flows and reduced tariffs.
- Increased opportunities for exporters in diverse sectors.
- Potential for job creation and economic growth.

Member Countries of CPTPP

1. Canada
2. Japan
3. Australia
4. New Zealand
5. Brunei
6. Chile
7. Malaysia
8. Mexico

- 9. Peru
- 10. Singapore
- 11. Vietnam
- 12. United Kingdom (recent addition)

Each member contributes to a diverse trading environment, offering unique economic strengths.

Significance of UK's Entry

- **Global Trade Position:** Boosts the UK's standing in international trade.
- **Collaboration Opportunities:** Paves the way for partnerships with member nations.
- **Long-term Prospects:** Expected to deliver sustained benefits for British businesses and consumers.

Green hydrogen and the financing challenge

Syllabus: GS-3: Renewable Energy.

Context:

- India's success in green hydrogen will depend on leveraging its abundant renewable resources through efficient project execution, access to low-cost capital, and strategic investments.

India's Green Hydrogen Ambition

- **Target:** Achieving net-zero emissions by 2070 with an annual production of 5 million metric tonnes (MMT) of green hydrogen by 2030.
- **Significance:** Green hydrogen is key to decarbonizing industrial sectors and establishing India's leadership in the sector.
- **Challenge:** Economic viability due to high production costs compared to traditional hydrogen.
 - Green hydrogen: \$5.30-\$6.70 per kg
 - Grey/blue hydrogen: \$1.9-\$2.4 per kg

Current Progress

- India is projected to achieve only **10% of its stated target** by 2030 (BloombergNEF analysis).
- **Market deadlock:** Scaling production requires cost reduction, but cost reduction depends on scaling.

Barriers to Green Hydrogen Adoption

Economic Factors

- **Levelised Cost of Electricity (LCOE)**
 - High borrowing costs in India elevate the Weighted Average Cost of Capital (WACC), impacting overall costs.
 - A rise in WACC from 10% to 20% increases hydrogen costs by **up to 73%**.
- **Electrolyzer Costs**
 - Alkaline systems: \$500-\$1,400/kW
 - Proton Exchange Membrane systems: \$1,100-\$1,800/kW
- **Global Investment Trends**
 - By May 2024, only **27.6% of announced clean hydrogen projects** reached final investment decisions.
 - Structural barriers in market readiness hinder large-scale investments.

Policy Lessons from Other Countries

Innovative Policy Frameworks

- **U.K.:** Low Carbon Hydrogen Standard Certification to boost market confidence.
- **U.S., Japan, and Australia:** Creation of integrated hydrogen hubs where infrastructure, production, and consumption co-evolve.

Adaptation for India

- Establish localized industrial clusters linked to renewable energy, forming self-sustaining hydrogen corridors.

Strategies to De-risk Investments

Policy Interventions

- Develop a **comprehensive policy framework** addressing financing barriers.

- Long-term **hydrogen purchase agreements** and **partial loan guarantees** to reduce investor risks.
- Introduce **regulatory sandboxes** for experimentation with business models.

Innovative Financing Models

- **Beyond Traditional Financing**
 - Modular project financing: Scale facilities in phases, reducing initial capital requirements.
 - Anchor-plus models: Creditworthy industrial customers underwrite base capacity while additional capacity is flexibly financed.
 - Equipment-leasing structures: Transform upfront electrolyzer costs into manageable operational expenses.
- **Blended Finance and Green Bonds**
 - Provides initial momentum for projects while attracting long-term capital.

Global Collaboration

- Develop standardised carbon intensity and hydrogen origin certification to boost exports.
- Cross-border partnerships, e.g., **Australia-Japan Hydrogen Energy Supply Chain Project**, to provide demand certainty for large-scale investments.

Way Forward

Short-Term Focus

- Implement pilot projects in industrial hubs like **Odisha, Maharashtra, and Gujarat**.
- Demonstrate financially viable business models to attract investment.

Long-Term Vision

- Leverage India's abundant renewable resources for efficient project execution.
- Ensure access to low-cost capital and strategic investments.
- Deliver green hydrogen at competitive prices to meet industrial needs.

India's success in the green hydrogen sector will depend on overcoming economic barriers, fostering innovation, and driving strategic partnerships to build a sustainable ecosystem.

What is AI Agents?

Syllabus: GS-3: Science and Technology – Artificial Intelligence.

Context:

- The integration of generative AI and autonomous AI agents is predicted to redefine industries by 2027, with nearly half of AI-adopting companies implementing these intelligent systems.

What Are AI Agents?

AI agents are **autonomous systems** designed to interact dynamically with their environment. They comprise:

- **Sensors:** For gathering information.
- **Control Centers:** For processing data and making decisions.
- **Effectors:** For executing actions in real-world or virtual environments.

With ongoing advancements, AI agents are set to tackle increasingly **complex tasks**, ranging from real-time traffic management to personalized education systems.

Applications Across Industries

1. Software Development

- Automating repetitive coding tasks.
- Assisting in debugging and improving development timelines.

2. Healthcare

- Supporting diagnostics and patient management.
- Monitoring health metrics in real time.

3. Customer Service

- Enhancing user experience through automated query handling.
- Providing 24/7 support with increased efficiency.

Advantages of AI Agents

- **Bridging Skill Gaps:** Performing specialized tasks beyond human expertise.
- **Scalability:** Solving complex problems at scale, boosting productivity.

- **Fostering Innovation:** Driving advancements across sectors through data-driven insights.

Risks and Concerns

Technical Issues

- Errors in decision-making.
- Vulnerabilities in data security.

Ethical Concerns

- Autonomous decisions without human oversight.
- Privacy risks and accountability issues.

Job Displacement

- Potential reduction in roles requiring human labor.
- Dependence on AI might hinder innovation by humans.

Mitigation Strategies

To address these challenges, businesses should:

- **Prioritize Transparency:** Maintain human involvement in critical decision-making processes.
- **Establish Ethical Guidelines:** Focus on privacy, accountability, and inclusivity.
- **Implement Robust Security:** Protect against data breaches and misuse.
- **Educate Stakeholders:** Increase public awareness of AI limitations and potential risks.

With these measures, the adoption of AI agents can be steered toward a **responsible and sustainable future**.

Delhi - India's most polluted city

Syllabus: GS-3: Air Pollution

Context:

- Continued to be the most polluted place in India for the third consecutive day (as of December 18, 2024).
- Overall Air Quality Index (AQI): **441** (Severe category) at 9 a.m.

Pollutant Levels:

- PM2.5 levels: **248.5 micrograms per cubic meter** at 9 a.m., **16.5 times** the WHO's permissible limit (15 micrograms per cubic meter for 24 hours).

Health Impacts

- Severe air pollution:
 - **Affects healthy individuals.**
 - **Serious health risks** for people with pre-existing conditions (e.g., respiratory or cardiovascular diseases).

Regional Impact

- **National Capital Region (NCR)** and other parts of north India also experiencing deteriorated air quality:
 - Air quality levels in the "very poor" category.

Key Observations

- **Persistent Smog:** Dense smog observed across Delhi, including iconic locations like Kartavya Path.
- **WHO Standards Violation:** Air pollution in Delhi exceeds prescribed WHO limits for PM2.5 by a significant margin, indicating critical public health concerns.

Sources of Information

- Data from **Central Pollution Control Board (CPCB)**.
- WHO air quality standards as benchmarks for comparison.

About Air Quality Index (AQI)

The **Air Quality Index (AQI)** was launched in 2014 as part of the **Swachh Bharat Campaign** to simplify the public's understanding of air pollution. It provides a unified

representation of air quality, aiding both the government and citizens in comprehending the extent of pollution and enabling appropriate actions.

Key Features:

➤ Purpose:

- Transforms complex air quality data into a single index value with a corresponding nomenclature and color code.
- Aids in clear communication about air quality and its potential impacts on health.

➤ Pollutants Monitored:

- **Particulate Matter:** PM10, PM2.5
- **Gaseous Pollutants:** Nitrogen Dioxide (NO₂), Ozone (O₃), Carbon Monoxide (CO), Sulfur Dioxide (SO₂), Ammonia (NH₃), and Lead (Pb).

➤ Colour-Coded Representation:

- The AQI is categorized into six bands, making it visually accessible and easy to understand for the public.
- Each band is associated with specific health advisories.

Six AQI Categories:

Category	AQI Range	Colour Code	Impact on Health
Good	0-50	Green	Minimal impact on health.
Satisfactory	51-100	Light Green	Minor respiratory discomfort for sensitive individuals.
Moderate	101-200	Yellow	Breathing discomfort for people with lungs or heart diseases, children, and older adults.
Poor	201-300	Orange	Increased breathing discomfort and health issues.
Very Poor	301-400	Red	Severe respiratory effects for the general population.
Severe	401-500	Maroon	May affect healthy individuals and worsen existing diseases.

How AQI is Calculated:

➤ **Input Pollutants:**

- Levels of up to 6 or 8 key pollutants in the air are measured.

➤ **Weightage:**

- Each pollutant is assigned a weight based on its health impact. For example, PM2.5 and PM10 have significant weight because of their severe effects on respiratory health.

➤ **Composite Score:**

- The worst-case pollutant's weighted score is considered the AQI value for a given location.
- This ensures the overall AQI reflects the most severe impact among all pollutants.

Monitoring Infrastructure:

- The AQI is derived from **monitoring stations** set up across the country. These stations measure the concentration of pollutants and calculate the AQI value in real-time.
- Data collected helps in formulating public health advisories and environmental policies.

Significance of AQI:

- **Public Awareness:** Helps individuals make informed decisions regarding outdoor activities based on air quality levels.
- **Policy and Action:** Assists government bodies in identifying pollution hotspots and implementing mitigation strategies such as traffic control, industrial regulation, and crop-burning restrictions.