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Takeaways From the Swachh Survekshan

Context

- The **ninth edition of Swachh Survekshan**, hailed as the **world's largest cleanliness survey**, marks a significant milestone in India's urban sanitation landscape.
- Spearheaded by the Swachh Bharat Mission (SBM)-Urban, this annual survey has **evolved from a modest competition among fewer than 100 cities in 2016 to an extensive evaluation involving over 4,500 urban centres in 2024-25**.
- While **public attention often fixates on rankings and awards**, the deeper **value of the survey lies in the critical insights it offers into urban waste management, city-level governance**, and the evolving behavioural patterns of citizens and policymakers alike.

A Comprehensive Urban Sanitation Assessment

- The **survey serves as a crucial reality check for city managers and policymakers**, offering an evidence-based assessment on ten comprehensive parameters, **ranging from waste segregation, collection, and disposal to sanitation worker welfare and grievance redressal**.
- Its robust methodology, incorporating third-party verification and feedback from 140 million residents, **lends credibility to its findings and amplifies its utility** as a planning and monitoring tool.
- In essence, **Swachh Survekshan has transformed into a powerful lever for competition and performance enhancement**, nudging cities across India toward cleaner futures.

Significance and Key Features of the Survey

- **Encouraging Equitable Participation: Population Categories and the Super Swachh League**
 - A **significant reform in this edition was the creation of the Super Swachh League**, designed to break the monotony of a few cities repeatedly dominating the top ranks.
 - **Indore, Surat, and Navi Mumbai, historically top performers, were placed in a new league**, opening the door for cities like Ahmedabad, Bhopal, and Lucknow to rise in the rankings within their population categories.
 - The **segmentation of cities into five population brackets**, from those with fewer than 20,000 people to over one million, helped **level the playing field and encouraged more diverse participation**.
 - This democratisation has proved fruitful.

- **Odisha's success exemplifies this shift:** Bhubaneswar's ascent from 34th to 9th place, and the rise of smaller cities like Aska and Chikiti, highlight how inclusive frameworks can foster widespread improvement.
- **A Growing Ecosystem of Best Practices and Innovation**
 - Beyond rankings, the **Swachh Survekshan** serves as a repository of best practices that can be scaled and replicated.
 - The **transformation of cities such as Indore and Surat reveals the possibilities of municipal innovation.**
 - **Indore's pioneering six-way waste segregation model, Surat's monetisation of treated sewage, Pune's ragpicker-run cooperatives, and Lucknow's waste wonder park underscore how creativity, policy support, and community engagement can turn urban waste into an asset.**
 - Similarly, **Agra's conversion of the toxic Kuberpur dumpsite into green space showcases the potential** of modern remediation technologies like bioremediation and biomining.
- **Cleanliness as an Economic and Cultural Imperative**
 - **Tourist hubs and high-footfall areas received special attention** in the latest survey, with Prayagraj being recognised for sanitation management during the Maha Kumbh.
 - As India accounts for a meagre 1.5% of global tourist arrivals, **sustained cleanliness is essential not only for public health and aesthetics but also for enhancing the tourist experience** and economic growth.
 - The **thematic focus of Swachh Survekshan 2025, Reduce, Reuse, Recycle (RRR),** underscores this broader ambition.
 - While the previous year's theme, waste to wealth, signalled an economic opportunity, **India has yet to fully capitalise on the value embedded in its waste streams.**

Challenges Ahead and The Way Forward

- Despite visible progress, **the survey reveals persistent challenges in developing behavioural change.**
- While SBM has successfully instilled societal rejection of open defecation, **nurturing a similar mindset around waste minimisation, consumerism, and recycling has been elusive.**
- This **behavioural inertia remains one of the most significant roadblocks** to lasting impact.
- Moreover, **the daily generation of 1.5 lakh tonnes of solid waste poses a formidable challenge.** Effective management will depend largely on the capacity and performance of ULBs.
- **Their ability to enforce waste segregation, ensure efficient collection, and handle plastic and e-waste will shape the next chapter** in India's urban cleanliness story.
- Going forward, **the focus must shift from celebrating momentary rankings to institutionalising cleanliness as a civic virtue** and economic opportunity.
- With policy support, **community ownership, and technological innovation, Indian cities can transition from managing waste to creating wealth, dignity, and health for all.**

Conclusion

- **India's urban cleanliness journey**, as illuminated by Swachh Survekshan 2024-25, is **both inspiring and instructive**.
 - It **demonstrates that with the right mix of competition, data, public engagement, and political will**, even the most chaotic waste systems can be reformed.
 - The **remarkable turnaround of Surat from a garbage-laden city in the 1990s to a sanitation model today proves that change is not only possible**, it is replicable.
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The Reality of the Changing Dimensions of Warfare

Context

- Niccolò Machiavelli's view that **politics is governed by power struggles and survival remains relevant today**.
- The **traditional international order**, shaped by events like the Peace of Westphalia and the Congress of Vienna, **is crumbling**.
- As older norms fade, **new tools of dominance, rooted in technological innovation, are rising**.
- The **focus has shifted from diplomacy to digital warfare**, reshaping both global politics and military strategy.

The Illusion of Post-War Peace

- The **end of World War II in 1945**, followed by the atomic bombings of Hiroshima and Nagasaki, **led many to believe in the arrival of a long-lasting peace** enforced by American military might.
- **Concepts like a rules-based international order emerged**. Yet, this peace proved to be an illusion.
- From Korea to Vietnam and North Africa, conflicts persisted, revealing that **global tensions had not subsided but transformed**.
- The **Cold War's end in 1989 did not usher in a peaceful era**. Instead, new conflicts emerged, challenging earlier assumptions.
- A **major turning point was Operation Desert Storm in 1991**, which marked the start of modern high-tech warfare.
- **Precision-guided missiles, satellite intelligence, and three-dimensional strikes redefined battle doctrine**.
- This **conflict began shifting war from manpower-heavy strategies to ones emphasising technology and speed**.

9/11, the Era of Pretextual Warfare and The Rise of Digitised and Autonomous Warfare

- **9/11 and The Era of Pretextual Warfare**
 - September 11, 2001, was **another defining moment**. While some mark 1989 as the start of a new world order, others see 9/11 as the true catalyst.

- The **attacks allowed the U.S. and its allies to launch military interventions** under the banner of combating terrorism.
- However, **this did not clarify whether the fundamentals of warfare were changing.**
- It **took time to realise that the traditional rules of conflict were eroding.** Military invasions began to rely **more on perception and less on legality**, and the justifications for war became increasingly ideological.
- The **seeds of algorithmic warfare had been planted**, though their consequences were not yet visible.
- **The Rise of Digitised and Autonomous Warfare**
 - Recent conflicts, particularly **the Russia-Ukraine war since 2022 and the India-Pakistan clash in May 2025**, have brought these changes into sharp focus.
 - Warfare today is driven by automation, **AI, and network-centric strategies.**
 - **Drones, equipped with image recognition and loitering munitions, now play a central role in combat operations.**
 - The **2025 India-Pakistan conflict showcased this shift.** Both sides used fixed-wing drones, loitering munitions, and precision-guided bombs.
 - **Fighter jets and missiles, like India's BrahMos and Pakistan's PL-15s, were deployed in tandem** with advanced Turkish drones.
 - These **engagements revealed a battlefield dominated by AI and autonomous systems**, where speed, coordination, and digital integration matter more than physical presence.
 - The **modern battlefield is now multi-domain, air, land, cyber, and space.**
 - Cyberattacks, AI-driven targeting, **and hypersonic weapons are shaping a new generation of warfare.**
 - **Traditional combat strategies, based on physical superiority**, are fast becoming obsolete.

India's Strategic Imperative

- **India must reassess its defence posture** in this changing landscape.
- Despite investments in platforms like the BrahMos and Rafale jets, **the pace of indigenous technological development lags behind.**
- **China, by contrast, has developed fifth-generation and is preparing sixth-generation fighter aircraft.** It also leads in drone warfare and cyber capabilities.
- **India's continued reliance on legacy systems and external procurements may limit its agility.**
- The **May 2025 conflict underscores the need for rapid modernisation**, particularly in autonomous systems, drones, AI, and cyber defence.
- The **advent of high-altitude, long-endurance UAVs has redefined surveillance and targeting, making them essential assets** in any modern military engagement.
- Furthermore, **India must diversify its military hardware to be better prepared for a two-front conflict with Pakistan and China.**

Conclusion

- The **evolution of conflict from conventional warfare to technologically driven**, digital battlespaces **signals the return of Machiavellian realism** in new form, where power is defined not by land or numbers, but by information and innovation.
 - The **post-WWII illusion of peace has been shattered**, and the nature of war has fundamentally changed.
 - The **future of warfare will be determined by those who master digital ecosystems**, AI, and autonomous combat capabilities.
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Critical Minerals and India's Strategic Imperative - Building Resilience for the Future

Context:

- **Critical minerals** are becoming the **geo-economic backbone of the 21st century**, powering clean energy transitions, digital technologies, and national security systems.
- For India, **dependence** on imports and limited domestic capacity **threaten future industrial, technological, and strategic autonomy**.

Critical Minerals - A New Geostrategic Axis:

- **Why critical minerals matter:**
 - Critical minerals are metallic or non-metallic elements that are **essential for clean energy systems**, EVs, semiconductors, and strategic technologies, and whose supply chains are at risk of disruption.
 - Their demand is driven by **energy transition, digitalisation, and supply chain resilience**.
 - **Examples** include minerals of high importance like lithium, cobalt, nickel, graphite, and rare earth elements (REEs).
- **Geopolitical concerns:**
 - High geographical concentration and opaque supply chains.
 - **For example**, China controls 90% of REE refining, 70% of cobalt processing, and 60% of lithium conversion.
 - China's lead stems from decades of **policy coherence and industrial planning**.

India's Critical Mineral Strategy:

- **National Policy initiatives:**
 - **2022**: Identification of 30 critical minerals by the Ministry of Mines.
 - **2025**: Launch of National Critical Mineral Mission (**NCMM**) to secure supply chains.
- **Current challenges:**
 - **100% import dependence** on key minerals like lithium, cobalt, and REEs.
 - Domestic exploration is growing, **for example**, 195 exploration projects in the past year, and 227 approved for the upcoming year.

Auctions and Exploration - Progress and Bottlenecks:

- **Mines and Minerals (Development and Regulation) Act:**
 - Inclusion of critical minerals enabled four rounds of **auctions**, fifth concluded in Jan 2025.
 - However, **low bidder turnout** due to high capital costs, inadequate processing capacity, and technical expertise gaps needs to be addressed.
- **Midstream vulnerability:**
 - India lacks **refining and processing capacity** for battery-grade materials.
 - **Continued foreign dependence**, especially on China, looms large.

Building Industrial Capability - Proposed Solutions:

- Establish mineral processing zones.
- Offer Production-Linked Incentives (**PLI**) for refining, separation, and conversion industries.
- **Catalyse private investment** in midstream processing.

Ensuring Mineral Security Amid Geopolitical Risks:

- **External disruptions:** China's export curbs on REEs impact India's automotive sector, including EV production.
- **Strategic recommendations:**
 - Accelerate independent supply chain development.
 - Deepen bilateral partnerships, **for example**, ongoing collaboration with **Australia, Argentina**, shows a path forward.
 - Engage through **Quad, G20**, and Minerals Security Partnership (**MSP**).

Sustainability, Recycling, and ESG Compliance:

- **Circular economy approach:**
 - Recycling of batteries and electronics to reduce import dependency.
 - **Challenges:** Informal recycling sector, lack of formal infrastructure, need for high-efficiency recovery systems, etc.
- **Sustainable mining and environmental, social and governance (ESG):**
 - Many reserves are in tribal/ecologically sensitive zones.
 - Delays due to protests, legal hurdles, and ESG concerns.
 - **Must adopt ESG frameworks, community participation, and local benefit-sharing models.**

Way Forward - Policy and Strategic Alignment:

- **Conduct regular assessments** of critical mineral demand and supply.
- **Update mineral lists** as per evolving industrial and strategic priorities.
- **Develop critical mineral stockpiles** to buffer against supply shocks.
- **Align mineral policy** with foreign policy, energy policy, and industrial strategy.

Conclusion - India's Strategic Imperative:

- India must act decisively to **reduce dependency, foster self-reliance, and build resilient and sustainable supply chains.**
- With the **right policy execution**, institutional backing, and international collaboration, India can emerge as **a major global player in the critical mineral economy.**

Critical Minerals and India's Strategic Imperative FAQs

Q1. Why are critical minerals geostrategically important today?

Ans. They power clean energy, digital technologies, and national security, with China dominating their global supply chains.

Q2. What challenges does India face in critical mineral security?

Ans. India lacks domestic reserves, refining capacity, and faces low investor confidence in mineral auctions.

Q3. What is the aim of the National Critical Mineral Mission (NCMM)?

Ans. It seeks to ensure mineral availability through exploration, processing zones, and investment incentives.

Q4. How can international partnerships help India's mineral strategy?

Ans. They enable supply diversification through friendshoring, joint ventures, and strategic alignments like MSP and Quad.

Q5. Why is sustainability crucial in mineral development?

Ans. Sustainable mining and ESG compliance build community trust and reduce ecological and legal risks.

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