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Estimating India's Potential Growth Rate

Context

- The **debate around India's potential growth rate**, its sustainable level of economic expansion without triggering inflationary pressures, **remains central to macroeconomic discourse**.
- Although **India's recent GDP growth has shown fluctuations**, many economists, including the authors of the cited text, maintain that **the country's potential growth rate currently stands at 6.5%**.
- It is, therefore, **important to critically analyse the arguments, examining empirical evidence on recent growth patterns, the role of capital formation** and the Incremental Capital-Output Ratio (ICOR), and the impact of public and private investment trends.

A Contextual Overview of Recent Growth Performance

- The first quarter of 2025–26 recorded a **8% real GDP growth rate**, a figure that appears robust at first glance.
- However, this number is **below the average first-quarter growth rate (9.9%)** of the previous three years (2022–23 to 2024–25).
- Similarly, **real GVA growth** for the same quarter was **6%**, lower than the **9.5% average** of earlier years.
- Thus, **while India's short-term growth remains strong, it does not represent a structural acceleration** sufficient to alter the long-term potential growth trajectory.
- Sector wise, **manufacturing was the key outperformer with a 7.7% growth rate**, higher than its three-year average of 5.8%. By contrast, major service sectors, trade, transport, financial services, and public administration, registered lower growth compared to their historical averages.

Potential Growth and the Role of Capital Efficiency

- A central analytical framework employed in the text is the relationship between **Gross Fixed Capital Formation Rate (GFCFR)** and the **Incremental Capital-Output Ratio (ICOR)**.
- Potential growth is determined by how much new investment (capital formation) translates into productive output.
- In recent years, India's **GFCFR has remained stable**, hovering around **33–34% of GDP**, with the ICOR averaging **2**.
- Using these parameters, the authors reaffirm their estimate of a **5% potential growth rate** (calculated as $\text{GFCFR} \div \text{ICOR}$).

- Since neither variable shows a structural shift, GFCFR has plateaued and ICOR remains volatile, **there is no empirical basis for revising the potential growth estimate upward.**
- To exceed 6.5%, India must either **raise the investment rate by 2 percentage points** or **reduce the ICOR through enhanced capital efficiency.**

Public Sector Investment: Catalyst or Constraint?

- Public investment has **recently become a more prominent driver** of fixed capital formation.
- The **public sector's share in total GFCF** rose from **6% in 2021-22 to 25.1% in 2023-24**, largely due to **infrastructure spending** by the central government.
- While such investments enhance long-term productive capacity, they also exhibit **high sectoral ICORs**, meaning they yield returns over a longer horizon.
- Moreover, the **growth rate of central government capital expenditure**, which surged above 30% during 2021-23, **fell sharply to 10.8% in 2024-25**, signalling a moderation in public investment momentum.
- To achieve a higher potential growth rate, the burden must shift toward **private corporate investment**, which has declined from **37% to 34.4%** of total GFCF during 2021-24.
- A revival of private sector participation is therefore crucial for sustaining capital deepening and efficiency improvements.

Technological, Structural, and Global Influences

- Emerging technologies, particularly **Artificial Intelligence (AI)** and **Generative AI (GenAI)**, hold potential to **boost productivity and lower ICORs** through automation, process optimisation, and innovation.
- However, these gains may be partially offset by **rising capital replacement needs**, as older technologies and equipment become obsolete faster.
- These opposing forces may **balance out**, keeping long-term potential growth near the 6.5% mark.
- Externally, India faces a **challenging global trade environment**, marked by tariff uncertainty and supply chain realignments.
- The **negative contribution of net exports** (-1.4 percentage points) to growth in Q1 2025-26 underscores these headwinds.
- Hence, sustaining high growth will depend on **diversifying export markets** and **broadening global investment linkages**, both of which require agile trade and industrial policies.

Policy Imperatives and the Path Ahead

- A **5% potential growth rate remains realistic** and relatively strong by global standards.
- However, for higher **employment generation and inclusive growth**, India must push beyond this ceiling.
- Policy priorities should therefore focus on:
 - **Reviving private investment** through regulatory reforms, tax incentives, and financial deepening.
 - **Improving capital efficiency** by investing in technology, logistics, and skill development to reduce ICOR.
 - **Sustaining public infrastructure investment**, especially in transport, energy, and digital connectivity.

- **Enhancing export competitiveness** amid shifting global supply chains.
- These measures, **if pursued cohesively, could help raise India's potential growth closer to 7% or more** over the medium term.

Conclusion

- India's growth performance in recent years **reflects resilience but not a structural transformation**.
- Despite cyclical upticks in quarterly GDP data, the economy's underlying productive capacity remains aligned with a **5% potential growth rate**.
- Stable investment levels, **declining private sector participation, and moderate capital efficiency constrain a higher trajectory**.
- Moving forward, India's challenge lies not merely in achieving short-term growth spurts, but in **sustaining and broadening the investment base**, both public and private, to unlock a new phase of potential-led expansion.

Estimating India's Potential Growth Rate FAQs

Q1. What is India's current estimated potential growth rate?

Ans. India's current estimated potential growth rate is 6.5%.

Q2. Why does the recent 7.8% GDP growth not change the potential growth estimate?

Ans. The 7.8% GDP growth in the first quarter of 2025-26 is below the average of recent years and does not indicate a structural shift in the economy.

Q3. What two factors determine India's potential growth rate?

Ans. India's potential growth rate is determined by the Gross Fixed Capital Formation Rate (GFCFR) and the Incremental Capital-Output Ratio (ICOR).

Q4. How can India raise its potential growth above 6.5%?

Ans. India can raise its potential growth by increasing private investment and improving capital efficiency to lower the ICOR.

Q5. What global factor poses a challenge to India's growth prospects?

Ans. A challenging global trade environment with tariff and supply chain uncertainties poses a major challenge to India's growth prospects.

Source: **The Hindu**

A Green Transition Accelerating at Express Speed

Context

- The successful July 2025 trial of **India's first hydrogen-powered coach** at the Integral Coach Factory marks a major milestone in Indian Railways' green transformation.

- Aiming for **net-zero carbon emissions by 2030**—decades ahead of national targets—the initiative reflects a broader overhaul of operations, infrastructure, and financing.
- As one of the world’s largest rail networks carrying 24 million passengers and 3 million tonnes of freight daily, this shift will play a crucial role in advancing India’s sustainable development and achieving national climate goals.
- This article highlights Indian Railways’ rapid and comprehensive green transformation aimed at achieving net-zero carbon emissions by 2030.

Indian Railways’ Green Transformation: Toward a Climate-Positive Future

- Over the past decade, Indian Railways has **electrified nearly 45,000 km of its broad-gauge network**, achieving over **98% electrification** and drastically cutting diesel dependence and emissions.
- This transition is reinforced by **renewable energy adoption** — with 553 MW of solar, 103 MW of wind, and 100 MW of hybrid capacity already operational.
- More than 2,000 stations and service buildings now run on solar power, and several railway facilities, including in the **Northeast Frontier zone**, have earned the Bureau of Energy Efficiency’s **“Shunya” net-zero certification**.
- Innovation in clean traction includes India’s first hydrogen-powered train under the **“Hydrogen for Heritage” initiative**, which plans to deploy 35 such units.
- Complementary measures are also planned. These measures include:
 - shifting freight from road to rail to reach a 45% modal share by 2030,
 - blending biofuels,
 - constructing green buildings, and
 - operating Dedicated Freight Corridors.
- These measures are expected to prevent 457 million tonnes of CO₂ emissions over 30 years.

Climate Finance Fuels Indian Railways’ Green Transition

- India’s decarbonisation of rail transport is being driven by a strong climate finance framework.
- Since FY2023, the government has issued ₹58,000 crore in **sovereign green bonds**, allocating around ₹42,000 crore for electric locomotives and metro and suburban rail expansion—embedding climate goals within capital budgeting.
- The *Indian Railway Finance Corporation (IRFC)* has been central to this transition, beginning with its \$500 million green bond in 2017 for locomotive procurement and later extending a ₹7,500 crore loan to *NTPC Green Energy* to develop renewable capacity.
- Multilateral support, such as the World Bank’s \$245 million Rail Logistics Project loan in 2022, has further bolstered India’s low-carbon transport infrastructure.

Making Electrification Truly Green

- To sustain real emission reductions, railway electrification must be matched by renewable energy sourcing.
- Drawing traction power from India’s coal-heavy grid weakens climate gains.

- Procuring renewable electricity directly from solar and wind producers through long-term contracts can ensure that “**green trains**” are powered by genuinely clean energy.

Building Low-Carbon Connectivity and Infrastructure

- Sustainable last-mile connectivity is essential. Railway stations should evolve into multi-modal green hubs integrating electric buses, cycling infrastructure, and pedestrian-friendly designs.
- Freight operations should maintain their low-carbon edge by adopting electric or LNG-powered trucks and exploring hydrogen-based mobility solutions for first-and-last-mile transport.

Innovation and Behavioural Change for a Greener Future

- India must align **rolling stock innovation** with global standards by introducing hydrogen fuel cell trains on non-electrified routes and heritage lines, using lightweight coaches, aerodynamic designs, and AI-driven energy optimisation systems.
- Beyond technology, behavioural transformation is key—green certification for trains, carbon labelling of freight services, and public awareness campaigns can make passengers and industries active partners in climate action.
- With its massive reach, Indian Railways can redefine sustainable mobility and set a national example in climate-conscious transport.

Indian Railways: Turning Net Zero into a Global Benchmark

- By achieving its net-zero target by 2030, **Indian Railways could cut over 60 million tonnes of CO₂ emissions annually** — equivalent to removing 13 million cars from the road.
- Electrification and energy efficiency initiatives are expected to yield fuel cost savings exceeding ₹1 lakh crore by decade’s end.
- However, the true challenge lies in mobilising and effectively managing the capital needed to realise these goals.
- If executed efficiently, India’s railway decarbonisation strategy could serve as a global model, demonstrating how large public transport systems can achieve low-carbon transformation without compromising fiscal stability.

A Green Transition Accelerating at Express Speed FAQs

Q1. What milestone marked a major step in Indian Railways’ green transformation?

Ans. The successful July 2025 trial of India’s first hydrogen-powered coach at the Integral Coach Factory marked a key step toward zero-carbon rail operations.

Q2. How much of Indian Railways’ network is electrified, and what renewable capacity is operational?

Ans. Over 98% of the network is electrified, supported by 553 MW of solar, 103 MW of wind, and 100 MW of hybrid renewable capacity.

Q3. What role does climate finance play in the railway's decarbonisation?

Ans. Climate finance, including ₹58,000 crore in sovereign green bonds and IRFC's green loans, funds electric locomotives, metro projects, and renewable infrastructure.

Q4. Why must electrification be paired with renewable energy sourcing?

Ans. Drawing power from a coal-heavy grid undermines climate gains; direct renewable procurement ensures genuinely green traction energy and true emissions reduction.

Q5. What broader impact could Indian Railways' net-zero plan have by 2030?

Ans. It could cut 60 million tonnes of annual CO₂ emissions and save ₹1 lakh crore in fuel costs, becoming a global sustainability model.

Source: **TH**

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